

Forecasting Employees' Success at Work in Banking: Could Psychological Testing Be Used as the Crystal Ball?

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Human resources have nowadays been recognized as one of the most important key competitive advantages of organizations. Human resources management deals with the recruitment, selection and training of the best candidates for a particular job position. Although training has significant influence on the performance of employees, recruitment and selection still remain the crucial steps. The goal of the paper is to explore if special characteristics of candidates for employment in the banking industry could be used for predicting their future success at work. Real-life data from a Croatian bank's employee database are used for analysis, with the total sample of 1659 candidates tested for the purpose of employment. Results of the multiple regression analysis indicate that the following characteristics are important at forecasting an employee's success at work in the banking sector: cognitive ability, reasoning, dominance, social boldness, sensitivity, openness to change, warmth, and emotional stability. Therefore, as the best practice for recruitment, the use of the *Profile of a Quality Candidate in Banking* is proposed.

Key Words: recruitment; psychology testing; data mining; cognitive ability tests; personality traits tests

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Introduction

Human resources have become one of the key competitive strengths of enterprises in the era of highly intense competitiveness and globalization

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(Chien and Chen 2008; Meško Štok et al. 2010). Human resources management is the organizational function that deals with recruitment, selection and training of employees. Many scientists and experts from the domain of human resources deal with the topic of how to recruit and select most promising future employees and how to develop, educate and motivate them (Lievens, Van Dam, and Anderson 2002). Human resources management thus contributes to the stability of enterprise operations that can be characterized by many uncertainties such as instability (Pejić Bach 2003).

In the recent years, quality recruitment has gained a substantial attention (Bertoncelj 2010), primarily with the emergence of private enterprises that support firms in professional employee selection (Vujić 2008). Quality of professional selection is significantly increased by the use of psychological testing (Schmidt 1998). Results of psychological testing are mostly considered only at the moment of employment, and their use for investigation of their correlation with later job performance is still scarce (Singh and Singh 1994; Raufelder et al. 2013). In modern organizations, the data mining approach has become highly significant, since in most of organizations' databases the data on employees' personal characteristics are available, and could be used for future performance prediction (Strohmeier and Piazza 2013).

Since the prediction of employees' work performance is extremely important for the decision making within the human resources domain, this research paper aims to make a contribution in this field. The purpose of this paper is to explore the possibilities of forecasting future performance of employees in banking based on their personal characteristics. For this purpose real-life data from a Croatian bank's employee database are used. The total sample of 1659 candidates tested for the purpose of employment will be used for analysis. Also, the choice of this topic presents an attempt to contribute to the local employment policies (Drobne, Bogataj, and Lisec 2012).

The paper consists of the following parts. After the introductory part of the paper, the literature review is presented with the focus on the importance of cognitive abilities, and the importance of personality traits in professional selection. The methodology part of the paper presents data used in the study and describes the study sample. The section on results of the paper presents multiple regression models with the following criterion variables: *Performance* and *Speed of Promotion*. The discussion part of the paper explores possible improvements of the prediction of job per-

formance during the recruitment process in the banking sector. The last part of the paper presents a conclusion.

Literature Review

Designing a selection procedure in an organization is a complex and challenging process that often consists of several stages. Although it may seem that posting a job advertisement and choosing the best candidate is a relatively simple and not a particularly demanding procedure, the process itself is significantly more complex since it is indirectly connected to the organizational long-term goals and strategy (Bahtijarević Šiber 1999). General potential for learning and development is one of the most important factors of good performance. Previous research and current practices have shown that the potential for learning and development can be best evaluated by using cognitive ability tests and personality factors questionnaires.

THE IMPORTANCE OF COGNITIVE ABILITY IN PROFESSIONAL SELECTION

Previous research indicates that one of the most significant predispositions influencing performance is the general cognitive ability (e.g. Schmidt and Hunter 1998). Therefore, the results of general cognitive ability tests are in fact the best future performance indicators and are used in selection procedures most commonly. Also, they have proven to be the best predictors for learning in professional educational programs. Their main advantages stem from good psychometric characteristics: objectivity, sensitivity, validity and reliability (Jackson 2000). Raven's Advanced Progressive Matrices (APM) is one of the cognitive ability tests that has proved to be highly appropriate in the area of professional selection of highly qualified workers, and is therefore used in our research.

