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THE ANALYSIS OF PERSON-JOB FIT IN THE PUBLIC INQUIRY SERVICE AT THE HUNGARIAN TELECOM ORGANIZATION EXPERIENCES OF A VALIDATION PROCESS

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Abstract

Models of person-job fit reflect well the economic and social attitude of a certain era and give guiding principles to the companies for the selecting process. The practical interpretation of the beginning of the century is very one-sided contemplation of the function only, which means 'suitable person for suitable job'. Nowadays the person-job fit models consider the possibilities offered by the job and also the motivation and the demand of the person towards the job (ROBERTSON, 1994). Fitting between the person and the job is an adaptation process which is a dynamically changing interactive process helped by the selection and the socialisation.(SEMMER, SCHALLBERGER, 1996).

The validity analysis of the predictors (different methods of selection) is related to the work achievement of the employees employed already. The analysis of their work helps to define the criteria of the selection. A person who suited the criteria and reached a required level during the assessment process is not sure having an appropriate way of working and achievement. This is true inversely too. In spite of the fact that the results of predictors of a nominee are low he or she is still able to achieve a sufficient work. It means in the practice that making a selection based only on the results of the predictor is not sufficient, the validation process is needed to be used too.

In the followings I would like to present a working process which we started in 1996 at the public inquiry service of a Hungarian telecom organization on the occasion of the introduction of a new technology (ANTALOVITS et al., 1997). The process started with job analysis and then we worked out a special psychological selection methodology. In the fall of 1997 half a year after the selection we wanted to prove the validity of our selection methodology using the validation process for measuring different parameters of achievement (ANTALOVITS et al., 1998).

Keywords: person-job fit, prediction, assessment process, validation process.

1. Motivation of the Organization for Changing

- It is more and more important for this organization to provide a high level, more adopting service to the altered surroundings of the market (JANSEN, 1994). For this reason a new software and new technology were introduced in the public inquiry service which can offer quicker, more precise and more effective information to the clients. This modernising process requires reorganization of the service as well.

- From the management side there is a rightful claim to have new abilities of the employees required by the new technology. In comparison with the traditional technology the quantitative and qualitative expectation towards the employees have been changed.
- The goal of the leading management of the organization is to have the best people for this job at the inquiry service after selection. It is important because the personal connection with the clients and with the outside world is going through the inquiry service. This is true inversely as well because for many people the inquiry service is the only living connection with the organization.

These motivations mentioned above were the reason why we started this assessment. The goal of this selection was to have such a staff at the inquiry service who is able to improve the quality of the inquiry service despite the altered technology without damage in their physical and mental health.

1.1. Short Introduction of the Public Inquiry Service

There are 130 people working together in one open plan office in one shift. Everybody has his or her separated area to work, where the computer, the keyboard and some personal things are kept. The employees work 7 hours a shift with 10 minutes break determined in advance hourly. Their working equipments are computer, ear-phones and microphone. The correct answer for the client's question is searched in the data-base software. Their activities consist of the following phases: greeting the client, receiving and understanding the question, starting the searching, finding, interpretation of the finding list and the answering. The norm for fulfilment of the request concerning about name, address, telephone or fax number of private or public subscribers is set up by the management and has to be fulfilled by every member of the staff. Continuity of the callings is made and guaranteed by an Automatic Call Device (ACD) which connects the client to the operator 2 second after the previous call finished.

For the continuous control of the operators a screen is used which is exposed and attainable, allowing self-control for everyone. This equipment shows who and how long time was late from the break, shows that in a certain moment what is the difference between the achievement of the individual operators and the mean achievement, it shows that how many phone calls were made in a minute by the individual operators and how long the individual calls took. Besides that the supervisors regularly control the operators work using different techniques.

At the beginning of the introduction of the new technology there was one week training course for the employees where they got acquainted with the new data-base software and they learned how to use it. There were also other courses for the operators. For the newly employed operators there are training programs namely 'Telephone communication by phone and behavioural culture'. Besides that every morning there is a short 10 minute briefing for all members of the staff which is rather a change of information.

