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**Implementation
competences as an
attribute of executive
employees of the flexible
organisation – an attempt
of their assessment
among manufacturers
of the agricultural
machinery sector¹**

*Knowledge and sitting down with people who live the
topic and brainstorming with them – that's what helps
me back the right people*

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1. Introduction

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According to B. Nogalski (2010, p. 300), a modern company is subject to significant changes involving the functioning in a more and more wider institutional perspective, on the increasing discontinuity of development challenges, and on the increasing complexity as a social system. Therefore, the organisation's success, measured by a degree of implementation of the assumed development strategy, depends on the ability to dynamically adapt the organisation to changing environmental conditions (Cyfert 2012, p. 123). In the context of the above,

1 This paper refers to industrial companies related to the production of spare parts, components, and finished agricultural machinery; such institutions constitute a subject of the authors' current and future research.

J. Stankiewicz and M. Moczulska (2013, p. 119) postulate that one of the most important competition instruments of companies includes innovations. In the creation process, they require the participation of employees, which is based on creativity and associated with activities related to knowledge, as well as the participation in more and more often performed changes (Moczulska, Stankiewicz 2016, p. 117). In modern management systems, high innovativeness is also expected from executive employees (Rutka, Czerna 2013, p. 28). The emphasis is put on the possibly quick manufacture of a product and the implementation of new technological solutions implying the achievement of a leading position in terms of costs.

The growing experience as well as research show that a decisive factor for the success of virtually every organisation includes activities that allow to use and develop the organisation's competence potential (Nogalski, Niewiadomski 2016, p. 137), which is understood as a complex of abilities, competences and resources that allow the organisation to shape, use and reproduce a business model, which provides it with the possibility to achieve and maintain permanent competitive advantages (Cyfert 2016, p. 46).

Globalisation and the new economy impose more and more new requirements on companies and entrepreneurs (Borowiecki 2016, p. 48). The companies were forced not only to create and search for creative, adaptive and anticipative enterprises towards a more turbulent environment, but also to such systemic reconstruction and structural changes in their tangible and intangible assets, which will enable them to develop. Accordingly, the activities of companies pose many challenges in the area of human resource management². These challenges relate, inter alia, to the competence of executive employees.

The competences became the subject of special attention in contemporary management. This situation results both from the need to adapt to economic phenomena taking place in Poland, and from changes in a wider global aspect. Knowledge and access to information begin to play an increasingly important role in the economic life. The new conditions require talented, highly qualified employees at various levels of management. The professionals, who understand the meaning of knowledge, have the ability to use it, as well as necessary experience, personal characteristics, and demonstrate appropriate attitudes and

2 In this paper, it was assumed that the human resource management objectives are to provide the organisation with competent employees and to increase their work efficiency (Nogalski, Surawski 2008, p.118).

behaviours aimed at efficient and effective development activities, are needed³.

In the context of the above, based on theoretical knowledge, own professional experience and conducted research, the authors recognised it crucial to develop and empirically verify the theoretical model of implementation competences of the executive employees of manufacturing companies of the agricultural machinery sector operating in Poland. The achievement of the main objective required a formulation and achievement of partial objectives, which included:

- the discussion and sorting out of terminological issues in the field of understanding of the implementation competence term,
- the development of a general model of the executive employees' implementation competences, which is a sign of knowledge, skills, personality features, attitudes and values,
- the empirical verification of a theoretical model; prioritisation of individual implementation competences in the assessment of the management personnel or owners of selected companies and determination of competence weaknesses, which are characteristic of the executive personnel of these companies.

It seems that the complexity of problems and small, so far, scientific identification justify considering these issues as a subject of research. The additional confirmation of the need for undertaking the research also results from the following facts (Gorynia, Kowalski 2013, p. 459):

- in the publishing market, there is a shortage of developments on the modelling of competences of executive employees in manufacturing companies, especially in relation to flexibility of machinery manufacture companies,
- the subject literature usually refers to general descriptions, lists or competence profiles; a shortage of developments presenting specific suggestions, which can be reflected in the management practice, is observed,
- a characteristic of modern management sciences includes the fast development of research works, which head for providing the carried out considerations with a nature that is much closer to the real economic life.

The research aimed at the identification of implementation competences of executive employees, who shape competitiveness of a manufacturing company, often faces numerous problems connected with the availability of reliable information. In this situation, the remaining option is to use expert,

3 J. Stankiewicz and M. Moczulska (2016, p. 37) postulate that the attitudes and behaviours are worth completing with the creation components. This point of view is entirely supported by the authors of this paper, at the same time, noting that the development of new – exceeding the current state – creative ideas is a condition that implies the possibility of implementation of new products.

direct interview, observation and participation methods. Having regard to this assumption, the authors started the implementation of the research, which will find their methodical and practical dimension, on the one hand, in the design of a set of key competences, and on the other hand, as a formulation of a response to the question of the extent to which some of the individual competences – according to manufacturers of the agricultural machinery sector – are the most important in terms of their implementation capacities. This response will be significantly reflected in a constructed concept of the assessment and measurement methods. By starting the research, the following assumptions were considered as leading: a) currently, each organisation experiences high dynamics of changes in the environment, regardless of the type of business (Szpitter, Sadkowska 2016, p. 402); b) the organisation's response to the increasing environment turbulence, and consequently, to its unpredictability, should include the increasing organisation competence potential, which implies its implementation flexibility; c) regardless of the environment variability and unpredictability degree, managers are obliged to build a competence development strategy, and constantly monitor it⁴.

This publication was created as a result of the authors' reflection and exploration, but primarily their practical actions in the current economic reality.

