

Comparative analysis of the professional microenvironment between a high-tech company and a service provider

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SAMPLE

The study was conducted among employees at two companies – a high-tech production enterprise and a service provider company. The respondents' mean age is $X=38,88$ ($SD=11,32$), work experience $X=18,67$ years ($SD=11,49$), and work experience at the organization - $X=5,51$ years ($SD=3,12$).

METHOD

The study was carried out by using a questionnaire, including general sample data (7 questions), a modified version of the *Copenhagen's Psychosocial Questionnaire (COPSOQ)* - 74 items. On the basis of the empirical measures, several scales were composed and distributed in several basic modules (the number of items composing a certain scale and the scale reliability – Cronbach's alpha within the studied sample are indicated in brackets).

Module I. „Demands at work”, composed of 4 scales:

- (1) *Quantitative demands at work* (irregular workload, insufficient time to cope with tasks, falling behind with work, etc.)
- (2) *Cognitive demands at work* (concentration and distribution of attention demands, decision-making in difficult situations, memorization demands, etc.)
- (3) *Emotional demands at work* (situations of high tension, “tough nerves” demands, emotional overload).
- 4) *An aggregated Demands at work scale*, composed by the three scales above.
- (5) *Possibilities for influence at work* (choosing with whom and how to work, influence over the quantity of work, etc.).

Module II. „Social relationships at work” includes 5 scales:

- (1) *Role conflicts* (assignment of unnecessary tasks, conflicting guidelines, etc.).
- (2) *Social support* (support by colleagues and by the immediate manager).
- (3) *Possibilities for influence at work*: over the quantity and type of work; whom to work with).
- (4) *Role clarity* (clearly defined expectations, goals, tasks and responsibilities; taking employees' opinions into consideration).
- (5) *Quality of leadership* (providing career opportunities, good planning, conflict management, feedback about employees' work).

Module III. „Mental health” – composed of two components/scales:

- (1) *Positive mood* (feeling happy, the opposite to strenuousness, low spirit, etc.).
- (2) *Vitality* (optimism, vigour, etc.).
- (3) An aggregated „Mental health” scale (composed of (1) and (2)).

Module IV. „Stress” – includes 4 scales for measurement of behavioural, somatic and cognitive manifestations of stress, indicated as follows:

- (1) *Behavioural stress*¹ (irritability, overload of squabbles and conflicts, „drifting with the current”, etc.).
- (2) *Somatic stress* (health concerns: stomachache/other stomach issues, chest pain/squeezing, muscle tension, dizziness).
- (3) *Cognitive stress* (difficulties in concentration, memory and decision-making, confused thoughts).
- (4) An aggregated „Stress” scale (composed of (1), (2) and (3)).

(5) *Demands for hiding emotions and personal opinion*.

This scale has been found to have too low internal consistency for the studied organization and hence, it is not likely to be a reflection of any essential aspects of social relationships and activity.

Module V. „Meaning of work” – comprises 4 scales:

- (1) *Meaning of the work* (the sense of one's job being both important and meaningful).
- (2) *Commitment to the work* (the desire to keep the job until the end of service, great personal importance of the work, the desire to let others know about your job and workplace).
- (3) *An aggregated scale „Meaning and personal commitment to the work”*, composed by the two scales above.

(4) *Opportunities for development* (the prospects of professional development rather than career prospects, i.e. if the job provides opportunities for expansion of one's knowledge, personal initiative and adequate expression of competencies and skills).

(5) *Job insecurity* (worries about a potential job loss, about relocation to a undesired workplace, etc.).

Module VI. „Satisfaction with the conditions of work” – evaluation of the work environment factors (noise, illumination, temperature, dust, etc., including social gains).

Module VII. „Job satisfaction”: with the work in general, with the opportunities for applying one's own competency, with the opportunities for professional development. This scale also includes an overall measure of “Satisfaction with the conditions of work”, as the overall measure of “Satisfaction with the conditions of work” has the lowest coefficient, i.e. a weight lower than the other measures (opportunities for professional development, adequate expression of personal competencies). Consequently, the option to evaluate “Job satisfaction” separately was chosen.