2. Job Analysis

The first step of the assessment process is to be aware of the characteristics of the inquiry service job and to determine the criteria of the successful work. We used different methods for the analysis: results of job analysis got from a similar job analysis made before this (the Department of Ergonomics and Psychology of the Technical University of Budapest makes assessment processes, experiments in the field of telecommunication since 1992), analysis of documents, surveys among supervisors, group discussion among supervisors and employees, analysis of a working day (analysis of video and audio recordings). With knowledge of the data we had determined the requirements and set up the criteria of the successful work.

2.1. Determination of the Criteria

There is an important difference between the results of our recent job analysis (1996) and the results got before. Managers, supervisors and operators who were asked for job analysis using group discussion and surveys emphasised the role of *cognitive abilities* more than they did in the previous years. The reason for that is probably because in the period of the job analysis there was a continuous changing over the new technology and the supervisors and the operators had a very intensive learning period. Based on the results they considered that the following abilities are important:

2.1.1. Cognitive Abilities (Pe)

- *Memory*: the short-term memory has an important role in this work although the long-term memory is a good indicator for the trainability.
- *Attention*: rapid and accurate work, ability of concentration, fatigue.
- *Emphasising and understanding the importance*: one of the base criteria of the effective questioning is having the ability to take relevant information.
- *Comprehension*: in this job the changing of information is going through the acoustical communication net. Speaking and ability of expression of the clients can vary widely and the operator has to be adapted to it and has to understand the question of the client relatively quickly.

This job is interpersonal and serves as a service and that's why features of personality such as polite behaviour, compliance, quietness, modesty, self-control, tolerance are considered to be important as well, but defect of speech (e.g. stammering) is contraindicated.

2.1.2. Politeness (Pu)

Compliance, confidence, extroversion, modesty, kindness.

Style of speaking: Vocal quality of the ability of communication is very important in that case when the talking partners are not in close, personal contact with each other, for example they talk on the phone and this is the direct contact. In this case the importance of the speech technique is emphasised because the appearance, gesture, mimic etc. cannot help the communication.

2.1.3. Self-Control, Tolerance (Pt)

This ability means how somebody can control his or her emotion, how impulsive he or she is, how he or she considers the importance and the consequence of his or her words and actions. Tolerance means tolerating frustration, accepting and understanding the others.

For the personnel assessment there is a Big Five questionnaire (COSTA, MCCRAE, 1992) adapted expressively for the world of work. The five dimensions are the followings: Neuroticism, Extroversion, Openness to Experience, Agreeableness, Conscientiousness. These five factors are divided to further scales (six scales per factor). This questionnaire contains 240 statements. The person who takes part in this personnel assessment has to evaluate the certain test items on a five grade scale along the dimension 'Don't agree', 'Agree', and has to mark his or her opinion on the answering sheet. *Fig. 1* shows the summary of the experimental methods.

2.2. Developing of the Experimental Methods

During the setting up of the experimental methods our goal was to simulate as much as possible the every day work situation of the operators and to cover the abilities and the features of personality which were determined in the criteria. Before that we had spent lots of hours in the operator's company. We set up hypotheses in connection with prediction of the methods. We taped original conversations and analysed their contents, for example according to the types of the conflicts and the ways of dealing with it. We had university students all the time for trying the experimental methods and after that we made the corrections when they needed. We tried to make the instruments of the experimental methods original and variegated. Besides the paper-pen test ear-phones, microphone, tape recorder were used. (*Fig. 1*.)

2.3. Results of the Assessment Process

Results from the assessment methods for examination of different abilities and features of personality were graded according to their importance by the management.

Basing on this we determined the index of psychological suitability (*Fig. 1*). Determining 'Pa' index, the examined people can be graded according to their points. According to the point limit determined by the management the sample can be divided into three groups: *suitable, suitable with development, unsuitable*. In the group of *suitable with development* we wanted to show those skill gaps which could be developed by special training programs.