2. Competences in the flexible company theory⁵

B. Nogalski, J. Karpacz, and A. Wójcik-Karpacz (2004, p. 5) note that small and medium companies occupy a key position in the social and economic policy of many countries, and their development is considered one of the measures of economic growth and a sign of healthy market competition. Similar views are represented by M. Grudzewski and I. Hejduk (1998, p. 11) postulating that the acceleration of development of the sector of small and medium companies is one of the key issues for the Polish economy development. At the same time, they emphasise that the studies carried out in highly developed countries confirm

4 In this context, J. Stankiewicz, B. Seiler, and H. Bortnowska (2016, p. 383) indicate the possibility to improve the competences of young people – useful in the modern labour market – via voluntary work.

5 In this publication, the authors use two notions “flexible organisation” and “organisation flexibility.” The organisation, whose structure and culture enable to quickly adjust to changing needs of the clients and requirements of the competition, is flexible. Flexibility means an organisation's ability to introduce new implementations in relation to vast, unpredictable, and quickly emerging changes in the environment, which influence the organisation's results.

that the companies included in a small business group are characterised by high flexibility of action, high innovation, employment growth dynamics or a substantial share in the national income growth.

According to the authors of this paper, a period of the next two years will be a chance for the development of micro and small companies, including manufacturers who are able to adapt to the realities, in which they will operate⁶. The authors point out the development possibilities for small organisations implementing their own products, and operating on the basis of trust, commitment and competences. These criteria indicate manufacturing companies that create flexible behaviours manifested with a large number of implemented products. These products are manufactured in the optimized processes of designing and manufacturing, with the use of specialised equipment.

The increasing globalisation and operation in the turbulent environment create a situation, in which the possession of appropriate competences determines the conduct and effectiveness of integrated activities. Management theorists and practitioners emphasise that these are the competences that are a valuable resource for individuals and a resource of every organisation. A key reason for qualification of competences as a determinant of the organisation flexibility is the assumption that the organization, as a subject of interests of the organization and management theory, is an object that was created by people, and its composition - along with other resources - always includes people with competences at their disposal.

The term "competences" owes its popularity to the searching for new solutions tailored to the challenges that await the companies in relation to the growing global competition or treating human resources as a potential for competing more effectively in the market.

Although the information society paradigm is becoming more widely known, the theory and practice show that it is still far from adopting a single, universally accepted definition of the competence term. According to R. Walkowiak (2004, p. 16), the search for one common or universal definition, if it is possible at all, would not enhance neither knowledge nor management practices, and at the same time, could lead to the research field narrowing.

In the context of the above - as well as due to the limited publishing possibilities - an attempt of the terminological order was not discussed in the

6 It will not be an easy period, especially for large entities, the management boards of which are resistant to all kinds of changes, and even if they accept them, a process of their implementation is too long.

paper. The carried out analyses have only a cognitive nature, which made it possible to detect common areas, correlations and research approaches. The systematisation of different aspects of the same problem increased a chance for a comprehensive analysis, and might also constitute an inspiration for searching the own definition of implementation competences.

In the context of the conducted review of the literature, for the purposes of this paper, it was assumed that implementation competences are a system of interdependent knowledge⁷, skills, personality features of executive employees, as well as values, attitudes and their behaviours, which imply the smooth, efficient and effective implementation of new products being a response to the constantly changing turbulent environment⁸.

To sum up the definitional considerations, when invoking in other authors or handling and comparing the experience of different researchers, it is important to pay attention to the interpretation of the term by a given author. However, from the analytic perspective, it is important that the definition of competence properly served research purposes, which was provided by the authors of this paper.

3. Research scope and subject

The studies, referred to in this part of the paper, were conducted within the period from 10 to 25 September 2016⁹. In the first stage constituting preparatory research, the authors applied a method of literature studies¹⁰ and

7 The basic components of the adopted definition of implementation competences include knowledge and the ability of its use in practice. Modern ideas, concepts and management theories highlight the role of knowledge and skills in the organisation effective functioning. They began to be considered as a source of the competitive advantage, and thus as a basic kind of the organization's resources.

8 In the development, it was assumed that the implementation includes the entire process of creating a new product.

9 However, 37 expert interviews were carried out on 23-26 September 2016 during the AGRO SHOW 2016 International Agricultural Fair.

10 The works related to the following issues were used: management of professional competences (Filipowicz 2004; Moczydłowska 2008; Szczęśna, Rostkowski 2004), competences of employees hired in the industry (Wyrwicka, 2001; Niewiadomski, 2010), the effective manager's competences (Nogalski, Śniadecki 2001; Bartkowiak 2003), management personnel key competences (Rakowska, A. Sitko – Lutek 2000; Rakowska 2007), or competence gap (Rakowska 2007; Walkowiak 2004), human resource system based on competences (Dubois, Rothwell 2008), relations between competences and careers as well as management levels (Majewski 2006).

expert consultations. The preparatory research determined the conduct of the actual research; aimed at defining a list of implementation competences of the executive employees of manufacturing companies of the agricultural machinery sector¹¹.

As a result of the preparatory research, a list of twenty-four competences, which was moved to the developed construction of a survey questionnaire, was determined; the survey constituting a tool for conducting the actual research was prepared¹².

In the second stage of the research constituting the actual research, a list of implementation competences developed by the authors was delivered to forty-nine deliberately selected people who are managers (22 people)¹³ or owners (27 people)¹⁴ of the companies that are subject to the research¹⁵. The importance of individual competences was determined by evaluators in a scale from 1 to 5 points, where 1 - low required level, and 5 - very high level of the acquisition of required implementation competences.

The identification of the improvement areas, that is the competence gap, required the assessment of the level of implementation competences of the executive employees hired in the examined company. However, hardly anyone, especially the engineering personnel, likes to be evaluated. People are reluctant to reveal their weaknesses, and they are more likely to talk about their strengths¹⁶.

11 The primary research objective was to develop their list, as well as their discussion in relation to the way of defining.