THE IMPORTANCE OF PERSONALITY TRAITS IN PROFESSIONAL SELECTION

Personality traits can be identified as customary routines of behavior, thought and emotions. Traits are stable over time, they vary among individuals (e.g. outgoing and shy people), and affect behavior. Personality traits are, along with the cognitive ability, most commonly used assessment indicators in professional selection.

Although there is a lot of research regarding influence of personality traits on performance in the workplace, there are still some inconclusive

findings. Barrick, Mount, and Judge (2001) in their meta-study of previous research revealed the following findings: (i) conscientiousness predicts a wide range of job performance criteria for all occupational groups; (ii) emotional stability is a good predictor for general job performance for all occupational groups; and (iii) extraversion, agreeableness and openness to experience are predictors of some specific variables (e. g. teamwork, sales talent, and management). Similarly, people who are anxious, hostile, with low self-esteem and depressed will hardly be great performers, especially in jobs that require teamwork.

Personality traits are measured by personality tests. Rothstein and Goffin (2006) claim that the use of personality tests leads to the better selection of employees whose personalities fit into the corporate culture of the organization, which can in turn significantly reduce unwanted outflow of employees.

Personality tests are often used for the purpose of professional selection. Croatian human resources professionals commonly use the 16 Personality Factors (16PF) questionnaire, which is a venture by Raymond Cattell (Russell and Karol 2000), who used the factor analysis for identification of primary components of the personality. The fifth edition of the questionnaire, which was used in this study, contains 185 items (questions) that are summarized to 16 primary personality factors.

Methodology

RESEARCH INSTRUMENT

Multiple regression models were used in order to explore possible predictors of future employees' success at work.

Predictor Variables

The following predictor variables were used: (1) the results of the APM cognitive ability test, (2) the results of the 16PF test (Raven, Raven, and Court 2003). Table 1 explains 16 primary personality factors that represent personality traits. Primary personality factors are bipolar, which means that both high and low scores can be interpreted as opposite characteristics. For example, a high score on the factor A (Warmth) indicates that the person is warm in interpersonal relationships, and low scores indicate that one tends to be more restrained in relationships. However, in some situations it is appropriate to be restrained, while in other situations it may be more appropriate to be warmer.

TABLE 1 Primary personality factors

(1)	(2)	(3)	(4)
A	Warmth	Distant, reserved, deliberate	Warm, outgoing, attentive to others
B	Reasoning	Concrete thinking	Abstract thinking
C	Emotional Stability	Reactive emotionally, emotionally less stable	Emotionally stable, adaptive, mature
E	Dominance	Submissive, cooperative, avoids conflict	Dominant, forceful, assertive
F	Liveliness	Serious, restrained, taciturn	Lively, animated, spontaneous
G	Rule-Consciousness	Expedient, nonconforming	Rule-conscious, dutiful
H	Social Boldness	Shy, threat-sensitive, timid	Socially bold, venturesome, thick-skinned
I	Sensitivity	Utilitarian, objective, un sentimental	Sensitive, aesthetic, sentimental
L	Vigilance	Trusting, unsuspecting, accepting	Vigilant, suspicious, skeptical, distrustful
M	Abstractedness	Grounded, practical, solution oriented	Abstract, imaginative, absorbed in ideas
N	Privateness	Forthright, genuine, artless	Private, discreet, non-disclosing
O	Apprehension	Self-Assured, unworried, confident	Apprehensive, worried, insecure
Q1	Openness to Change	Traditional, attached to familiar	Open to change, experimental
Q2	Self-Reliance	Group-oriented, affiliative	Self-reliant, solitary, individualistic
Q3	Perfectionism	Tolerates disorder, unexacting, flexible	Perfectionistic, organized, self-disciplined
Q4	Tension	Relaxed, placid, tranquil,	Tense, high energy, impatient, driven

NOTES Column headings are as follows: (1) primary personality factor, (2) primary personality factor name, (3) descriptors of low range, (4) descriptors of high range. Adapted from Russell and Karol (2000).