RESULTS

With regard to these two organizations, contiguously presented below are:

- (1) comparative data of the measured constructs by department;
- (2) analysis of the main factors that „determine”: (a) *stress level*; (6) *meaning of the work and commitment to the work*;

1. RESULTS ON THE BASIC SCALES BY DEPARTMENT AT THE HIGH-TECH COMPANY

The illustrative character of data facilitates comprehension of results. Since the bar charts are informative enough only short notes are added to some results. Any further comments and questions can be brought forward a bit later in the discussion section.

All three departments score higher on the scales „Role clarity” (clearly defined expectations, goals, tasks and responsibilities), „Social support” (by colleagues and by the immediate manager) and „Quality of leadership” (providing career opportunities, good planning, conflict management, feedback about the employees' work). Lower are their scores on the scales „Role conflicts” (assignment of unnecessary tasks, conflicting guidelines, involvement on tasks that are welcomed by some colleagues, but unwelcomed by the others) and „Possibilities for influence at work”. The scale „Role conflicts” has the highest value at the Sales Department and similar values at the Administration Department and the Production Department.

¹ As mentioned above, it would be more precise to use the term “behavioural (somatic, cognitive) manifestations of stress”. Still, the term “behavioural (somatic, cognitive) stress” is used herein below for the sake of brevity.

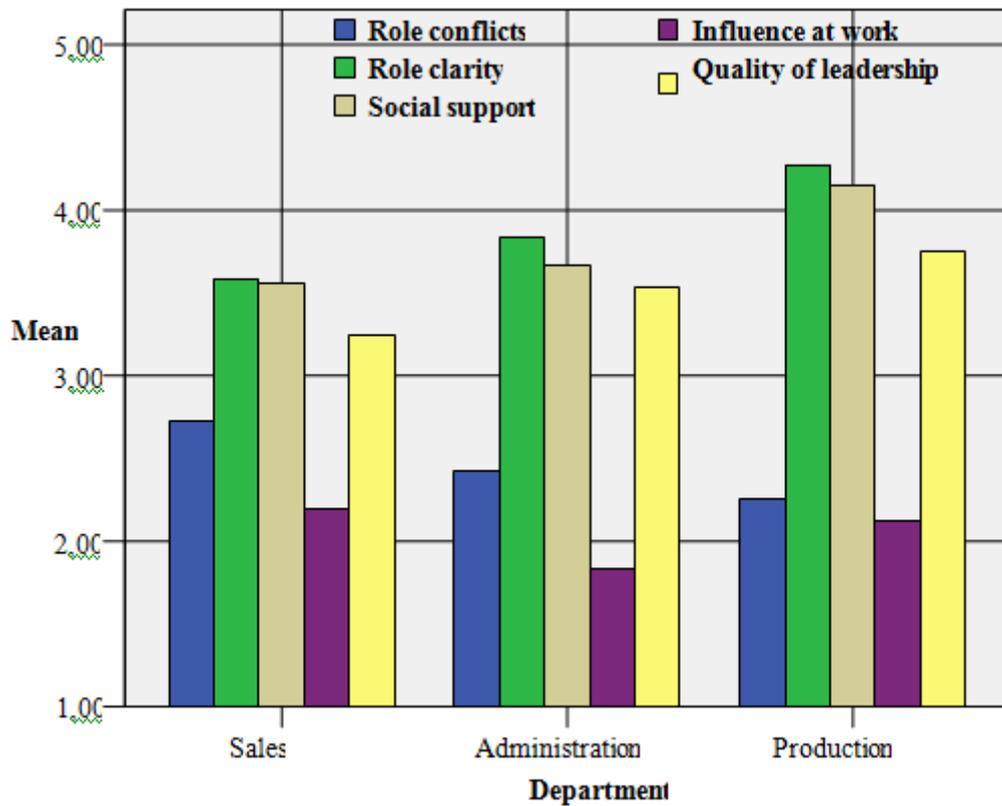


Figure 1. Mean values of the scales included in Module I „Demands at work” by department at the high-tech company