12 Since the introduction of a higher number of variables strongly complicates and prevents the formulation of conclusions, the actual research was limited only to a specified number of variables. The originally prepared list of 65 implementation competences was verified among 11 deliberately selected experts (7 - owners, 2 - directors, 1 - president of the management board, 1 - proxy). The mentioned people were asked to identify - on the basis of their opinion - the most important competences. The significance was marked by sorting out the competences (in the specially prepared table) in the order from the most to the least important ones.

13 Among the examined representatives, there were, among others, directors or general managers - 11 people, production managers - 6 people, technologists - 5 people.

14 In case of nineteen entities, which are family-owned companies, the survey was filled out by future inheritors or co-owners.

15 The experts represented the following companies: micro - 6 people (12.24%), small - 13 people (26.53%), medium - 28 people and big - 2 people (4.08%). Small and medium companies are key in the agriculture machinery sector, hence such entities were the significant majority. (83.67%).

16 According to the authors, in case of testing the executive personnel, there is the possibility of falsification of disclosed information about themselves. Even by maintaining the appropriate research results, it can be assumed that, in principle, the respondents may strive for their distortion.

Therefore, in addition to the assessment of the required competence level from an executive employee – managers subject to the research – also assessed the degree, on which executive employees, hired in the company that they represent, have specific competences at their disposal. Similarly, as it was in case of the assessment of the importance of individual competences, the level at which they possess them was identified with a scale of 1 to 5 points, where 0 - none, 1 - very low level, and 5 - very high level of possessed competences.

Deliberately chosen representatives of practice were invited to the research. In the procedure of their selection, the following criteria were used: the long-term cooperation of the respondent with the Production Plant of Agricultural Spare Parts and Machines “Fortschritt” as a research partner; readiness to participate in the research; interest in the results of the research covered by the presented subject matter; direct acquaintance of an expert with researchers¹⁷.

4. Implementation competences in the opinion of selected manufacturers of the agricultural machinery sector¹⁸ – research results

4.1. Desired state – model conception

The resource approach still plays a huge role, especially in the context of shaping the manufacturing company flexibility. The above facts seem to be confirmed by the numerous studies of R. Rumelt, A. McGahan and M. Porter and on the basis of the Polish heritage of management sciences of R. Krupski (Niewiadomski 2016, p. 95). As a remedy to increase the environment unpredictability – business practice – also usually selects the resource-based orientation. Therefore, it is appropriate – according to the authors of this paper – to treat the resources in the

▼ A tendency to false the information intensifies especially when there is concern that information may be used to make personnel decisions. An additional problem is the lack of time, which executive employees suffer from (e.g. piecework, production schedule), in order to pay greater attention to the research, especially when the respondents know that the research “serves” only scientific purposes. In this paper, it was assumed that no one has greater knowledge about the employees and their competences than owners of the management personnel systematically monitoring – performed by them – tasks.

¹⁷ It made it possible to verify whether the candidate: has the appropriate practical experience in the sector; has communication skills to facilitate the knowledge share; shares knowledge in a reliable and conscientious manner; is ethical in his/her actions; is independent in the presented assessment and issued opinions, has great knowledge in a particular field, appropriately structured.

¹⁸ AMS is an abbreviation for “agricultural machinery sector”.

category of making the organisation more flexible. In view of the above, it should be added that the flexibility issue researchers, with the use of numerous studies, confirmed that the activity and the flexibility level depend both on tangible and intangible assets¹⁹. M. Romanowska (2016, p. 34) indicates that financial and human resources, team support, external communication, formalisation and adoption of the market orientation are key elements at the stage of the innovation implementation (including a new product). The above mentioned fact is confirmed by M. Pichlak (2015, pp. 37-49) pointing out the factors of a resource and competence nature.

Therefore, in the changing environment conditions, this issue becomes not only a domain of theoretical interests, but also a guideline for managers in designing new types of strategies, especially that modern companies must meet the demand for individual solutions, in particular, in terms of organisation of implementation processes.

Therefore, the empirical studies were undertaken, and it was directed to obtain an answer to the following question: what implementation competences, and to what extent, should be revealed by executive employees of manufacturing companies of the agricultural machinery sector? Detailed results are shown in table 1.

Table 1. Implementation competences – desired state (own research results)

Item	Competence	Significance level (% responses)					Average
		1	2	3	4	5	
K-1	Ability to develop new instruments	-	-	-	16.3	83.7	4.84
K-2	Service of machines, including: lathes, milling machines, drills, plasma and laser cutters, press brakes, etc.	-	-	-	22.4	77.6	4.78
K-3	Ability to choose operating tools and objects	-	-	2.0	38.8	61.2	4.67
K-4	Manual skills	-	-	2.0	38.8	59.2	4.57

¹⁹ See: (Krupski, 2008; Osbert-Pociecha, 2011; Nogalski, Niewiadomski, 2015; Niewiadomski, 2016, Kasiewicz i zespół [Kasiewicz and the team], 2009; Worren, Moore, Cardona, 2002; Ketkar, Sett, 2010; Johnson, Lee, Saini, Grohmann, 2003; Bhattacharya, Gibson, Doty, 2005; Aaker, Mascarenhas, 1984; Atkinson, 1984; Swafford, Ghosh, Murthy, 2006).