Criterion Variables

For the purpose of this study several types of criterion variables will be used: (1) *Performance*, and (2) *Speed of Promotion*. *Performance* of the employee is expressed as one of the three recorded levels (high, medium and

realized). It is revised each year for each employee of the bank, and it is a combination of several factors, such as the general level of knowledge of the domain of work and motivation for further learning. *Speed of Promotion* is measured as the average number of months spent at the same workplace, which is expressed as the ratio of the total number of months of work in the bank and the total number of vertical promotions/demotions that were recorded. This measure suggests that successful workers are promoted faster than less successful workers and also that unsuccessful workers are demoted. Since data on employees' performance from 2005 to 2010 were used, the average values for the performance and the speed of promotion were calculated in order to be used as criterion variables.

SAMPLE DESCRIPTION

The data used in this research are the actual data obtained from the human resources department of one Croatian bank. The data use has been approved by a responsible manager. The data was collected at the beginning of 2010 and the sample in this study represents the data on the employees employed in the bank since 2005 (1695 employees).

Table 2 shows the average results of the APM and the 16PF tests for 1695 candidates that were tested for the purpose of employment.

Based on the results shown in table 2 one can conclude that the employees of the bank have specific characteristics. For example, employees are on average motivated to do jobs that involve intense interaction with other people, they are focused on establishing a connection with other people, they are empathetic, and they tend to express emotions but also easily recognize feelings and intentions of others and other individuals perceive them as friendly. This is consistent with Cattell's findings (Cattell 2003) that high scores on the scale of agreeableness are common in sales occupations, management and supervisory professions. Therefore it is expected that the candidates employed in a bank have elevated scores on this scale.

Results

In this section, the aim was to investigate whether the simultaneous consideration of several predictor variables using multiple regression models may predict the results of the criterion variables. The following text presents a review of multiple regression models. The APM test results and the 16PF test results are used as predictor variables. Performance and speed of promotion of employees are used as the criterion variables.

TABLE 2 Exploratory analysis of the predictor variables

Predictor variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
APM cognitive ability test	1679	21.38	22	23	5.91	1	36
16PF test Warmth (A)	1679	6.61	7	7	1.70	1	10
Reasoning (B)	1671	6.18	6	6	1.54	3	10
Emotional Stability (C)	1680	7.69	8	9	1.32	2	10
Dominance (E)	1680	6.78	7	7	1.62	1	10
Liveliness (F)	1680	5.88	6	6	1.02	1	9
Rule-Consciousness (G)	1679	6.94	7	8	1.58	2	9
Social Boldness (H)	1680	7.83	8	9	1.18	1	9
Sensitivity(I)	1679	4.01	4	4	1.94	1	10
Vigilance (L)	1679	6.12	6	7	1.66	1	10
Abstractedness (M)	1680	3.38	3	3	1.25	2	10
Privateness (N)	1679	4.38	4	4	1.46	1	9
Apprehension (O)	1678	4.12	4	4	1.57	1	9
Openness to Change (Q1)	1679	6.38	7	7	1.51	1	10
Self-Reliance (Q2)	1680	3.00	3	2	1.05	1	7
Perfectionism (Q3)	1680	7.29	8	9	1.48	2	9
Tension (Q4)	1677	3.08	3	2	1.43	1	9

NOTES Column headings are as follows: (1) *n*, (2) mean, (3) median, (4) mode, (5) standard deviation, (6) minimum, (7) maximum.

MULTIPLE REGRESSION MODEL WITH THE CRITERION VARIABLE PERFORMANCE

Table 3 presents results of the multiple regression model with the criterion variable *Performance*. The coefficient of determination is 0.088 thus indicating that only 8.8% of the variation in *Performance* could be attributed to the variation in predictor variables (results of the APM and the 16PF tests). Although this result indicates modest reliability of the model, results are interesting and give important insights into the relation between the predictor variables (results of the APM and the 16PF test) and *Performance* as the criterion variable. Five predictor variables were found to be statistically significant. The results of the APM tests of cognitive abilities contribute significantly to the prediction of *Performance*, thus indicating that the higher level of cognitive ability could predict the higher level of *Performance*, and vice versa. Agreeableness (A) significantly contributes to the prediction of *Performance*, thus indicating that the lower level of

agreeableness could predict the higher level of *Performance*. Reasoning (B) also significantly contributes to the prediction of *Performance*, thus indicating that the higher result on reasoning could predict the higher level of *Performance*. At this point it is important to note that although the correlation coefficients between the APM and *Performance*, and Reasoning (B) and *Performance* are of similar value ($r_{\text{APM}} = -0.239$, $r_{\text{B}} = -0.207$), the Beta coefficient for the variable B is lower than the the Beta coefficient for the APM because these two variables are correlated with each other ($r_{\text{APM-B}} = 0.555$). Emotional Stability (C) and Sensitivity (S) significantly contribute to the prediction of *Performance*, but with the opposite sign, thus indicating that the higher result on the emotional stability could predict the higher level of *Performance*, while the lower value of sensitivity could predict the higher value of *Performance*.

