

MANAGERIAL COMPETENCE TEST: PSYCHOMETRIC CONSTRUCTION AND ANALYSIS

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Purpose: The aim of the article is to show the process of creating and validate a research tool for measuring the psychosocial competences of people performing managerial functions, the Managerial Competence Test (TKM).

Design/Methodology/Approach: The stages of work on the original construction of the TKM are presented, and the validity of this test is analysed using the Bochum Inventory of Personality Determinants (BIP).

Findings: The validation shows that the constructed test can be successfully used to measure the psychosocial competences of people who hold managerial positions in organisations.

Research limitations/implications: Validation of the test on a larger sample would allow evaluating the test with more accuracy. It would also be worthwhile for further work on test validation carried out on a larger sample to include demonstrating the differential validity of the test.

Practical implications: The constructed TKM can be used as an accurate tool to diagnose psychosocial managerial competences.

Originality/value: The value of the work lies in the comprehensive approach to the construction and validation of the Managerial Competency Test. The recipients of the article can be researchers, occupational psychologists, and HR practitioners interested in a reliable diagnosis of managerial competencies.

Keywords: situational competency test, competence measurement, psychometrics.

Category of the paper: research paper.

1. Introduction

The issue of measuring and analysing psychological and social managerial competences is strongly inscribed in the management process. This measurement and analysis plays an important role in the assessment of competences in the area of leadership, because professional work based on contacts and cooperation with people requires psychosocial competences.

The aim of the article is to show the process of creating and validating a research tool for measuring psychosocial managerial competences, which is the Managerial Competence Test (TKM). The presented tool is a competence test, in which, in principle, the choice of reactions (answers) in the presented dilemmas is conditioned by the level of psychosocial competence.

First, the psychological and social managerial competences are characterised, and the most popular methods of their measurement are presented. Then the procedure for constructing the author's TKM was presented. Once constructed, the test was validated following guidelines for the validation of measurement tools in management sciences (Czakoń, 2019). The research was carried out on 200 representatives of management staff, and the results obtained were subjected to statistical analysis.

2. Psychological and Social Management Competencies and Possible Measurements

The diagnosis of psychosocial competences is particularly important for representatives of professions whose essence is to influence others (Matczak, Martowska, 2013), that is, managers at all levels of management. Most often, measurement of psychological and social competences is carried out during the recruitment process, changes in positions within the organisation, employee evaluation, planning, and evaluation of training activities, or when making decisions about promotions and dismissals.

There is no uniform position in the literature on how to precisely define psychosocial managerial competencies and what their components are. Research in this area is characterised by a very diverse methodology, which makes it difficult to analyse it comparatively. The authors' work, although consistent in emphasising the importance of psychosocial competences for the effectiveness of managers' work (see Adler, Rosenfeld, Proctor, 2006; Bjekić et al., 2021; Borkowska, 2012; Boyatzis, Ratti, 2009; Mintzberg, 2012; Penley et al., 1991; Sangha, 2007; Smółka, 2016; Whetten, Cameron, 1996), come to define them in different ways. There are references to personality, abilities, values, skills, experiences, or behaviours. The lists of psychological and social competencies necessary to perform managerial functions are close to management practice.

In the literature, one can find many theoretical models describing psychological and social competences or their connections with other theoretical constructs (Argyle, 1998, 2002; Bar-On, 1997; Harden, Crossy, 1999; Salovey, Mayer, 1990; Schwartzman, 2003). Social competences are also called interpersonal (McClelland, 1973), communicative (Białecka-Pikul, 1993; Kowalik, 1984), relational (Spitzberg, Cupach, 1989), sociological (Nosal, 1997), or social skills (Argyle, 1994, 1998, 2002). Psychological and intrapersonal competences are also often treated as one of the dimensions of social competences. Aspects such as self-

confidence, self-knowledge, critical insight into one's own desires and motives, and self-regulation skills are indicated here (Nosal, 1997; Zwaans, Ten Dam, Volman, 2006). In this area, there are also references to emotional or social intelligence, which are defined by reference to psychosocial competences (Matczak, Knopp, 2013). It is worth emphasising, however, that despite the recognition of the role of emotional intelligence, which has largely contributed to the popularisation of the subject of psychosocial competences in management and leadership (Anand, Udayasuriyan, 2010; Caruso, Salovey, 2004; Cherniss, 2000; Cherniss, Goleman, 2001; Goleman, Boyatzis, McKee, 2002), attention should be paid to the difference in the concepts of competence, and emotional and social abilities, which, although they are predictors of these competences, are not the same as having them.