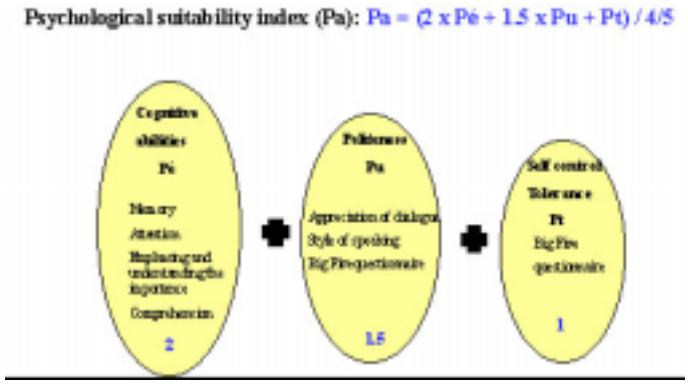

Fig. 1. Applied methods

The sample in the given experimental period (1996 December – 1997 January) was 344 operators working for the telecom company. The duration of the psychological examination was 1.5–2 hours which was closed by an interview with the psychologist. For data analysis we used SPSS for Windows (Statistical Package for Social Sciences).

3. Follow Up

Results from the selection methods – theoretically – predict the work achievement of the investigated employees, how successful they will be in their work (quantitative and qualitative points of view as well) (ARNOLD, COOPER, ROBERTSON, 1995b).

We started the validation process in the autumn of 1997, half a year after the introduction of the new system and the assessment process. This is sufficient time for the employees to get trained in the new task, to get used to the new environment and to adapt themselves to the new requirements.

3.1. Assignment of the Investigated Employees

For the validation process we choose 50–50 people randomly from the *suitable* (Group A) and the *suitable with development* (Group B) groups. We used no names during the investigation.

3.2. Introduction of the Experimental Methods

The second figure summarizes the applied validation processes. The 'objective'/hard achievement measuring methods and the 'subjective'/soft measuring methods are marked with different colours.

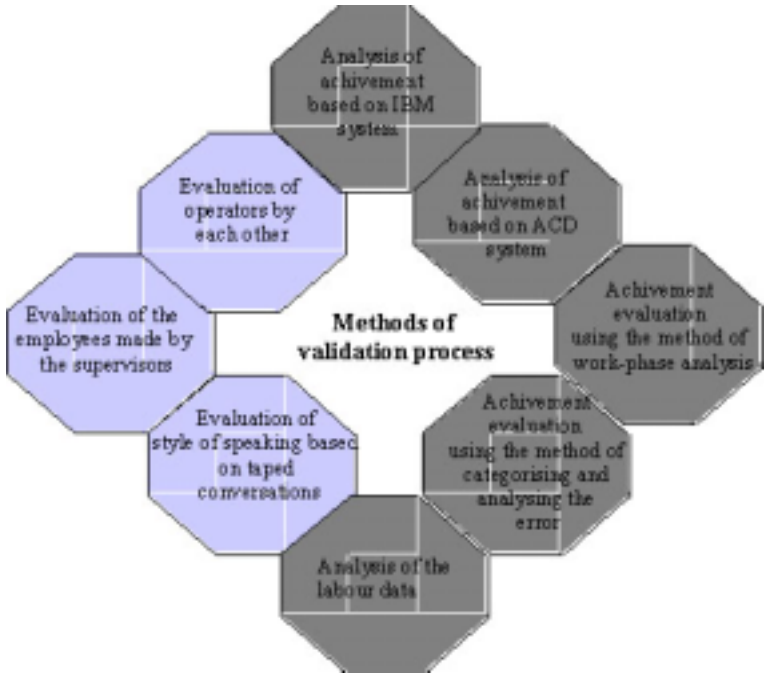

Fig. 2. Methods of validation process

3.2.1. Analysis of Achievement Based on IBM and ACD Systems

For following the achievement of the operators the Company applies two computer systems (IBM and ACD / Automatic Call Device). We suppose that statistical analysis of the data of both systems gives comprehensive information and tendency about that half a year of learning period which began at the time of introduction of the new technology and the beginning of the assessment process. Achievement index of IBM and ACD systems: Requests, Searches, Challenge Time (s), Keying Time (s), Street Name Uses, Local inquiries-keyed, Street Name Characters, LOC Characters, Finding name characters, First finding name, Characters, Finding name Words', Correction Keystrokes, One-page displays, Lines in one-page display, No display, Too many listings, Page inquiries, Not founds.

Hypotheses

- We suppose there is a significant difference between the two groups (A and B) in the theoretical learning curve, which means that the members of group 'A' learn faster.
- We suppose there is a difference between the group 'A' and 'B' in the characteristics of their learning process (effectiveness, rapidity).
- We suppose that the members of group 'A' are characterised by more independent solution, shorter operating time.