MULTIPLE REGRESSION MODEL WITH THE CRITERION VARIABLE SPEED OF PROMOTION

Table 4 presents results of the multiple regression model with the criterion variable *Speed of Promotion*. The coefficient of determination is 0.054 thus indicating that only 5.4% of the variation in *Performance* could be attributed to the variation in predictor variables (results of the APM and the 16PF tests). It is important to mention that *Speed of Promotion* is measured as the average number of months spent at the same workplace. Therefore, a lower level of *Speed of Promotion* indicates better results.

Although this result indicates modest reliability of the model, results are interesting and give important insights into the relation between the predictor variables (results of the APM and the 16PF test) and *Speed of Promotion* as the criterion variable. Again, five predictor variables were found to be statistically significant. Again, the results of the APM tests of cognitive abilities contribute significantly to the prediction of *Speed of Promotion*, thus indicating that the higher level of cognitive ability could predict the fewer average number of months spend at the same workplace, and thus faster *Speed of Promotion*. Reasoning (B) also significantly contributes to the prediction of performance, thus indicating that the higher result on reasoning could predict the fewer average number of months spend at the same workplace, and thus faster *Speed of Promotion*. The same explanation can be attributed to Dominance (E) and Social Boldness (H). However, Sensitivity (I) and Openness to Change (Q1) have positive beta coefficients, indicating a negative correlation between high re-

TABLE 3 Results of the multiple regression model with the criterion variable *Performance*

Predictor variables	(1)	(2)	(3)	(4)	(5)
Constant	1.470	.910		1.614	.107
APM cognitive ability test	-.014	.003	-.158	-4.128	.000***
16PF test Warmth (A)	.045	.023	.150	1.971	.049**
Reasoning (B)	-.033	.013	-.096	-2.532	.012**
Emotional Stability (C)	-.061	.026	-.156	-2.352	.019**
Dominance (E)	-.007	.035	-.022	-.199	.842
Liveliness (F)	-.020	.026	-.038	-.753	.452
Rule-Consciousness (G)	.033	.026	.101	1.247	.213
Social Boldness (H)	-.020	.027	-.045	-.757	.449
Sensitivity(I)	.066	.030	.242	2.223	.026**
Vigilance (L)	.022	.023	.069	.964	.335
Abstractedness (M)	.007	.028	.017	.255	.799
Privateness (N)	.003	.021	.009	.147	.883
Apprehension (O)	.015	.025	.044	.587	.557
Openness to Change (Q1)	.042	.034	.122	1.242	.215
Self-Reliance (Q2)	.018	.024	.035	.734	.463
Perfectionism (Q3)	.030	.026	.082	1.148	.251
Tension (Q4)	.018	.025	.050	.724	.469

NOTES $R = 0.297$, $R^2 = 0.088$, $\bar{R}^2 = 0.066$. Column headings are as follows: (1) β , (2) standard error (unstandardized coefficients), (3) β (standardized coefficient), (4) t , (5) p -value. *** Statistically significant at 1%. ** Statistically significant at 5%.

sults and the *Speed of Promotion*, although it should be taken into account that the coefficients are statistically significant at 10% probability.

Discussion

THE IMPORTANCE OF IMPROVING THE PREDICTION OF JOB PERFORMANCE DURING THE RECRUITMENT PROCESS IN THE BANKING SECTOR

If an organization employs a quality candidate, the candidate will achieve better results, with its quality work she or he will contribute to the successful realization of business objectives and overall long-term success of the organization. However, hiring quality candidates is only one of the essential elements for long-term success of an organization, because the

TABLE 4 Results of the multiple regression model for the criterion variable *Speed of Promotion*