In this article, the authors assume that psychosocial management competencies include two interpenetrating components. The first one concerns personal, intrapersonal, and psychological competences. It is primarily related to the ability to cope with one's own emotions (emotional control), cope with stress, and self-confidence. The second group – social and interpersonal competences – is an area related to the style of interacting with people. Such an approach seems to be justified not only for the inclusion of both aspects of competence (Smółka, 2016), but also due to its strong genetic relationship and mutual determinants (Konarski, 2006).

Among the methods that are recognised in the field of measuring psychological and social competences, the most frequently mentioned are: assessment and development centre, 360 degree assessment in the workplace, psychometric tests, including personality questionnaires, various forms of interviews or application forms, as well as situational competency tests.

Among the tests, the tool that allows the description of personality in a professional context is the Bochum Inventory of Personality Determinants of Work (BIP) by Rudiger Hossiep and Michael Paschen (2014). It is designed to measure personality dimensions that are important from the point of view of effective professional functioning in various positions. In the definition adopted by the authors of BIP, personality is a set of traits that characterise an individual and manifest themselves in his behaviour, system of values, and motivation. The inventory is used to measure four areas of one's own professional competence, forming 14 scales (Figure 1). The area of Career Orientation includes motivation and professional values, the area of Professional Behaviour analyses the individual's approach to performing professional duties, and the area of Social Competence is an analysis of the characteristics of building interpersonal relationships typical for an individual. The last area of the Inventory is the Psychological Nature. It refers to preferences for psychophysical conditions in the workplace (Jaworowska, Brzezińska, 2014).

The Inventory enables the measurement of psychological and social competences, thus, it was used to validate the author's Management Competence Test.