K-5	Knowledge related to the used operating resources and objects, as well as technology	-	-	2.0	53.1	44.9	4.43
K-6	Knowledge of the implemented product	-	-	8.2	42.9	49.0	4.41
K-7	Knowledge of information technologies, including the ability to use the software, e.g. CAD	-	-	4.1	51.0	44.9	4.41
K-8	Ability to quickly acquire knowledge	-	-	4.1	53.1	42.9	4.39
K-9	Planning and organisational skills	2.0	2.0	6.1	40.8	49.0	4.33
K-10	Creativity, creation, innovation	2.0	2.0	8.2	38.8	49.0	4.31
K-11	Ability to read and develop a technical drawing	2.0	2.0	4.1	53.1	38.8	4.24
K-12	Knowledge of the processed material properties	-	-	2.0	73.5	24.5	4.22
K-13	Spatial vision abilities	2.0	2.0	8.2	49.0	38.8	4.20
K-14	Object dimensioning ability	-	-	2.0	75.5	22.4	4.20
K-15	Analytical-diagnostic and conceptual thinking	2.0	2.0	8.2	59.2	28.6	4.10
K-16	Knowledge of the types of turning tools and other tools	-	-	10.2	75.5	14.3	4.04
K-17	Knowledge of geometry and trigonometry	-	-	12.2	73.5	14.3	4.02
K-18	Ability to control correctness of settings	2.0	2.0	12.2	69.4	14.3	3.92
K-19	Knowledge about the rules of determining the order of technological operations	2.0	6.1	14.3	63.3	14.3	3.82
K-20	Professional experience in the industry	2.0	2.0	67.3	26.5	2.0	3.24
K-21	Resistance to stress	2.0	12.2	57.1	18.4	10.2	3.22
K-22	Decision-making skills; courage in decision-making	4.1	6.1	61.2	26.5	2.0	3.16
K-23	Orientation on cooperation; the ability to work in a team	4.1	12.2	59.2	24.5	2.0	3.14
K-24	Knowledge of Health and Safety regulations in terms of occupational risks	6.1	10.2	59.2	22.4	2.0	3.04

Source: own study on the basis of research results

The carried out research shows that among the presented set of implementation competences of executive employees, the following elements have key

importance²⁰: the ability to develop new instruments (average rating 4.84; 83.7% responses for the assessment of 5 points), service of machines (average rating of 4.78; 77.6% responses for the assessment of 5 points), the ability to choose operating tools and objects (average rating of 4.67; 61.2% responses for the assessment of 5 points), manual skills (average rating of 4.57; 59.2% responses for the assessment of 5 points).

Small differences were also observed in terms of the assessment, made by the management personnel, of the degree of other anticipated implementation competences, which are:

- knowledge associated with the applied operating resources and objects as well as technology (average rating of 4.43; 44.9% of responses for the assessment of 5 points),
- knowledge of the implemented product (average rating 4.41; 49% of responses for the assessment of 5 points),
- knowledge of information technologies (average rating 4.41; 44.9% of responses for the assessment of 5 points),
- ability to quickly acquire knowledge (average rating 4.39; 42.9% of responses for the assessment of 5 points),
- planning and organisational skills (average rating 4.33; 49% of responses for the assessment of 5 points),
- creativity, creation, innovation (average rating 4.31; 49% of responses for the assessment of 5 points),
- ability to read and develop a technical drawing (average rating 4.24; 38.8% of responses for the assessment of 5 points),
- knowledge of the processed material properties (average rating 4.22; 24.5% of responses for the assessment of 5 points).

To sum up, a competent executive employee is a person who has thorough knowledge in the field of construction and operation of machines and agricultural vehicles. The employee has the abilities to develop the technical documentation, programme and use the systems and computer programmes, as well as specialised packages applied in the processes of modelling, designing

20 Taking into account a criterion of importance related to particular competences, they were divided by the authors into three groups, i.e. key competences characterised by the high desire significance and significantly complementary competences. The authors adopted the following solution: a lower limit of the range of values for the competence group with a high desire degree was a point value of 4.21; in the analysed case, it is a value of the twelfth competence. Another group of competences included the factors from 13 to 24.

and manufacturing of the machines' elements. Furthermore, this person has knowledge of the construction, service, repair and operation of the machinery and vehicles as well as specialised equipment.

He or she does not have a problem in the use of modern conventional machine tools, and also those equipped with computerised numerical control systems. His or her implementation competences are manifested in the practical use of specialised engineering software in the range of the computer-aided design (CAD), computer-aided manufacturing (CAM) and computer-aided quality assurance (CAQ).

4.2. Actual state – assessment of executive employees

Popular methods of the competence state diagnosis include tests (Filipowicz 2002, p. 27). With the use of them, with some modifications, it is possible to diagnose the level of the executive employees' implementation competences. A specific variety includes situational tests (task tests), also known as

simulations. Their essence is to assess the level of selected competences based on observation of the tested person's behaviour in a situation which is a simulation of the challenge specific to a professional role or a work position. The above fact was taken into account while starting the research; it was assumed that the assessing management personnel verifies specific tasks or a project implemented in the real work environment every day, which makes it possible to assess the level of acquisition of – demonstrated by concrete executive employees – specific competences.

The research, which is presented in this chapter, was aimed at the reception of answers to the following question: to what extent are the presented implementation competences manifested by the executive employees of manufacturing companies of the agricultural machinery sector? Detailed results are shown in table 2.

The carried out research shows that among the presented set of implementation competences of executive employees, the highest rating was obtained by the machine service ability (average rating of 4.65; 67.3% of responses for the assessment of 5 points). An only slightly lower rating was awarded to the ability to choose operating tools and objects (average rating of 4.61; 65.3% of responses for the assessment of 5 points), the ability to develop new instruments (average rating of 4.59; 59.2% of responses for the assessment of 5 points), manual skills (average rating of 4.57; 57.1% of responses for the assessment of 5 points) and knowledge associated with the applied operating resources and objects as well

as technology (average rating of 4.41; 46.9% of responses for the assessment of 5 points).