Predictor variables	(1)	(2)	(3)	(4)	(5)
Constant	.548	25.019		.022	.983
APM cognitive ability test	-.483	.094	-.152	-5.139	.000***
16PF test Warmth (A)	.455	.637	.042	.715	.475
Reasoning (B)	-.677	.351	-.056	-1.932	.054*
Emotional Stability (C)	.725	.711	.051	1.019	.308
Dominance (E)	-2.082	.969	-.181	-2.149	.032**
Liveliness (F)	-.624	.728	-.034	-.856	.392
Rule-Consciousness (G)	-.363	.723	-.031	-.503	.615
Social Boldness (H)	-1.454	.725	-.092	-2.005	.045**
Sensitivity(I)	1.583	.822	.165	1.926	.054*
Vigilance (L)	-.845	.626	-.075	-1.350	.177
Abstractedness (M)	.237	.776	.016	.305	.760
Privateness (N)	.388	.579	.031	.670	.503
Apprehension (O)	-.868	.687	-.074	-1.264	.206
Openness to Change (Q1)	1.657	.953	.135	1.739	.082*
Self-Reliance (Q2)	1.077	.664	.060	1.623	.105
Perfectionism (Q3)	.889	.715	.070	1.243	.214
Tension (Q4)	-.356	.703	-.027	-.507	.612

NOTES $R = 0.233$, $R^2 = 0.054$, $\bar{R}^2 = 0.041$. Column headings are as follows: (1) β , (2) standard error (unstandardized coefficients), (3) β (standardized coefficient), (4) t , (5) p -value. *** Statistically significant at 1%. ** Statistically significant at 5%. * Statistically significant at 10%.

organization necessarily also needs to develop systems of career development with an emphasis on talent management, payment and reward schemes as well as retaining quality employees. If an organization does not have good methods for identification of high-quality candidates, the average or below-average candidates will with time begin to create difficulties. In that case organizations need to address the issue of terminating employment for these sub-quality employees, instead of focusing on the question of how to properly utilize the potential of high quality workers in order to achieve better results.

In the banking sector, which is under the influence of constant dynamic changes in the business environment, it has been proven that hiring can-

didates who have a high overall potential for learning and development is of the highest importance. Such abilities are measured with cognitive ability and personality traits tests. The abovementioned is generally known in business practice in Croatia, and therefore almost all banks apply more or less similar instruments in the selection of candidates. However, the business practice shows that different banks differ in successfulness of employing really quality candidates. Although similar instruments are used, the differences in the quality of hired candidates may arise for several reasons.

One of the reasons is the quality of the recruitment process, that is, the ability to attract quality candidates into the selection process. This may seem illogical to some extent, given that banks are generally desirable places to work in Croatia. However, there are significant differences in the perception of how desirable a bank is as an employer. Precisely for these reasons, some banks are investing significant efforts into positioning themselves in the labor market as very highly desirable employers as this will ensure that quality candidates will keep applying to their job posts.

The second reason is the consistency in compliance with the prescribed selection procedure. Specifically, business practices in Croatia indicate that the selection procedures are often violated if a candidate has a recommendation of a high-ranking person in the organization. This is encountered so frequently in the business practice, that selection procedures can often be thought as being 'fixed.'

The third, and perhaps the decisive reason for the difference in the quality of candidates that banks employ is the issue of defining the threshold for fulfilling the criteria on psychological tests, or in other words the ability to define the so-called *Profile of a Quality Candidate in Banking*. Such a profile would define certain factors of the criteria which should ensure high job performance of employees in the bank. Also, the ideal profile should define whether all the factors are equally important, or some factors may be less important in some cases. The abovementioned represents the main reason for conducting research elaborated in this paper.

As there are difficulties in defining what the best measure for the employee performance is, this paper presents a few of them, each of which to a greater or lesser extent represents the actual job performance. Specifically, the appraisal of job performance, although defined as an individual result of achieving planned goals, is influenced to some extent by the

evaluators. People differ according to their personal equations in the estimates of others. Although all the evaluators go through a well-structured training on evaluating performance and although the appraisal distribution for individual organizational units is aligned with the performance of organizational units, it is certain that not all evaluators are equally stern. Some workers may get lower appraisals from some evaluators than they would get from other assessors. It is similar with the assessment of potential workers. In dealing with the criteria of the average number of months spent in a particular workplace, it is possible to assume that the rate of promotion depends in addition to the employee performance and strictness in the criteria of managers, to some extent also on the opportunities within each organizational unit (for example, in organizational units with significant fluctuations of workers, it is easier for an individual to make an opportunity for promotion, than in stable and well-arranged organizational units). As these problems of objectivity of criteria for job performance were known in advance, several measures of work performance were deliberately used in this paper in order to, among other things, examine in more details the factors that are significantly associated with a larger number of criteria. Namely, it can be assumed that those factors that are associated with a larger number of criterion variables are very important in predicting job success.