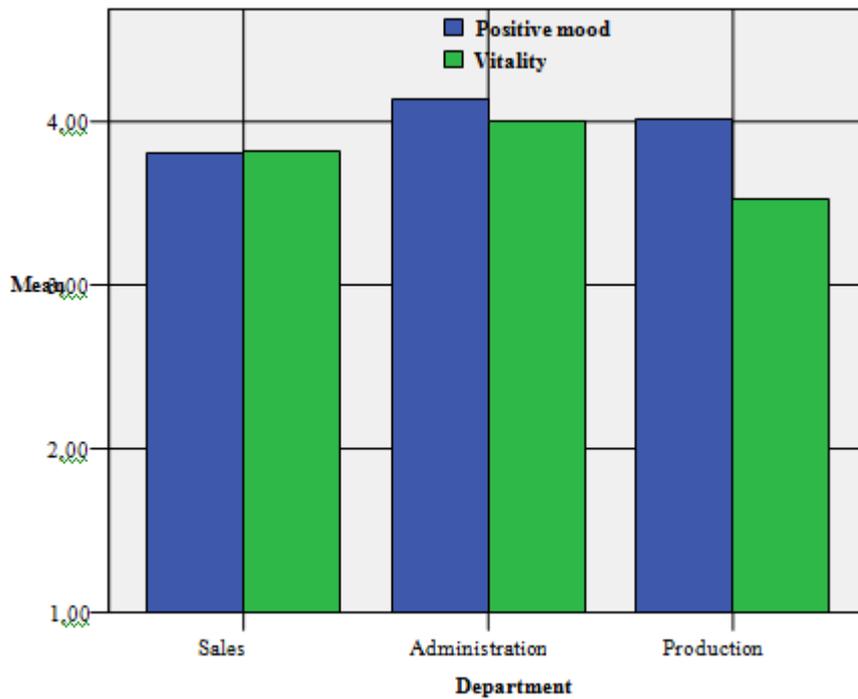


Figure 2. Mean values of the scales included in Module II „Social relationships” by department

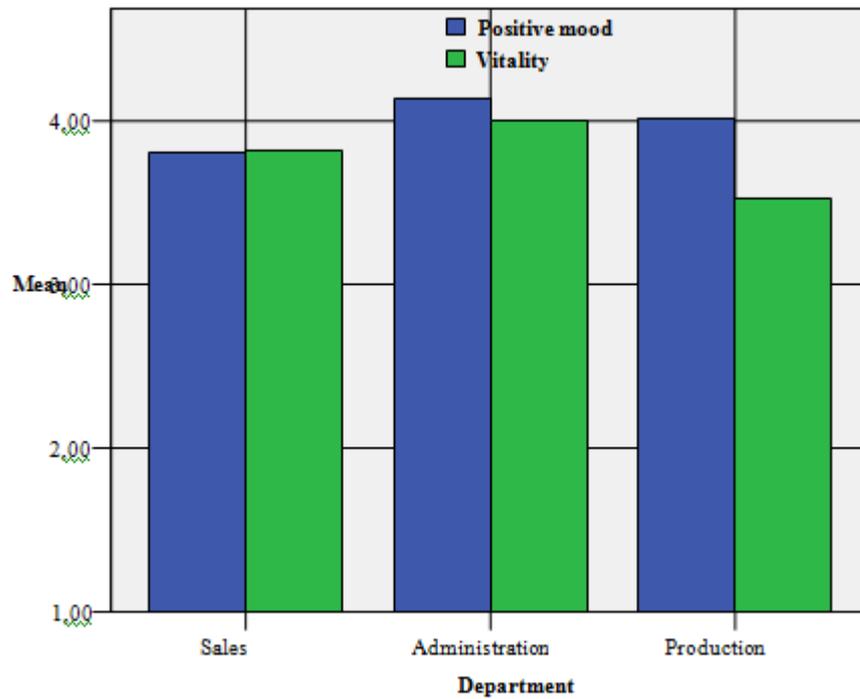


Figure 3. Mean values of the scales included in Module III „Mental health” by department

The levels of „Mental health” are relatively high in the three departments; no significant variation by department.