Table 2. Implementation competences – current state (own research results)

Item	Competence	Significance level (% responses)					Average
		1	2	3	4	5	
K-1	Service of machines, including: lathes, milling machines, drills, plasma and laser cutters, press brakes, etc.	-	-	2.0	30.6	67.3	4.65
K-2	Ability to choose operating tools and objects	-	-	4.1	30.6	65.3	4.61
K-3	Ability to develop new instruments	-	-	8.2	34.7	59.2	4.59
K-4	Manual skills	-	-	-	42.9	57.1	4.57
K-5	Knowledge related to the used operating resources and objects, as well as technology	-	-	6.1	46.9	46.9	4.41
K-6	Knowledge of the implemented product	-	-	10.2	40.8	49.0	4.39
K-7	Planning and organisational skills	-	2.0	6.1	51.0	40.8	4.31
K-8	Ability to read and develop a technical drawing	-	-	6.1	57.1	36.7	4.31
K-9	Object dimensioning ability	-	-	2.0	67.3	30.6	4.29
K-10	Knowledge of information technologies, including the ability to use the software, e.g. CAD	-	-	18.4	38.8	42.9	4.24
K-11	Knowledge of the types of turning tools and other tools	-	-	8.2	59.2	32.7	4.24
K-12	Knowledge of the processed material properties	-	-	6.1	67.3	26.5	4.20
K-13	Spatial vision abilities	-	2.0	8.2	59.2	30.6	4.18
K-14	Ability to quickly acquire knowledge	-	2.0	18.4	42.9	36.7	4.14
K-15	Creativity, creation, innovation	-	-	4.1	57.1	34.7	4.14
K-16	Professional experience in the industry	-	-	12.2	71.4	16.3	4.04
K-17	Knowledge of geometry and trigonometry	-	2.0	8.2	77.6	12.2	4.00

K-18	Analytical-diagnostic and conceptual thinking	2.0	2.0	16.3	59.2	20.4	3.94
K-19	Ability to control correctness of settings	-	2.0	16.3	69.4	12.2	3.92
K-20	Knowledge of Health and Safety regulations in terms of occupational risks	2.0	6.1	14.3	55.1	22.4	3.90
K-21	Knowledge about the rules of determining the order of technological operations	2.0	2.0	18.4	71.4	6.1	3.78
K-22	Resistance to stress	4.1	14.3	46.9	24.5	10.2	3.22
K-23	Decision-making skills; courage in decision-making; decisiveness	2.0	6.1	73.5	10.2	8.2	3.16
K-24	Orientation on cooperation; the ability to work in a team	2.0	28.6	34.7	22.4	12.2	3.14

Source: own study on the basis of research results

Small differences are also observed in terms of the assessment, made by respondents, of the degree of possession of other implementation competences, which are:

- knowledge of the implemented product (average rating of 4.39 point on a scale of 0-5 points),
- planning and organisational skills (average rating of 4.31 points on a scale of 0-5 points),
- ability to read and develop a technical drawing (average rating of 4.31 point; on a scale of 0-5 points),
- object dimensioning ability (average rating of 4.29 point on a scale of 0-5 points),
- knowledge of information technologies (average rating of 4.24 point on a scale of 0-5 points),
- knowledge of the types of turning tools and other tools (average rating of 4.24 point on a scale of 0-5 points),
- knowledge of the processed material properties (average rating of 4.20 point on a scale of 0-5 points).

As a result of the conducted assessment of acquisition of the presented implementation competences, the respondents subsequently assigned a rating below 4.20.

4.3. Competence gap – an attempt of the improvement direction assessment

After getting familiarised with the results of the assessment of implementation competences required and possessed by executive employees, a next stage in the improvement process is to identify a competence gap (table 3). In case of the improvement of executive employees, the information about the gap is a basis for determining the need and scope of professional development.

Table 3. Implementation competences – gap (own research results)

Item	Competence	Desired state	Current state	Gap
LK-1	Ability to develop new instruments	4.84	4.59	0.25
LK-2	Ability to quickly acquire knowledge	4.39	4.14	0.25
LK-3	Knowledge of information technologies, including the ability to use the software, e.g. CAD	4.41	4.24	0.17
LK-4	Creativity, creation, innovation	4.31	4.14	0.17
LK-5	Analytical-diagnostic and conceptual thinking	4.10	3.94	0.16
LK-6	Service of machines, including: lathes, milling machines, drills, plasma and laser cutters, press brakes, etc.	4.78	4.65	0.13
LK-7	Ability to choose operating tools and objects	4.67	4.61	0.06
LK-8	Knowledge about the rules of determining the order of technological operations	3.82	3.78	0.04
LK-9	Knowledge related to the used operating resources and objects, as well as technology	4.43	4.41	0.02
LK-10	Knowledge of the implemented product	4.41	4.39	0.02
LK-11	Planning and organisational skills	4.33	4.31	0.02
LK-12	Knowledge of the processed material properties	4.22	4.20	0.02
LK-13	Spatial vision abilities	4.20	4.18	0.02
LK-14	Knowledge of geometry and trigonometry	4.02	4.00	0.02

Source: own study on the basis of research results

On the basis of the importance (significance) assessment of implementation competences, which was carried out by the management personnel, and the assessment in the scope of the executive employees' possession of their individual types, it is possible to single out their weaknesses. Out of twenty-four singled out competences, the executive employees' ability to develop new instruments and to quickly acquire knowledge were relatively the most critically assessed among imposed requirements. In both cases, the difference between the desired and actual state fluctuates around 0.25 point. A slightly smaller gap occurs between the possessed and required level of implementation competences in case of knowledge of information technologies as well as creativity, creation, and innovation (the difference of 0.17 point), or analytical-diagnostic and conceptual thinking (the difference of 0.16 point), and in the scope of operation of machines (the difference of 0.13 point). The difference between successive eight competences is small; it fluctuates between 0.06 and 0.02 point (table 3). In conclusion, it should be emphasised that among twenty-four implementation competences, the gap occurs in fourteen of them (58.33%). This is an area that requires the potential improvement. In case of five competences (20.83%), the level of their fulfilment slightly exceeds the model level (required). The situation is similar in case of the other five competences (20.83%), where the required level is equal to their level of acquisition by executive employees (table 4).