The results of the analysis indicate that the bank whose data were analyzed already manages the professional selection process successfully. This conclusion is the result of an exploratory analysis. The average values of employed candidates are almost in all factors significantly shifted towards higher or lower values than in the average population, whereby the more emphasized qualities are more desirable in banking (based on the logical analysis of the meaning for individual factors). Although no studies have been found that have dealt with the issues of which results are optimal for a 'good banker,' if a group of experts were to try to describe a 'good banker,' their description would most likely be in line with the results obtained by an exploratory analysis. The deviation from the average population and thus the reduced standard deviation have very likely 'camouflaged' the association between the individual predictor and criterion variables. Because of the reduced data variability (for the already continuous quality selection procedure) the correlation of individual variables is lower. Nevertheless, several factors have shown, though small, yet a significant association with a variety of criterion variables.

APPLICATION OF IMPROVED PREDICTION OF JOB
PERFORMANCE DURING THE RECRUITMENT PROCESS
IN THE BANKING SECTOR

For the purpose of improving business employment practices in the Croatian banking sector based on the analysis made, an overall suggestion would certainly be to develop a *Profile of a Quality Candidate in Banking* presented in table 5. In this profile, it would be important to determine passing thresholds for each factor or in fact the range of results that would ensure that the candidate will be successful in his or her work in the bank. Assuming that the research was done using the data of a successful bank, the ranges for all factors (except APM, A, B and C) can be defined as a ± 3 points in relation to the average results obtained from the exploratory analysis. This conclusion results from the following: employees used for the analysis are on average high-quality employees. The range of ± 3 points is taken to ensure that there is a sufficient range of results and there are enough candidates that meet specified ranges. As far as APM factors are concerned, it has been already suggested that candidates with a higher achieved result should be recruited. For university degree candidates a minimum threshold of 25 points could be used, and for high school candidates, a minimum threshold of 18 points achieved. For the factor Reasoning (A), a positive association with two criteria was found and a range of 6–10 points might be suggested. For the factor Emotional stability (C), where most employees already achieve very high scores (9) a range of 7–10 points could be suggested, while Agreeableness has a negative correlation and the proposed range would be 5–9.

LIMITATIONS IN THE APPLICATION OF PSYCHOLOGICAL
TESTS AS PREDICTORS OF EMPLOYEES' SUCCESS

In the application and interpretation of psychological tests, it is important to note some limitations that may affect the test results.

Fatigue and lack of sleep, stress, and poor health adversely affect the intellectual capacity of a person, and as such may result in a diminished ability to solve problems in cognitive ability tests. The results of the cognitive ability tests are sometimes influenced by personality traits, culture and the perception of the test situation stressfulness. It follows that a good score on the test indicates a highly developed trait and should be accepted as such, while a low result requires another testing. Tests that measure the learning ability of the individual (general factor) are generally more difficult to solve and more demanding. Therefore, if an individual is not