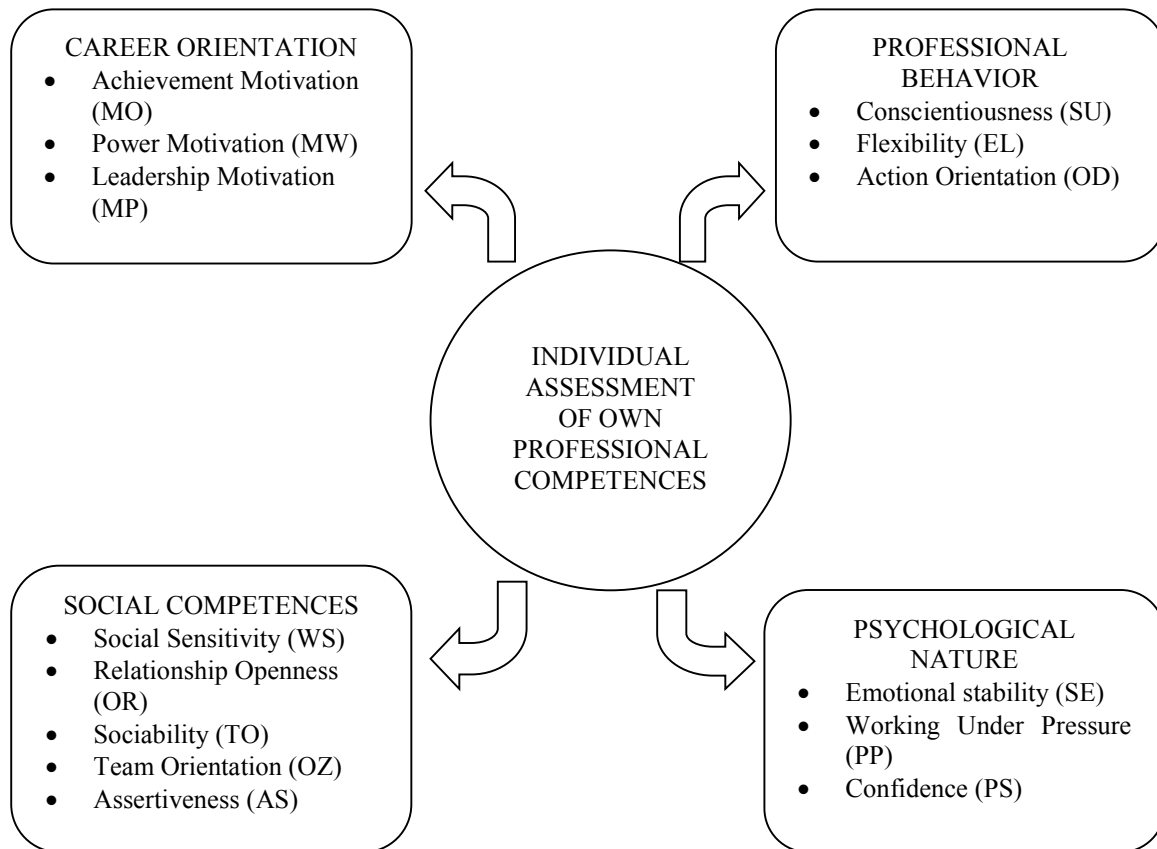


Figure 1. Skale BIP.

Source: based on Jaworowska, Brzezińska, 2014.

The created TKM is a Situational Judgment Test (SJT). These tests have long been used in employee recruitment (McDaniel et al., 2001). These are assessment and selection tools based on a series of dilemmas designed to measure an individual's judgment in situations related to a specific job position. SJT can also be defined as an extensive knowledge test in which the questions are situational (Prokopowicz, Żmuda, Król, 2014). A typical reaction judgment assessment in the SJT measures procedural knowledge of how to act effectively in the occupational situations described by the SJT (Motowidlo, Beier, 2010).

The purpose of using TKM is to identify the most likely behaviour of the person taking the test. The main assumption of SJT is that the statements of the respondent about his or her behaviour in a hypothetical situation are a good predictor of the actual course of action, as they are based on his or her previous behaviours and experiences, tendencies to a specific way of acting (Smółka, 2016).

Competency tests can quickly and reliably measure managerial competences, and what is particularly important is the possibility of reaching the so-called tacit knowledge through their application, characterised by the fact that it is acquired through experience, is procedural in nature, and is used in practice (Nęcka, 2003). Thanks to the use of SJT, it is possible to reach the area of the respondents' behaviour, i.e., how people behave, how they act in their professional roles. Respondents are evaluated here on how they react, act, and behave in the

incidents presented and not on their own opinions, which seems to be a special advantage of competency tests. It is also important to measure many skills, abilities, and knowledge of the respondent, as well as the fact that these types of tests are most often used to assess interpersonal skills and leadership (Christian, Edwards, Bradley, 2010). Not without significance for the choice of this method is also the issue of the ease of application of SJT and its high content relevance, as well as the highly rated façade validity affecting the involvement of the respondents (Motowidlo, Hanson, Crafts, 1997; Salgado et al., 2001).

3. Procedure for constructing the Managerial Competency Test

The author's Charter of Managerial Competences was based on the division of competences of Whetten, Cameron and Woods (1996). These researchers list two groups of competences: psychological (personal, personal) and social, also known as interpersonal competences. The first group consists of individual predispositions related to personal effectiveness, i.e., the so-called personal skills, which include stress management (identifying stressors and preventing them), creative problem solving (a combination of rational and creative thinking), improving self-awareness, identifying one's own goals and values, coping with emotions, time management, self-motivation. On the other hand, in the area of social and interpersonal competences in the work of managers, Whetten, Cameron, Woods (1996) mention the use of one's authority, influencing others, communication, conflict management, and motivation.

Case studies published in the Harvard Business Review Polska (HBRP) magazine were used to create test items and construct the answers. The questions themselves (description of managerial dilemmas) and possible reactions were based on descriptions of these cases with expert comments. To create the test questions, cases containing dilemmas faced by people in managerial positions were used. The cases selected to construct incidents in the test presented difficult problems, the solution of which or the action taken was largely determined by the level of mental resilience (psychological competence) and interpersonal competence possessed by the manager. Selected dilemmas were focused on such problems as building trust, building good relationships in the team while caring for the achievement of business goals, dealing with conflict situations, conducting difficult managerial conversations, taking care of one's authority, and dealing with difficult emotions.