**Table 4. Implementation competences with a high level of acquisition
(own research results)**

Item	Competence	Desired state	Current state	Super-competence
LK-15	Object dimensioning ability	4.20	4.29	-0.09
LK-16	Professional experience in the industry	3.24	4.04	-0.8
LK-17	Ability to read and develop a technical drawing	4.24	4.31	-0.07
LK-18	Knowledge of the types of turning tools and other tools	4.04	4.24	-0.2
LK-19	Manual skills	4.57	4.57	0
LK-20	Ability to control correctness of settings	3.92	3.92	0
LK-21	Resistance to stress	3.22	3.22	0
LK-22	Decision-making skills; courage in decision-making; decisiveness	3.16	3.16	0

LK-23	Orientation on cooperation; the ability to work in a team	3.14	3.14	0
LK-24	Knowledge of Health and Safety regulations in terms of occupational risks	3.04	3.90	-0.86

Source: own study on the basis of research results

In the carried out analysis of the obtained results, it is not only important to find the differences between the required and possessed competence levels, but also to verify the statistical significance of the observed differences. It can be performed with the use of the t-test for the difference between averages. Unfortunately, due to stringent publishing requirements, it was expressly departed from in this paper, assuming that a hypothesis of the lack of differences between the average ratings should be rejected.

5. Conclusion

In the improvement process, at the planning stage, decisions about the need and scope of training are taken on the basis of the size of the implementation gap and anticipation of future tasks performed on a given position. Taking into account the employees' individual needs is desired at the same time. Moreover, the authors suggest that the improvement methods should be linked to the human resource management model, which is dominant in a organisation, and the related training philosophy.

The obtained research results confirm the assumption that there is a hierarchy of implementation competences of the executive employees of companies operating in the agricultural machinery sector. The paper showed that it is possible to diagnose the competence gap. Moreover, it was proven that the construction of the executive employees' competence models can be based on existing methodological approaches.

The author's developed profile of key competences constitutes a starting point for improving the company flexibility management processes. In the context of the research subject, the developed models can be used when interviewing candidates for the position of executive employees and the selection of those who have already performed these functions. In addition, the competence models can be useful to develop criteria for periodic evaluations and during the current assessment of the performed work²¹. The knowledge of differences between the

21 At the same time, among the available diagnosis methods, people, who assess the competences, should choose those, which they believe best meet the requirements of a particular organisation.

model and actual levels of competences, can be applied in planning the training needs for the engineering personnel. The management personnel's specific expectations related to the training needs are presented to people responsible for the development, which is obviously necessary while creating individual professional training programmes.

In the paper, the procedures and tools that allow to identify key implementation competences and determine the competence gap, which according to the authors contributes to the partial completion of the lack of knowledge in this field.

Summary

Implementation competences as an attribute of executive employees of the flexible organisation – an attempt of their assessment among manufacturers of the agricultural machinery sector

Based on theoretical knowledge, own professional experience and conducted research, according to the authors, the paper's objective is to develop and empirically verify the theoretical model of implementation competences of the executive employees of manufacturing companies of the agricultural machinery sector. The main objective achievement required to formulate and reach partial objectives, which include: a) discussion and organisation of terminological issues in terms of understanding the term of implementation competences, b) development of a general model of the executive employees' implementation competences, which is a sign of knowledge, skills, personality features, attitudes and values, c) empirical verification of the theoretical model; prioritisation of individual implementation competences in the assessment of executive employees or owners of selected companies and determination of competence weaknesses, which are characteristic of the executive personnel of these companies.

Keywords: *implementation competences, flexibility, competence gap, improvement.*

Streszczenie

Kompetencje implementacyjne jako atrybut pracowników wykonawczych elastycznej organizacji – próba ich oceny wśród wytwórców sektora maszyn rolniczych

W oparciu o wiedzę teoretyczną, własne doświadczenia zawodowe oraz przeprowadzone badania, za cel niniejszej pracy autorzy uznali opracowanie i empiryczną weryfikację

teoretycznego modelu kompetencji implementacyjnych pracowników wykonawczych przedsiębiorstw produkcyjnych sektora maszyn rolniczych. Osiągnięcie celu głównego wymagało sformułowania i zrealizowania celów cząstkowych, do których zaliczono: a) dyskusję i uporządkowanie kwestii terminologicznych w zakresie pojmowania terminu kompetencje implementacyjne, b) opracowanie ogólnego modelu kompetencji implementacyjnych pracowników wykonawczych, będącego wykazem wiedzy, umiejętności, cech osobowościowych, postaw oraz wartości, c) empiryczną weryfikację modelu teoretycznego; ustalenie hierarchii ważności poszczególnych kompetencji implementacyjnych w ocenie kadry menedżerskiej lub właścicieli wybranych przedsiębiorstw oraz określenie jakie niedomagania kompetencyjne cechują kadrę wykonawczą tychże przedsiębiorstw.

Słowa

kluczowe: *kompetencje implementacyjne, elastyczność, luka kompetencyjna, doskonalenie.*

References

1. Aaker D.A., Mascarenhas B. (1984), *The need for strategic flexibility*, „Journal of Business Strategy”, No. 5.
2. Atkinson, J. (1984), *Manpower strategies for flexible organizations*, „Personnel Management”, No. 26.
3. Bartkowiak G. (2003), *Skuteczny kierownik – model i jego empiryczna weryfikacja* [Effective manager – a model and its empirical verification], Wydawnictwo Akademii Ekonomicznej w Poznaniu [Publishing House of Poznań University of Economics], Poznań.
4. Bhattacharya, M., Gibson, D., Doty, D.H. (2005), *The effects of flexibility in employee skills, employee behaviors, and human resource practices on firm performance*, „Journal of Management”, 31(4), pp. 622-640.
5. Borowiecki R. (2016), *Permanentna restrukturyzacja – współczesny paradygmat zarządzania?* [Constant restructuring – a contemporary paradigm of management?], [in:] G. Osbert-Pociecha, S. Nowosielski, *Meandry teorii i praktyki zarządzania* [Meanders of management theory and practice], Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu [Publishing House of Wrocław University of Economics], Wrocław, pp. 45-55.
6. Cyfert S. (2012), *Systemowy model organizacji: perspektywa procesów odnowy*