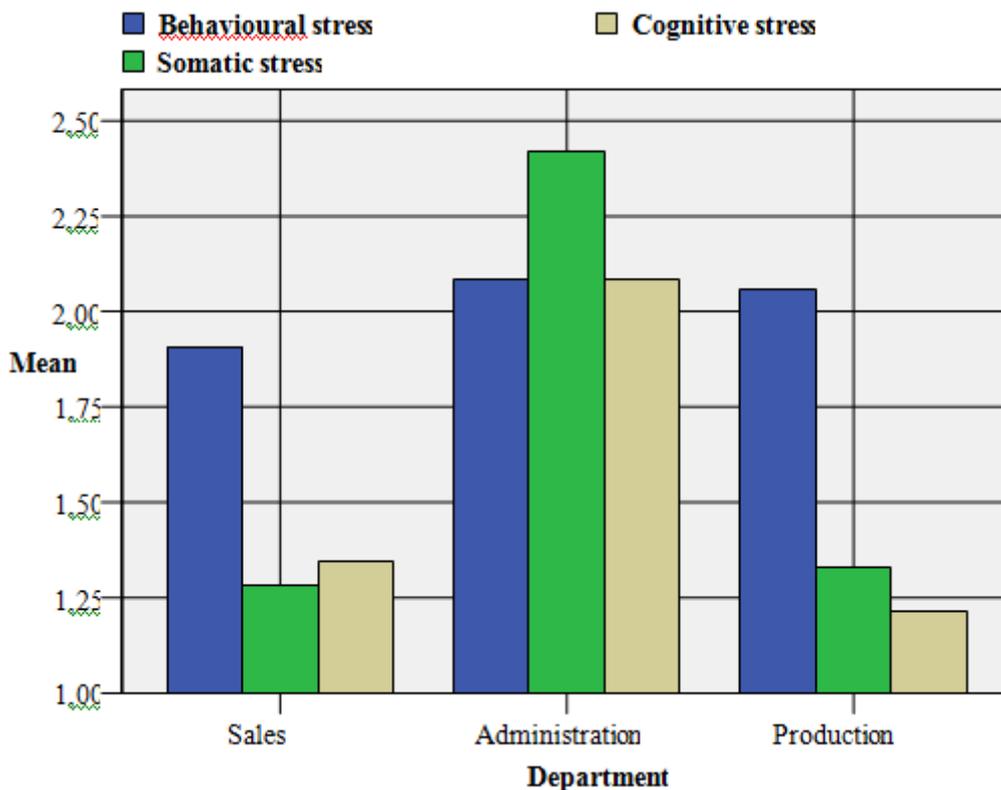


Figure 4. Mean values of the scales included in Module IV „Stress” by department

In the Administration Department, there is a tendency of reporting higher somatic stress („health concerns: stomachache/other stomach issues, chest pain/squeezing, muscle tension, dizziness, etc.) and cognitive stress (difficulties in concentration, memory and decision-making, confused thoughts).

Behavioural stress (irritability, overload of squabbles and conflicts, „drifting with the current”, etc.) was found to attain similar levels in the three departments.