TABLE 5 Profile of a quality candidate in banking

Cognitive abilities	Adjusts to new and unexpected circumstances with difficulty	APM > 25* APM > 18**	Easily adjusts to new and unexpected circumstances
Warmth	Distant, reserved, deliberate	• • • • •	Warm, outgoing, attentive to others
Reasoning	Concrete thinking	• • • • •	Abstract thinking
Emotional Stability	Reactive emotionally, emotionally less stable	• • • • •	Emotionally stable, adaptive, mature
Dominance	Submissive, cooperative, avoids conflict	• • • • • • •	Dominant, forceful, assertive
Liveliness	Serious, restrained, taciturn	• • • • • • •	Lively, animated, spontaneous
Rule-consciousness	Expedient, nonconforming	• • • • • • •	Rule-conscious, dutiful
Social Boldness	Shy, threat-sensitive, timid	• • • • • • •	Socially bold, venture-some, thick-skinned
Sensitivity	Utilitarian, objective, unsentimental	• • • • • • •	Sensitive, aesthetic, sentimental
Vigilance	Trusting, unsuspecting, accepting	• • • • • • •	Vigilant, suspicious, skeptical, distrustful
Abstractedness	Grounded, practical, solution oriented	• • • • • • •	Abstract, imaginative, absorbed in ideas
Privateness	Forthright, genuine, artless	• • • • • • •	Private, discreet, non-disclosing
Apprehension	Self-assured, unworried, confident	• • • • • • •	Apprehensive, worried, insecure,
Openness to Change	Traditional, attached to familiar	• • • • • • •	Open to change, experimental
Self-reliance	Group-oriented, affiliative	• • • • • • •	Self-reliant, solitary, individualistic
Perfectionism	Tolerates disorder, unexacting, flexible	• • • • • • •	Perfectionistic, organized, self-disciplined
Tension	Relaxed, placid, tranquil,	• • • • • • •	Tense, high energy, impatient, driven

NOTES * University graduates. ** High school graduates.

motivated and does not attach great importance to the testing situation he or she is likely to achieve inferior results.

Personality traits should be relatively stable over time. However, there

is always a possibility of fluctuations in results due to the effect of aging, learning or different experiences an individual has been subjected to. In case of retests, results for individual subjects should be approximately the same, despite the fact that certain time (even a few years) has passed since the original testing. If a person has, in the meanwhile, undergone some important life events that are expected to affect the person's mental state, retesting is strongly recommended.

When taking into account the results of our research one should also be careful since the data from only one bank have been included into the analysis. However, the selection process for most of the banks in Croatia is conducted with the assistance of a few human resources management consulting firms, thus indicating that the results could be applicable to the Croatian banking sector. Also, it is important to note that the *Profile of a Quality Candidate in Banking* represents just one of the attempts to improve the selection process in the banking industry, and that prior to the implementation of the specified profile, it should be further tested through several selection procedures.

Conclusion

The goal of this research was to investigate if it is possible to predict success of employees in the banking sector by applying the data mining approach. The analysis was based on data from one Croatian bank. The variables that were used as predictors are the psychological testing results: the APM cognitive abilities test and the 16 Personality Factors test. The variables that were used as criterion variables are: the assessment of employee performance and the speed of promotion/demotion of workers expressed as the average number of months spent in the same workplace. The results of the multiple regression models showed that the predictor variables explained from 4% to 8% variability of criterion variables, and that their implementation requires some improvements, particularly ensuring access to a wider set of data. However, interesting results were found regarding the influence of predictor variables on the criterion variables, which led development of the *Profile of a Quality Candidate in Banking*.

The use of the abovementioned *Profile of a Quality Candidate in Banking* may present a practical application of the paper's results in the selection process in the banking sector. The basic idea of the profile is to determine intervals of points for specific factors to ensure that the candidates whose results fit specified intervals indeed prove to be successful at work. This success should be reported as a measure of job perfor-

mance discussed in this paper. Proposed intervals for all factors (except APM, Warmth (A), Reasoning (B) and C (Emotional stability) should be defined ± 3 points higher than the average results obtained from the exploratory analysis. The range of Warmth (A) is defined as 5–9 points, the Reasoning factor (B) as 6–10 points, and the Emotional stability factor (C) as 7–10 points. For the cognitive ability test, the minimum defined threshold is 25 points for university graduate candidates and 18 points for high school candidates.

Further research in this area should explore the issue of forecasting employees' success at work in broader contexts. Specifically, it would be interesting to explore if the results of our research are applicable to other similar occupational groups for instance in the insurance and the investment banking sector. For a more precise selection of candidates, it would be interesting if future research included the so-called prospects of the *Profile of a Quality Candidate in Banking*, separately for high school occupations and university degree professions, and specifically for particular occupational groups (for example sales occupations/non-sales occupations).

Organizations operate in a very dynamic and competitive environment and are forced to constantly seek ways to improve business processes that will ensure the long-term viability of operations and survival in the market (Hernaus, Pejić Bach, and Bosilj Vukšić 2013). One of the business processes that directly affects the long-term viability of the business is the professional selection process. Hiring the best candidates, candidates who have a high potential for learning and development, will ensure that quality work achieves quality business results and thus directly affects long-term quality business performance of enterprises.

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