- organizacyjnej [Organisation systemic model: the prospect of organisational renewal processes], [in:] G. Belz, S. Cyfert (ed.), *Strategie i mechanizmy odnowy przedsiębiorstw [Strategies and mechanisms for renewal of companies]*, Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu [Publishing House of Wrocław University of Economics], Wrocław, „Prace Naukowe” [“Scientific Paper”], No. 276, pp. 123-129.
7. Dubois D. D., Rothwell W. J. (2008), *Zarządzanie zasobami ludzkimi oparte na kompetencjach [Human resource management based on competences]*, HELION Publishing House, Gliwice.
 8. Filipowicz G. (2002), *Pracownik wyskalowany, czyli metody i narzędzia pomiaru poziomu kompetencji [A calibrated employee, i.e. methods and tools for measuring the competence level]* (1), „Personel” [“Personnel”], No. 7.
 9. Filipowicz G. (2004), *Zarządzanie kompetencjami zawodowymi [Professional competence management]*, PWE, Warsaw.
 10. Gorynia M., Kowalski T. (2013), *Nauki ekonomiczne i ich klasyfikacja a wyzwania współczesnej gospodarki [Economic sciences and their classification versus modern economy challenges]*, „Ekonomista” [„Economist”], No. 4.
 11. Grudzewski W.M., Hejduk I. (1998), *Małe i średnie przedsiębiorstwa w gospodarce rynkowej w Polsce [Small and medium companies in the Polish market economy]*, Wyższa Szkoła Handlu i Prawa w Warszawie [Warsaw Higher School of Trade and Law], Warsaw.
 12. Johnson J.L., Lee R.P., Saini A., Grohmann B. (2003), *Market-Focused Strategic Flexibility: Conceptual Advances and an Integrative Model*, „Journal of the Academy of Marketing Science”, No. 31(1).
 13. Kasiewicz S., Ormińska J. Rogowski W., Urban W. (2009), *Metody osiągania elastyczności przedsiębiorstw. Od zarządzania zasobowego do procesowego [Methods of achieving the flexibility of companies. From resource to process management]*, Szkoła Główna Handlowa w Warszawie [Warsaw School of Economics], Warsaw.
 14. Ketkar, S., Sett, P.K. (2010), *Environmental dynamism, human resource flexibility, and firm performance: analysis of a multi-level causal model*, „International Journal of Human Resource Management”, Vol. 21 No. 4, pp. 1173-1206.
 15. Krupski R. (2008), *Elastyczność organizacji [Organisation flexibility]*, Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu [Publishing House of Wrocław University of Economics], Wrocław.
 16. Krzakiewicz K., Cyfert S., (2016), *Strategiczny potencjał organizacji uczącej się w aspekcie koncepcji zdolności dynamicznych [Strategic potential of the learning organisation in terms of the concept of dynamic capabilities]*, „Studia i Prace Kolegium Zarządzania i Finansów” [„Studies and Papers at the Collegium of Management and Finance”], Zeszyt Naukowy [Research Bulletin] 149, pp. 43-59.

17. Majewski T. (2006), *Kompetencje dowódcze oficerów wojsk lądowych sił zbrojnych RP [Commanding competences of officers of ground forces of the Polish Armed Forces]*, Akademia Obrony Narodowej [National Defence University of Warsaw], Warszawa.
18. Moczulska M. Stankiewicz J. (2016), *Interakcje społeczne sprzyjające zaangażowaniu pracowników w organizacji – założenia w świetle teorii organizacji i zarządzania [Social interactions conducive to the employees' involvement in the organisation – assumptions in the light of the organisation and management theory]*, „Nauki o Zarządzaniu” [„Management Sciences”] No. 2(27), pp. 116-129.
19. Moczydłowska J. (2008), *Zarządzanie kompetencjami zawodowymi a motywowanie pracowników [Management of professional competence versus motivation of employees]*, Difin, Warsaw.
20. Niewiadomski P. (2010), *Badanie kompetencji menedżerów sprzedaży w przedsiębiorstwach budowy maszyn [Study on the competencies of sales managers at agricultural machinery manufacture companies]*, Unpublished doctoral dissertation.
21. Niewiadomski P. (2016), *Determinanty elastyczności funkcjonowania przedsiębiorstwa produkcyjnego sektora maszyn rolniczych [Determinants related to flexibility of functioning of a manufacturing company of the agricultural machinery sector]*, Wydawnictwo Politechniki Poznańskiej [Publishing House of Poznań University of Technology], Poznań.
22. Nogalski B, Karpacz J., Wójcik-Karpacz A. (2004), *Funkcjonowanie i rozwój małych i średnich przedsiębiorstw [Functioning and development of small and medium companies]*, AJG Publishing House, Bydgoszcz.
23. Nogalski B. (2010), *Lean Management*, [in:] M. Czerska, A. Szpitter (eds.), *Koncepcje zarządzania [Management concepts]*, C. H. Beck Publishing House, Warsaw.
24. Nogalski B., Niewiadomski P. (2015), *Metoda oceny determinant elastyczności jako wyraz odnowy strategicznej zakładu wytwórczego – koncepcja i zastosowanie [Methods of the assessment of flexibility determinants as a sign of the manufacturing plant's strategic renewal – concept and application]*, [in:] A. Jaki, M. Kowalik (eds.), *Współczesne oblicza i dylematy restrukturyzacji [Contemporary forms and dilemmas of restructuring]*, Fundacja Uniwersytetu Ekonomicznego w Krakowie [Foundation of the Cracow University of Economics], Katedra Ekonomiki i Organizacji Przedsiębiorstw [Department of Economics and Organisation of Enterprises], Uniwersytet Ekonomiczny w Krakowie [Cracow University of Economics], Cracow
25. Nogalski B., Śniadecki J. (2001), *Umiejętności menedżerskie w zarządzaniu przedsiębiorstwem [Managerial skills in the company management]*, Publishing House: Oficyna Wydawnicza Ośrodka Postępu Organizacyjnego, Bydgoszcz.