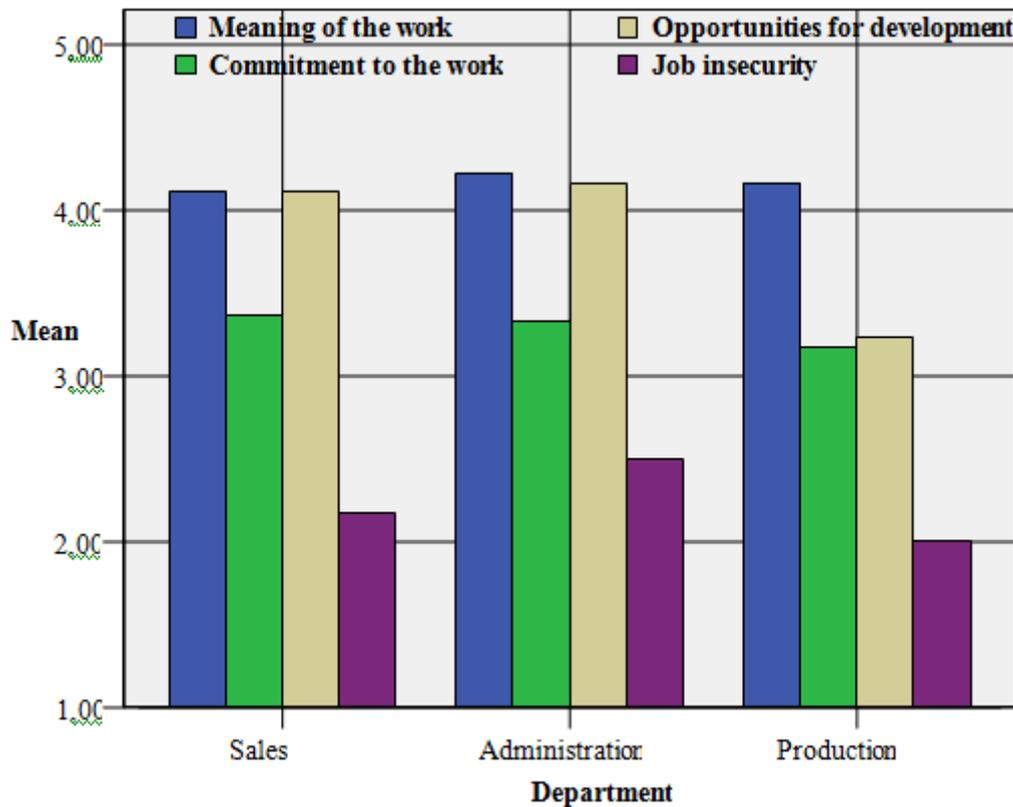


Figure 5. Mean values of the scales included in Module V „Meaning of the work” by department

The scales “Meaning of the work“, “Commitment to the work” and “Opportunities for development” were found to have higher values, and “Job insecurity“ was found to have a lower value.

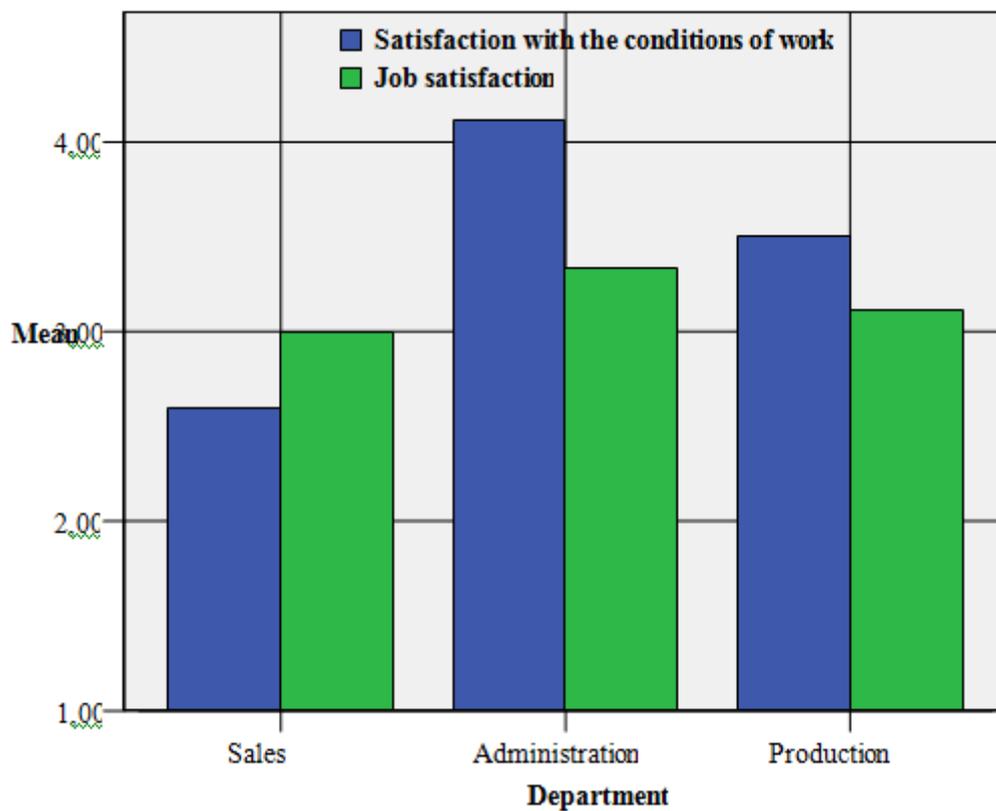


Figure 6. Mean values of the scales included in Module VI „Satisfaction with the conditions of work” and Module VII „Job satisfaction” by department

The measures of job satisfaction (with the work in general, with the opportunities for applying one’s own competency, with the opportunities for professional development) were found to have similar values. Still, there is a salient tendency of keeping a lower level of satisfaction with the conditions of work at the Sales Department.

2. FACTORS ASSOCIATED WITH STRESS AND MEANING/COMMITMENT TO THE WORK

Findings about the factors associated with stress and meaning/commitment to the work are presented below.