Results: There was no significant difference between the two groups after statistical analysis of the data because there were factors during this process, this suggests that these achievement measuring and evaluating systems are not suitable methods for determining the validity of the assessment process.

3.2.2. Achievement Evaluation Using the Method of Work-Phase Analysis

The aim of this method was to make a precise observation on a certain group of the employees and collect objective data about the working process and the task.

Method: We videotaped 20 minutes of 29 operators' working process which contained the telephone conversations with the clients and the screen of the operators. We analysed the followings:

- Analysis of the duration of work-phases (receiving the question, searching, finding, answering). Other derived time data: total time, time corrected by the answer (time of fulfilment – time of using the audio), time corrected (time of fulfilment – general time of the finding list).
- Filtering those factors which influence their achievement but independent from the operators (acoustical or phone error, software, hardware errors, errors of the clients).

Hypotheses

- There is significant difference between group 'A' and 'B' in their time data. The operators of group 'A' are characterised by quicker work and shorter time data.
- Different errors prolong the time of fulfilment.

Results: The first hypothesis seemed to be proven because there is a tendency to need longer time for searching, answering and completing in group 'B'. There is significant difference in the work-phases of searching, time corrected by the answer and the time corrected. We thought it is important to investigate how the different errors influence the average time of each work-phase because during the achievement measuring they have to be taken into consideration as influencing factors. The results proved well our expectations. Comparing with the faultless cases, every error improves significantly ($p < 0.01$) the time of fulfilment. The rate of improvement in the case of technical errors is 14.5%.

3.2.3. Achievement Evaluation Using the Method of Categorising and Analysing the Error

The aim of this method was to show the most typical mistakes and their frequency during the work. The types of mistakes and their frequency give information about those cognitive abilities such as memory, attention, understanding the importance, concentration skill. We investigated the followings:

- Ratio of total number of calls and faultless fulfilment
- Distribution of total error according to their origin (operator, client, technique, operator + other)
- Distribution of calls according to their successful. Successful, partly successful (the required information was given just partly or the call was directed to the stressed operator), unsuccessful (no finding or the information was not correct).
- Distribution of error frequency.

Method: First of all we determined the occurring error types, criteria of origins of error and the level of successfulness. The videotapes which were recorded for the method of work-phase analysis were watched and evaluated by two experts according to the given standpoints. A supervisor who was aware of the job and the task was also included in the evaluating group. For evaluation a special scoring sheet was used.

Hypotheses

- Ratio of total number of calls and faultless fulfilment: this ratio is smaller in group 'A' because they make less mistakes than the other group in case of considering the errors independent from the operator as constant.
- The distribution of the total error according to their origin (operator, client, technique, operator + other): there are less mistakes made by the operator in group 'A', while the other errors occur at the same ratio in both groups. We suppose that the percent of errors originating not from the operator (client, technique) is high comparing to the total error.
- The distribution of calls according to their successfulness: in group 'A' there are higher numbers of successful and lower numbers of unsuccessful calls.
- The distribution of error frequency: in group 'A' there are more mistakes originating from lack of attention. (this group has high cognitive ability probably because of their subjective judgement of the task is easier, they become bored and give up earlier, their activity level is decreasing earlier during the work).
- We suppose that in group 'A' there is less error originating from insufficient knowledge, application of the rules or originating from inadequate solution of the request.

Table 1. Percent of error types made by the operator

Type of error	Group 'A' ($n = 15$)	Group 'B' ($n = 14$)	Total ($n = 29$)
	Error number (100% = 498)	Error number (100% = 432)	Error number (100% = 930)
1. Miswriting	42.3%	22.0%	32.5%
2. Wrong data marking	3.4%	4.4%	3.9%
3. Irregular writing	0 %	2.2%	1.07%
4. Wrong shortening	27.8%	36.0%	31.7%
5. Not understood question	2.7%	2.9%	2.8%
6. Wrong searching method	9.7%	16.1%	12.8%
7. Inaccurate interpretation of the founded data	3.4%	8.8%	6.0%
8. Communicative errors	9.0%	5.8%	7.5%
9. Ignorance	1.3%	1.4%	1.4%

We determined the following error categories originating from the operator:

Results: It can be seen from this table that 61% of total calls is faultless and there is no difference between the two groups.