26. Nogalski B., Surawski B. (2008), *Pracownicy wiedzy. Problemy i dylematy badania pracy opartej na wiedzy* [Knowledge employees. Research problems and dilemmas of the knowledge-based work], [in:] T. Listwan, S. A. Witkowski (eds.), *Kompetencje a sukces zarządzania organizacją* [Competences versus organisation management success], Difin, Warsaw, pp. 118-130.
27. Osbert-Pociecha G. (2011), *Zdolność do zmian jako siła sprawcza elastyczności organizacji* [Ability to change as an organisation flexibility driving force], Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu [Publishing House of Wrocław University of Economics], Wrocław.
28. Pichlak M. (2015), *Uwarunkowania procesu adaptacji innowacji w polskich organizacjach* [Conditions of the adaptation process of innovations in Polish organisations], „Organizacja i Kierowanie” [„Organisation and Management”], No. 2, pp. 37-49.
29. Rakowska A. (2007), *Kompetencje menedżerskie kadry kierowniczej we współczesnych organizacjach* [Managerial competences of the management personnel in contemporary organisations], Wydawnictwo Uniwersytetu Marii Curie – Skłodowskiej [Publishing House of Maria Curie-Skłodowska University in Lublin], Lublin.
30. Rakowska A., Sitko – Lutek A. (2000), *Doskonalenie kompetencji menedżerskich* [Improvement of management competences], Państwowe Wydawnictwo Naukowe [Polish Scientific Publishers], Warsaw.
31. Romanowska M. (2016), *Determinanty elastyczności polskich przedsiębiorstw* [Determinants of flexibility of Polish companies], „Przegląd Organizacji” [„Journal of Organisation Review”] No. 2, pp. 29-35.
32. Rutka R., Czerska M. (2013), *Ewolucja uwarunkowań partycypacji bezpośredniej w drugiej dekadzie transformacji polskiej gospodarki* [Evolution of the direct participation conditions in the second decade of the Polish economy transformation], in: M. Moszkowicz, R. Kamiński, M. Wąsowicz (ed.), *Budowa gospodarki opartej na wiedzy w Polsce – modele i doświadczenia* [Construction of the knowledge-based economy in Poland – models and experemients], Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu [Publishing House of Wrocław University of Economics], Wrocław, „Prace Naukowe” [“Scientific Papers”], No. 298, pp. 27-39.
33. Stankiewicz J., Moczulska M. (2013), *Poprzez walkę i współzawodnictwo pracowników do innowacyjnej organizacji (w świetle wyników badań empirycznych)* [By the employees’ fight and competition to an innovative organisation (in the light of the empirical research results)], [in:] J. Skalik, A. Zabłocka-Kluczka (eds.), *Innowacje w zarządzaniu* [Innovations in managements], Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu [Publishing House of Wrocław University of Economics], Wrocław, „Prace Naukowe” [“Scientific Papers”], No. 300, pp. 119-130.

34. Stankiewicz J., Moczulska M. (2016), *Zachowania pracowników sprzyjające innowacyjności organizacji w świetle badań* [The behaviour of employees conducive to innovation of organization in the light of the research results], „Przegląd Organizacji” [“Journal of Organisation Review”] No. 2, pp. 36-43.
35. Stankiewicz J., Seiler B., Bortnowska H. (2016), *Studenci kierunków menedżerskich wobec pracy ochotniczej (w świetle wyników badań)* [Students of management in the face of volunteer work (in the light of the research results)], „Zarządzanie i Finanse Journal of Management and Finance” Vol. 14, No. 2/1, pp. 401-413.
36. Swafford P. M., Ghosh S., Murthy N. N. (2006), *The Antecedents of Supply Chain Agility of a Firm: Scale Development and Model Testing*, „Journal of Operations Management”, Vol. 24, No. 2.
37. Szczęsna A., Rostkowski T. (2004), *Zarządzanie kompetencjami* [Competence management], [in:] T. Rostkowski (ed.), *Nowoczesne metody zarządzania zasobami ludzkimi* [Modern methods of human resource management], Difin, Warsaw.
38. Szpitter A., Sadkowska J. (2016), *Wykorzystanie macierzy VUCA do oceny ryzyka otoczenia projektowego* [The use of VUCA matrix to assess the design environment risk], „Zarządzanie i Finanse Journal of Management and Finance” Vol. 14, No. 2/1, pp. 375-385.
39. Walkowiak R. (2004), *Model kompetencji menedżerów organizacji samorządowych* [Competence model of managers of self-government organisations], Wydawnictwo Uniwersytetu Warmińsko - Mazurskiego w Olsztynie [Publishing House of the University of Warmia and Mazury in Olsztyn], Olsztyn.
40. Worren, N., Moore, K., Cardona, P. (2002), *Modularity, Strategic Flexibility, and Firm Performance: A Study of the Home Appliance Industry*, „Strategic Management Journal”, No. 23, pp. 1123-1134.
41. Wyrwicka M. (2001), *Kompetencje i kwalifikacje wymagane od pracowników przemysłu u progu XXI wieku* [Competences and qualifications required from employees in the early XXI century], „Zeszyty Naukowe Politechniki Poznańskiej” [„Scientific Papers of the Poznań University of Technology”], seria Humanistyka i Nauki Społeczne [a series of Humanities and Social Sciences], No. 50, pp. 57-64.