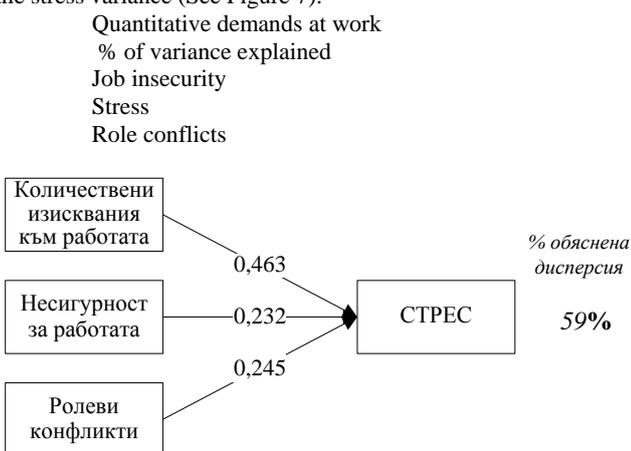
The significant one-way correlations (Pearson's *r*) with the overall stress level (composed of behavioural, somatic and cognitive manifestations of stress) are given in Table 3.

Table 3. Factors associated with the level of stress

Scale	Pearson's <i>r</i>
Quantitative demands at work	,723(**)
Role conflicts	,689(**)
Job satisfaction	-,572(**)
Hiding emotions/personal opinion	,548(**)
Meaning of the work	-,516(**)
Job insecurity	,508(**)
Role clarity	-,505(**)
Commitment to the work	-,444(**)
Emotional demands to work	,380(*)
Group cohesion	-,336(*)
Opportunities for development	-,284
Satisfaction with the conditions of work	-,208

According to the results, quantitative demands at work (overload of tasks, falling behind with work, insufficient time), role conflicts, job insecurity and emotional demands at work (situations of high tension) raise the level of stress, while job satisfaction, meaning and commitment to the work, role clarity, group cohesion, opportunities for development play a preventive role (i.e. reduce the level of stress)².

The data has also been analysed by means of multiple regression considering the indicated aggregated variables as independent variables that predict the level of stress (positive mood and vitality were not included in the analysis again). However, due to the small sample size, the results have a conditional character. The findings, obtained after the associations between the independent variables have been considered, show that there are three significant predictors – quantitative demands at work, job insecurity and role conflicts that come to explain a considerable percentage (59%) of the stress variance (See Figure 7).



Notice: The standardized regression Beta coefficients are presented above.

Figure 7. Professional stress factors – multiple regression

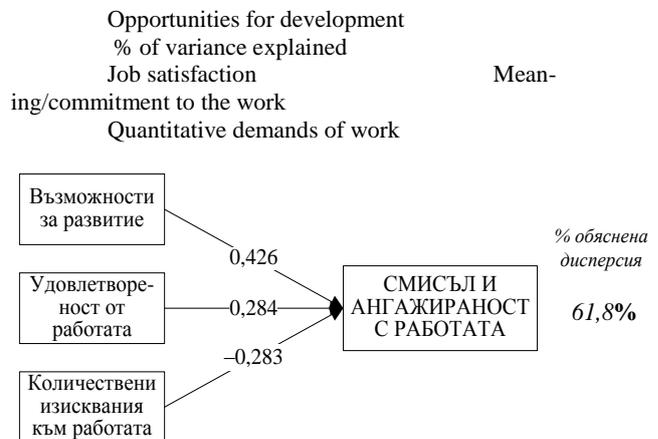
² As expected "Positive mood" and "Vitality" are strongly associated with „Stress”, but they are rather concepts of the same order and it would not be accurate to regard them as stress factors.

Significant one-way correlations (Pearson's *r*) with the scale „Meaning/commitment to the work” (composed through aggregation of “Meaning of the work” and „Commitment to the work”) are given in Table 4. The results identify both „risk” and „preventive” factors for experience of personal meaning of the work and commitment to it.

Table 4. Factors associated with meaning/commitment to the work

Scale	Pearson's <i>r</i>
Job satisfaction	,722(**)
Opportunities for development	,674(**)
Vitality	,623(**)
Positive mood	,610(**)
Role conflicts	-,593(**)
Role clarity	,527(**)
Quantitative demands at work	-,548(**)
Stress – overall (aggregated)	-,535(**)
Hiding emotions/personal opinion	-,534(**)
Job insecurity	-,411(**)
Group cohesion	,313(*)
Emotional demands at work	-,284
Demands at work – overall (aggregated)	-,302

Similarly, the data was also analysed by using multiple regression, where “Meaning/commitment to the work” was considered a dependent variable, determined by the other constructs (aggregated scales). The findings are conditional (due to the small sample size) and evince three significant predictors – opportunities for development, job satisfaction and quantitative demands at work (with an opposite sign), See Figure 8.