The descriptions of the situation were classified into two areas. The first indicates the need for social competences that allow the building of positive interpersonal relationships; the second refers to those behaviours that are related to the ability to exert influence and mental resilience.

As a result of the conversion of critical incidents into situational dilemmas, a set of 26 test items was created, along with answers and a key to assess the response.

The next stage of the tool development process was its testing. Experts were invited to this part of the work. The group of 10 experts included managers working in various organisations with at least 10 years of experience in managerial positions. Experts assessed to what extent a given dilemma is essential for the test of psychological and social competences of people holding managerial positions in organisations. A three-point scale was used for the assessment: This item is essential for the test; the position is useful, but it is not essential; the position should not be within the test. In order to estimate the façade accuracy of the tool, experts were also asked to assess the fidelity of the situational dilemma, i.e. the degree to which its content is similar to the tasks performed in a given position. They answered the question of whether the situation described in the test reflects real situations that take place in their work (scale: reflects to a large extent, partially reflects, does not reflect), as well as the non-obviousness of the answers. The experts were also asked to choose the most optimal response and possibly generate a new response that did not appear in the set proposed by the authors. They answered the following questions:

- What would be the reaction for you, apart from those indicated in the test:
 - By far the best?
 - Good, but not optimal?
 - The worst, but probable?
- In your opinion, how could an inexperienced employee behave in this situation?

Experts were also asked to assess the comprehensibility of the presented incidents and responses, the neutrality of the responses, and to submit other comments in style or form. During the consultations, experts rejected five cases: three of them were described as exceptional situations, not reflecting typical tasks in managerial positions, and two as too extensive, complicated, and difficult to assess. Experts also reported a lack of neutrality in some of the responses. The result of the consultations was the re-verification of both the incidents and the responses in the test being created. The correct answer to the test was determined by analysing its relationship with the description of the content of the selected scales of the BIP (scales in social competence and psychological nature).

As a result of this work, a set of 23 test questions was created, along with answers and a key to evaluate the answers. Two test items were taken from the literature (Prokopowicz, Żmuda, Król, 2014) and included in the test after slight modification. Four possible ways of reacting were indicated for each test item, from which the subject chooses, indicating the most typical reaction for him/her. The created TKM is a single-choice test. The method to define psychological and social competences in the created TKM was based on the description of selected scales from the Public Information Bulletin. The choice of answers in the presented dilemmas is conditioned by the competences in the area of: noticing emotional signals in the environment and reacting to them, building and developing interpersonal relationships by building a network of contacts, maintaining them and using them as helpful in professional work, the ability to take responsibility for the group process, the ability to achieve one's goals

despite existing difficulties, taking care of one's authority, possibilities in the field of emotional control and self-confidence.

4. Validation of the created Managerial Competency Test

To determine the theoretical validity of the created TCM, BIP (Jaworowska, Brzezińska, 2014) and a questionnaire that allowed the description of the sociodemographic data of the respondents were used. Study participants were informed of the purpose of the study and the planned use of the results. As part of the contract concluded with the respondents, they were assured of the possibility of receiving feedback on the results obtained from the research tools they performed. The examination lasted 1 to 1.5 hours. Respondents filled in the following documents: TKM, BIP, and a prepared questionnaire.

- TKM – contained 23 situational questions on 8 pages of A4 format. In relation to each question, the respondents had to choose one of the four indicated answers, which is the closest to their way of behaving in a similar situation. The questions were scored on a scale of 0 to 1, so it was possible to score 0 to 23 points throughout the test.
- The BIP inventory – question book contained 220 items arranged on 18 A4 pages. Respondents answered directly on the question sheet, each time ticking a circle corresponding to the selected answer. The answers were expressed on a 6-point scale, on which the extreme points mean 1 – completely true and 6 completely untrue.
- The survey included open and closed questions on sociodemographic data.

The respondents are managers, managers of various levels, managing a team of at least 6 people, having decision-making freedom, and bearing responsibility for the implemented projects. The study involved 200 people, 158 men, and 42 women.

The most numerous were people aged 35 to 44 years (54%). Regarding the education of the respondents, 98% of the respondents had higher education, and the remaining 2% had secondary education.