Considering the total occurring error (operator, client, technique) and their distribution according to their origin there is no significant difference between the two groups, although in group 'B' the error number originating from the operator is slightly higher and the error number coming from the clients is lower a little bit. 50% of the total error is caused exclusively by the operators, one third is the 'mistakes of the clients' which means that clients' questions, requests are often inaccurate, their information is wrong and insufficient or they are not aware of what the inquiry service is for, they have unfounded expectation or they have fun with the operators.

There is no significant difference between the two groups concerning the matter of successful calls which means that the work of both of them is effective. In group 'A' the number of unsuccessful fulfilment is significantly higher ($p < 0.05$), while in group 'B' there is a tendency to have higher number of partly successful calls ($p < 0.1$). The reason for this can be that members of the group 'A' try to find the answer the difficult and problematic questions alone – which more probably ends in an unsuccessful call – while members of the group 'B' prefer to direct these requests to the group supervisor who can spend more time on it.

3.2.4. Analysis of the Labour Data

Unfortunately these data were incomplete that's why we could not make usable conclusions.

3.2.5. Evaluation of Style of Speaking Based on Taped Conversations

The aim of this method was to prove that the assessment process which helps to select operators who speak in a pleasant, polite tone with the clients at the Inquiry service.

Method : We used the same method as we did in the assessment process. We taped 20 minutes of the operators' dialogue during their work, that is the conversation between the operator and the client. The tapes were evaluated by a group representing the clients using a 7 grade semantical differential scale. During this process they could not identify the investigated operators.

Hypotheses

We suppose that the panel representing the customers evaluates differently the style of speaking of the operators belonging to the group 'A' and 'B'. They consider that the style of speaking of the group 'A' members is more pleasant, more attractive than the one of the group 'B'.

Results: Members of the group 'A' have significantly better scores considering their voice, style of speaking, the way of their communication with the clients ($p < 0.045$). They were more friendly, more attractive, more pleasant for the panel than the members of group 'B'.

3.2.6. Evaluation of the Employees Made by the Supervisors

Method: Each employee (100 operators) was evaluated by at least 4 supervisors. For evaluation they used a scoring sheet which contained the exact determination of the dimension that had to be estimated. Standpoints of the scoring sheet are determined by the criteria of the assessment process. (Achievement, accuracy, knowledge of software, endurance, quietness, politeness, good communicative skill, pleasant voice, understanding of speech, memory, good relationship with the colleagues.) Supervisors used a 4 grade scale for evaluation.

Hypothesis

We suppose that supervisors make significant difference between the two groups (A, B) along the given dimensions.

The third figure shows the close relationship between the assessment and validation process. Stars indicate significant difference in dimensions between the two investigated groups according to the evaluation of the supervisors. It can be seen that the two groups firmly differ mainly in the evaluation of cognitive abilities. Measuring methods for cognitive abilities of the assessment process evaluate well the employees – from the aspects of supervisors too. Eight months after the introduction of the new technology, supervisors found during their every day work, that there is difference among the operators regarding performance and their key abilities which are needed for their successful work.

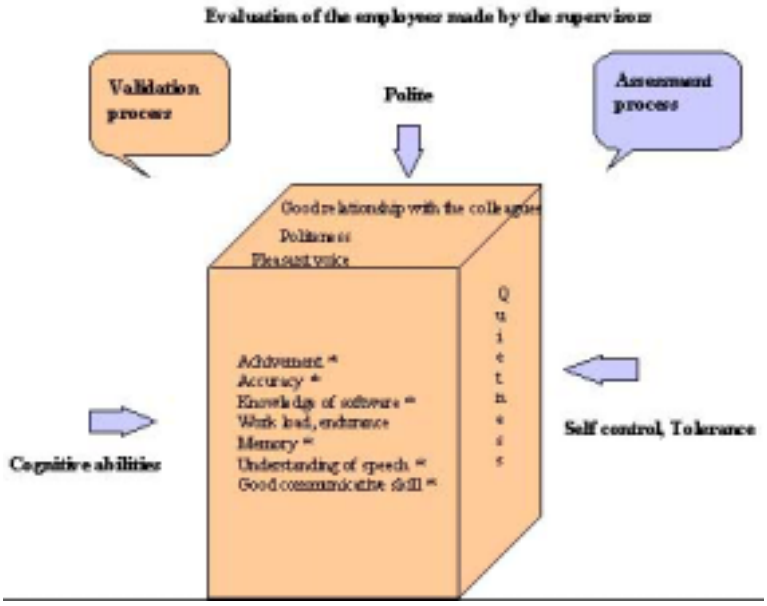

Fig. 3. Relationship between the criteria and the standpoints of the supervisors they used for evaluating the operators