Notice: The standardized regression Beta coefficients are presented above.

Figure 8. Factors for meaning and commitment to the work – multiple regression

RESULTS OBTAINED FOR THE SERVICE PROVIDER:

Scope of activity: nonstop processing of foodstuff and production of food packages is implemented, as both quality and hygiene of production and the workshops are inspected and certified annually. Considering the international contractors of the company, the demands of quality, quantity and sanitation are high.

Module I “Demands at work”:

1) quantitative demands at work (irregular workload, insufficient time to cope with tasks, falling behind with work, etc.) ($\alpha=0,26$)

- 2) cognitive demands at work: concentration and distribution of attention demands, decision-making in difficult situations, memory demands, etc. ($\alpha=0,74$)
- 3) Emotional demands at work: situations of high tension, "tough nerves" demands, emotional overload ($\alpha=0,76$)
- * Aggregated scale / overall *Demands at work* ($\alpha=0,79$)
- 4) Possibilities for influence at work (choosing with whom and how to work, influence over the quantity of work, etc.) ($\alpha=0,43$)

In Module I "**Demands at work**" the following results have been obtained: The highest quantitative demands at work by department were found for the Operations Department ($x=7, N=12$), and the lowest – for the Sanitation Department ($x=5,5, N=4$). The highest emotional demands at work were found for the Café Department ($x=9,71, N=7$), and the lowest – for the Sanitation Department ($x=4, N=4$). The highest cognitive demands were found for the Accounting and Administration Department ($x=14,85, N=7$), and the lowest - for "Café" and "Sanitation" ($x=10$). Those working at the Sanitation Department ($x=9,75, N=4$) and at the Operations Department ($x=9,58, N=12$) have possibilities to exert influence at work. The highest overall demands at work were found for the Accounting and Administration Department ($x=30,85$), Operations and Production Department.

Module II "Social relationships":

- 5) role conflicts (assignment of unnecessary tasks, conflicting guidelines, etc.) ($\alpha=0,59$)
- 6) social support (support by colleagues and by the immediate manager) ($\alpha=0,68$)
- 7) social relationships (opportunities for keeping communication lines open at work) ($\alpha=0,40$)
- 8) role clarity (clearly defined expectations, goals, tasks and responsibilities; taking into consideration the employees' opinions) ($\alpha=0,72$)
- 9) quality of leadership (providing career opportunities, good planning, conflict management, feedback about the employees' work) ($\alpha=0,83$)

In a social-psychological perspective the strongest role conflicts have been found at the Accounting and Administration Department ($x=10,14, N=7$), and the weakest – at the Café Department ($x=8,57, N=7$). The strongest social support was found for the Production Department ($x=8,08, N=12$), and the weakest – for the Accounting and Administration Department ($x=6,42, N=7$). The most clearly defined roles were found at the Operations Department ($x=16,46, N=13$). The quality of leadership of the head of the Sanitation Department were the most highly evaluated ($x=22, N=3$).

Module III "Health":

- 10) mental health (includes measures of low spirit, happiness, discouragement, nervousness) ($\alpha=0,82$)
- 11) vitality (exhaustion, optimism, vigour, inspiration) ($\alpha=0,64$)

Module IV "Stress":

- 12) behavioural stress (includes troubles with other people, high sensitivity and irritability, lack of motivation to act) ($\alpha=0,50$)
- 13) somatic stress (health concerns) ($\alpha=0,71$)
- 14) cognitive stress (difficulties in concentration, memory and decision-making) ($\alpha=0,63$)
- * Aggregated scale / overall *Stress* ($\alpha=0,77$)

15) Demands of hiding emotions/personal opinion ($\alpha=0,18$)

Those from the Sanitation Department report the highest values of vitality and mental health ($x=22$ и $x=16,25, N=4$) and at the same time the highest levels of behavioural, somatic, cognitive and overall stress. The lowest values of vitality and mental health were found for the Café Department ($x=13,12$ и $17,28$).