From the point of view of the purpose of the study, it was important that the people who participated in the study had managerial functions. Two groups were the most numerous: managers representing the first and second management levels (42% and 43.5% of the respondents, respectively). Top executives accounted for 14.5% of the sample.

The respondents represented mainly large companies (50.5%). Employees in medium-sized enterprises constituted 38% of the respondents, and in small enterprises, 8.5%. Managers working for micro-enterprises constituted only 3% of the surveyed population.

The largest group of respondents were managers with a total seniority of 4 to 8 years (34%), and the second largest group of people in this category were respondents with 1 to 3 years of seniority (29%). The smallest group of respondents was people whose seniority in managerial positions exceeded 15 years (5.5%).

In TKM, one correct answer was possible in each question, therefore, a maximum of 23 points could be obtained. The average score obtained by the 200 managers surveyed was 15.82 points. The standard deviation was 2.738.

Analysing the results obtained, a test of the normality of Shapiro-Wilk distributions was carried out. This test is used when the exact mean values and standard deviations of the population from which the samples come are unknown. The results of the Shapiro-Wilk test for TKM (standard deviation 0.949, degrees of freedom 200, and significance level 0.000) indicate that in the case of TKM, we cannot confirm the hypothesis of normality of the distribution. However, the fundamental issue in the case of TKM was determining its accuracy, which would justify the possibility of using it in the future as a tool to measure psychosocial managerial competences.

One way to determine the validity of a tool is to estimate the consistency of its results with those of other tools known to measure the same or similar construct. BIP was used to check the validity of TKM. The obtained Spearman rank correlation coefficients between the results in TKM and the BIP scores achieved by the respondents on the scales of psychosocial competences, i.e., WS, OR, TO, OZ, AS, SE, PS, as well as for individual scales of Social Competence and Psychological Strength, are presented in Table 2. The table also shows the correlation coefficient for psychosocial competences of TKM and BIP excluding AS.

Table 1.

Correlations (Spearman rho) between the TKM results and the BIP results – psychosocial scales (N = 200)

	BIP psychosocial competences	BIP psychosocial competence without AS	BIP WS	BIP OR	BIP IS	BIP OR	BIP AS	BIP SE	BIP PS
Result in TKM	0,616	0,654	0,687	0,472	0,504	0,425	n.i.	0,391	0,165 [^]

p < 0.00, [^]p < 0.01, N.I. – statistically insignificant result.

Source: own work.

Analysing the correlation coefficients of TKM with other BIP scales, it can be seen that they take lower values than the correlations between TKM and BIP scales determining psychosocial competences. The BIP scale, which is not a scale in the area of psychosocial competences, which correlates with TKM to the highest degree, is the MP scale (Spearman's rho +0.363 p < 0.000), which suggests that since the authors assume that TKM is a test to measure psychological and social managerial competences, it is related to the BIP MP scale, in which a high score indicates people who find themselves well in professional activity related to leading other people, coordinating their work, influencing them (Jaworowska, Brzezińska,

2014). Therefore, it can be concluded that TKM, apart from the BIP psychosocial scales, correlates with the MP scale because, on the one hand, it is closely related to the TKM test material (various types of managerial problems), and on the other hand, the scale in question - defined as the use of social influence - seems to be strongly related to the functioning of the respondents in social contexts. The results discussed are illustrated in Table 2.

Table 2.

Correlations (Spearman rho) between TKM scores and BIP scores: areas Career Orientation, Occupational Motivation and PP scale from the area of Psychological Nature

	BIP PP	BIP MO	BIP MW	BIP MP	BEEP SU	BEEP EL	BIP OD
TKM Results	0,204	0,191	n.i.	0,363	0,319	N.I.	0,252

$p < 0.00$, N.I. – statistically insignificant result.

Source: own work

The study also conducted separate analyses for two variables – the BIP psychosocial competence scale with AS and the BIP psychosocial competence scale without AS. This procedure is related to the results of research obtained during the work on the Polish adaptation of BIP (Jaworowska, Brzezińska, 2014), where the scale obtained, although similar, does not entirely coincide with the areas identified by the authors of the original version of BIP (German version). The factor analysis indicated that the Social Competences factor does not include the AS scale, which in Polish research co-creates a factor that can be described as Domination.