3.2.7. Evaluation of Operators by Each Other

For evaluation of operators by each other we made a scoring sheet containing four important dimensions: effectiveness, patience, politeness, understandable speaking. All employees working in that unit had to fill out this evaluating sheet about the listed 100 operators. Judging operators had to mark those five ones who are the best according to their opinion in the given category. During evaluation we were interested only in the positive differentiation.

Hypothesis

In judgement of operators made by each other there is significant difference between the two groups in the given dimensions.

Results:

The first graph shows that in all four categories there are more operators from group ‘A’ than from group ‘B’. There is significant difference between the two groups regarding the Understandable speaking and Patience.

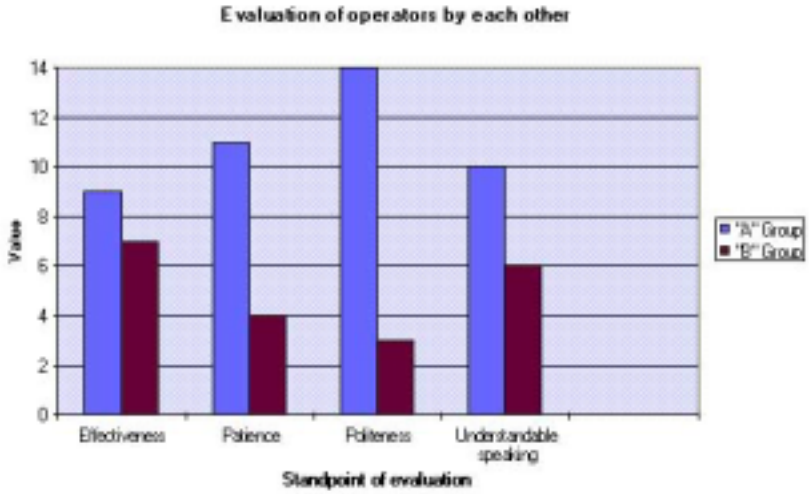

Fig. 4. Evaluation results of operators made by each other

4. Summary

1. The aim of the assessment process was to select operators – already or newly employed – who are suitable for this high achievement demand.
2. New methods of selection had to be developed which fit the task better. For this reason we made job analysis using different methods to get acquainted with the task as much as possible.
3. We set up the criteria of the successful work which were needed for determining the methods of the assessment process and the standpoints of the validation process.
4. The new methods of assessment process were tested previously on university students and we made the corrections needed.
5. According to the results of the assessment process the employees can be ordered. Point limits were determined by the management.
6. Later on we investigated whether the results of the selection process were correct or not (this is the difference from the classic predictive method). We suppose that there is also difference in the effective work of those operators who got high or low/lower point during the selection process. For determining the methods of validation process we used the information from the job analysis and the criteria of successful work.
7. We investigated whether there is significant difference between the groups in the achievement indicators (quantity, quality, objective, subjective) measured with different methods.

Because the validation process validates the predictors used during the assessment process, that's why we had to investigate whether the operators came up to expectations. The company terminated of the employment contract with people who were unsuitable according to the point limit determined by the management, so we had no possibility to investigate and compare their achievement and work. For comparison we used suitable and suitable with development group. We suppose there would be bigger difference between suitable and unsuitable group than suitable and suitable with development group, because operators in group 'B' perform well their work (at least according to the predictors) but it would be useful to improve some of their abilities with the help of special training programs. It was also proven by the results of validation process but the management changed the original idea and every operator had to attend to a uniform training program.

Results of validation process proving the methods of assessment process are positive, although the person – job fit could be proven mostly by evaluation of satisfaction which we plan to do this year.

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