Module V "Meaning of the work":

- 17) meaning of the work (the sense of one's job being meaningful, internal motivation) ($\alpha=0,84$)
- 18) commitment to the work (a pleasant feeling for what is done at work, the desire to keep the job until the end of service, great personal significance of the work) ($\alpha=0,71$)
- * Aggregated scale / overall *Meaning and personal commitment to the work* ($\alpha=0,83$)

- 19) opportunities for development (utilization of personal skills) ($\alpha=0,80$)
- 20) job insecurity (worries about a potential job loss, about relocation to a undesired workplace, etc.) ($\alpha=0,65$)

The highest values of meaning of the work ($x=13,16$), commitment to the work ($x=11,75$), opportunities for development ($x=10,27$) and also of worries about a potential job loss ($x=10,5$) were reported at the Production Department ($N=11$).

Module VI "Job satisfaction": with the work in general, with the opportunities of applying one's own competencies, with the opportunities for professional development, with the conditions of work" (an aggregated mean value is calculated) ($\alpha=0,78$)

Module VII „Satisfaction with the conditions of work", where work environment factors (noise, illumination, temperature, dust, etc.) were evaluated ($\alpha=0,77$)

The lowest satisfaction with the conditions of work and with the work in general is reported at the Accounting and Administration Department ($x=18,85$ and $x=11,42, N=7$), and the highest satisfaction – at the Sanitation Department ($x=27,4$ and $x=16,11, N=5$).

An independent samples T-test was used to compare data of regular (standard) vs. irregular shift work.

Regarding the "Shift work" measure, **regular shift** employees were found to have lower values of: role conflicts (8,26), proportion of positive and negative attitudes (0,44), meaning of the work (11,66), satisfaction with the conditions of work (20,27) and quality of leadership (15,36).

Irregular shift employees were found to have higher values of: quantitative demands at work (8,30), overall demands at work (32,30), cognitive demands at work (14,90), role conflicts (9,90), worries about a potential job loss (8,60), satisfaction with the conditions of work (23,48), group cohesion (17,48), quality of leadership (18,19), meaning of the work (13,18).

The analysis of **correlations** shows significant associations ($p<0,01$) between:

- emotional demands at work and behavioural stress ($r=0,395$)
- emotional demands at work and overall stress ($r=0,375$)
- overall demands at work and cognitive stress ($r=0,408$)
- overall demands at work and overall stress ($r=0,394$)
- role conflicts and behavioural stress ($r=0,408$)
- role conflicts and cognitive stress ($r=0,498$)
- role conflicts and overall stress ($r=0,526$)
- social support and behavioural stress ($r=-0,492$)
- role conflicts and overall stress ($r=-0,330$)
- worries about a potential job loss and somatic stress ($r=0,313$)

Regression. The one-way correlations mentioned above do not show associations between the studied variables, associated with the level of stress. The data was processed further by means of multiple regression, where the level of stress was defined as a dependent variable and regressed on the other variables (entered as independent variables). While entering the independent variables in the regression equation, the stepwise method was employed and the error probability was set to 0,10. However, the regression results should be conditionally interpreted due to the small sample size.

The findings show that the independent variables as per the tested model come to explain a large percentage (68,9%) of the variance of stress (adjusted $R^2 = 0,689$). The data identifies four significant predictors: "Quality of leadership" (with a standardized Beta coefficient = $-0,370$), „Proportion of positive and negative attitudes towards colleagues" (Beta = $-0,420$), „Opportunities for development" (Beta = $-0,343$) and „Emotional demands at work" (Beta = $0,396$). Hence, low quality of leadership, prevalence of negative attitudes towards colleagues, limited opportunities for development, and increased emotional demands at work significantly predict a high level of stress, as these effects are relatively balanced and together these predictors come to explain a large portion of stress. The findings also suggest that it is not only the system of professional relationships at work (incl., quality of leadership, op-

portunities for development and emotional demands at work), which is crucial for the stress level, but also the system of interpersonal relationships: prevalent positive/negative attitudes towards colleagues (sympathy/antipathy) in the professional microenvironment. Hence, positive interpersonal relationships can play a crucial preventive role (as a buffer) of the stress levels.

CONCLUSION

It is the system of professional relationships at work (incl., quality of leadership, opportunities for development and emotional demands at work) that is crucial for the level of stress.

Sixty seven percent of the employees have positive attitudes and sixteen percent - negative attitudes towards their professional community.

Positive interpersonal relationships can play a crucial preventive role (as a buffer) of the stress levels.

Irregular shift employees feel more worried about a potential job loss, more satisfied with the conditions of work; they experience higher cohesion within the group, but also stronger role conflicts compared to the regular shift employees.