During the work on TKM, two groups of questions were also distinguished: the first one was to refer to psychosocial competencies, which are related to PS, AS and created a factor related to exerting influence, defined by the authors as Domination (5 questions), while the second referred to relational competencies, which were characterised by a group of scales: WS, OR, TO, OZ (18 questions). The characteristics of the SE were understood as the basic basis for giving the correct answer in each of the TKM questions. The results of the correlation analysis for the first distinguished variable indicate a significant positive relationship between AS measured by the BIP and TKM scores on the Dominance scale (Spearman's rho 0.340 $p < 0.00$), as well as between the PS scale from the BIP and TKM questions intended to correspond to this variable (Spearman's rho 0.345 $p < 0.00$). The analysis of the second factor distinguished in the TCM, Relational competencies, indicates a greater, also positive, relationship with the variables highlighted in the BIP. The highest Spearman rank correlation coefficient was recorded for TKM and WS (rho = 0.673), for TO (rho = 0.520), for OZ (rho = 0.447), and for OR (rho = 0.398). All the results described were statistically significant ($p < 0.00$).

The analysis of these results, as well as the correlation of the overall TKM score with individual scales in the Public Information Bulletin, indicates that TKM is a test of psychosocial competences, which refers mainly to those variables in the area of social competences that are related to the ability to maintain harmonious contacts with the environment, sensitivity to the

emotional states of others, tendency to take into account the needs of other people, or alleviation of tensions. To a slightly lesser extent, TKM refers to characteristics such as self-confidence or the ability to pursue goals despite opposition from others.

5. Conclusion

The result of the research is a tool for measuring psychosocial managerial competences, a situational competence test, which is dedicated to people holding managerial positions.

In light of the analysis, it can be concluded that the constructed TCM can be used as an accurate tool for diagnosing psychosocial managerial competences. This is confirmed by significant correlations between the results of the constructed TKM and the results of the BIP.

Taking into account the considerations concerning two groups of psychosocial competences (influencing others and maintaining harmonious relationships with the environment), TKM is, to a greater extent, related to the latter area. In light of the results obtained, the assumption adopted by the authors about two components of psychosocial competence (psychological and social) seems less adequate and seems more correct to indicate two areas that would focus on the needs of the individual. On the one hand, there is the need for approval and acceptance, and on the other hand, there is the need for status and power. In the first case, we are talking about psychosocial competences, which we could call relational. In the second case, it is about characteristics that describe the ability to exert influence. Such a division seems to be particularly useful in the area of the discussed competences of managers, who should balance these two areas by taking care of their authority, while avoiding excessive directiveness and the ability to build good relationships with subordinates, co-workers, and superiors.

Therefore, the question of the possibilities of harmonious development of these two areas of competence becomes important, for example, by referring to the temperamental and personality variables that affect them (Argyle, 2002; Smółka, 2016; Spitzberg, Cupach, 1989). Further empirical work that would allow us to confirm the assumptions about the difference between these two areas could affect not only their classification but also the understanding of potential difficulties that managers may encounter in the harmonious development of both these areas. This seems to be important not only from the point of view of understanding the specifics of the work of people holding managerial positions but also for designing possible training activities, as well as the possibility of developing managerial competences.

6. Summary

In the work of a leader, substantive competence is indisputably extremely important. However, the importance of psychological and social competences should also be strongly emphasised.

In light of considerations on possible further work to improve the quality of TKM, it is possible to consider the use, in addition to diagnostic items, also buffer items (concerning the work of managers, where decisions are not related to the use of psychological and social competences), as well as an attempt to standardise the proposed answers so that they can be ranked. To achieve greater reliability in the assessment of psychosocial competencies of managers, it is also important to capture the perspective of subordinates.

The constructed TCM can be used as an accurate tool for diagnosing psychosocial managerial competences, but its limitations should also be considered. Undoubtedly, its validation on a larger sample would allow for a more accurate assessment of the test, taking into account, for example, the sociographic data obtained in the survey of the compared groups. It would also be worthwhile for further work on test validation carried out on a larger sample to include a larger number of tests demonstrating the differential validity of the test, for example, using the MTMM matrix method (Campbel, Fiske, 2005).

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