

# MODELING OF WORK-COMMITMENT DETERMINANTS: A CROSS-CULTURAL COMPARISON

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**Abstract:** The object of the current analysis is the work commitment phenomenon and the possibilities of modeling it by analysing its components and the system of influencing factors searching for most significant determinants. The objective is to discuss the possible components of work-commitment phenomenon, propose the system of commitment-influencing factors and test their significance using an appropriate mathematical methodology. An addition task is to implement cross-cultural analysis, modeling general sample and separate samples for different cultures. In this paper the quantitative research methodology was chosen. However, the special attention should be driven to the choice of the adequate data modeling method, taking into account the limitations emanating from semi-qualitative data characteristics. In the current analysis Bayesian classification technique is used. Cross-cultural comparison was made for five countries from rather different cultural clusters: Great Britain, USA, Russian Federation, Japan and Germany. The cross-cultural comparison analysis yielded the relative non-homogeneity of the best predictors across the countries, with the best predictors being the factors of work climate, perception of the place of work in life, job security, interesting job, income, sex and pride related to the type of work.

**Keywords:** Commitment, organisational culture, personnel management, cross-cultural analysis, international business administration, Bayesian analysis, Russian Federation, non-parametric methods, panel data modeling.

## 1. Work Commitment Problematics

Work commitment as a phenomenon is one of the central factors, influencing organisational culture, organisational behaviour and organisational effectiveness as an outcome. The current phenomenon can have a multi-layer complex structure, being a result of a set of influencing factors of different type and nature. The object of the current research is work commitment as a resulting factor or, more precisely, the whole system of work commitment determinants, significance of separate components and its variations in different cultures. In this study these components are analysed in general context and in cross-cultural context, with the aim to access the possible differences in work commitment influencing factors. The current topic is of special importance in connection to two different practical questions:

commitment as a factor influencing organizational development, and  
cross-cultural differences and the ways of commitment effective management.

The first question is related to employees' motivation to be the member of the current organisation, the factor influencing the time of working within the organisation. This issue is directly connected with organisational learning, when drawbacks in organisational development are caused by continuous changes in personnel structure. In addition, open market possibilities and liberalization of human capital movement in Europe has been

influencing in the first turn the countries of Eastern Europe and Baltic States, where employees short-time orientation and increased personnel mobility has become an actual topic, imposing a certain set of limitations for sustainable development of local businesses, especially in small and dynamic economies, such as the Baltic States.

The second question is related to international human resources management and cross-cultural conflicts management, when the cross-cultural differences and subsequent differences in organisational culture should be taken into account when elaborating effective managerial strategies with the aim of avoiding cross-cultural conflicts and obtaining superior performance.

In this context, the analysis of the current topic can be related, but not limited, to three research tasks:

- elaborating the system of commitment determinants by defining a set of hypothetically significant indicators and classifying separate variables in corresponding groups;
- estimating system with the aim to determine significant dependencies and the nature of their relationships with work commitment factor behaviour;
- testing for cross-cultural differences in the structure of significant determinants.

## **2. Work Commitment Determinants: Model Structure**

Work commitment, being a complex phenomenon, can be represented by several components (variables), such as:

- degree of overall satisfaction from work;
- degree of being proud to work in the organization;
- intentions to change the job;
- willing to work hard for organization to succeed;
- other.

Current variables can form a unique factor (using factor analysis techniques) or can be analysed separately, as different components can be related to determinants in a different way (example: I can be satisfied by my job, but still want to change it just because I want some new challenges in my life).

The phenomenon of work commitment or any of its components can be directly or indirectly influenced by multiple factors, so the structure of system of determinants can be quite complicated. In general context, the current phenomenon can emanate from two types of sources and the model of work commitment determinants was structured as follows:

a) direct factors;

b) synthetic or “realisation” factors (realisation of desired level of certain work-place characteristics or its correspondence with the actual level).

Here, two types of influencing factors should be considered: "hard" (or external) and "soft" (or internal) factors. The first group of factors consists of:

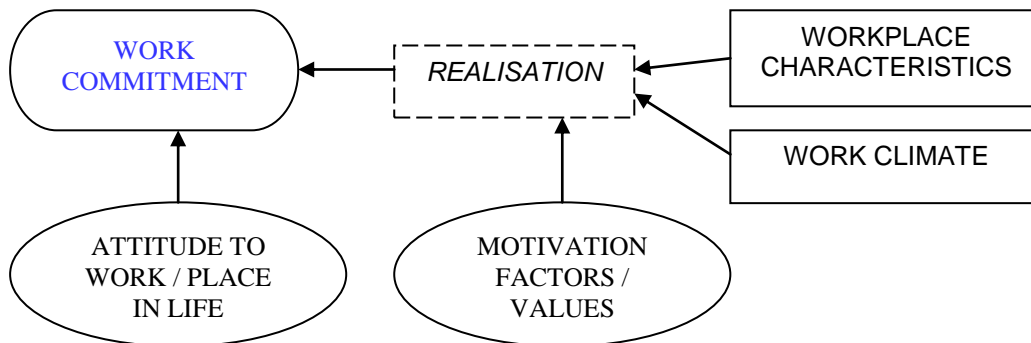
- real characteristics of the workplace and work climate (working time, advancement possibilities, stress, income, whether the job is interesting, whether the climate is good, etc.).

All these factors can directly or indirectly influence the degree of work satisfaction and commitment. At the same time the factors of the second group cannot be omitted. The second, “soft” group of factors consists of:

- personal attitude towards work as a part of life (personal importance of work) and different motivation factors.

The factors of the current group are forming “the base” of the relationships and their significance, influencing the personal perception of the workplace characteristics and workplace and commitment as a whole. For example, if the work is perceived as just a mean

of earning money, the factor of negative work climate can be of less or no influence for the person. The system of hypothesized work commitment determinants can be represented by the following scheme:



**Fig 1.** The system of work commitment determinants (by author).

Here, the degree of work commitment of a person is indirectly influenced by a set of the different characteristics of the workplace through their realisation factor, as well by general attitude of the person to work. Here, the motivation factors are represented by personal estimations about the importance of different work characteristics. These factors are important for measuring importance/presence balance, as considering only the "presence" factor of a certain work characteristics (for example "flexible working time") can lead to inconsistent findings, if the current factor is of no personal importance).

Consequently, the set of independent variables, tested in the models, included three types of variables, with the first subset ("hard" indicators) of consisting of:

(1)

Job characteristics group:

- Income, advancement, independence, interesting job, possibility to help people, useful to society, job security, flexibility of working time<sup>9</sup>;

Work climate group:

- Relations between colleagues, relations between management and employees.

Workplace characteristics group:

- Working hours, working place.

Stress group:

- Stress, hard physical work, dangerous conditions, possibility to loose the job.

Socio-demographic group:

- Age, sex, hierarchical level.

The subset of "soft" indicators included:

(2)

- Personal attitudes to work, estimations:
  - Job as a way of earning money, job as a most important activity.
- Estimations concerning the importance of certain work characteristics.
- Synthetic index (realisation).

To measure the balance of importance/presence of certain job characteristics, or the "realisation factor", mentioned earlier, synthetic index for each characteristic was calculated

<sup>9</sup> The choice of the current set of characteristics was limited by survey data (1) and can be accomplished by other factors.

and included in the analysis, representing the difference between the importance of certain job characteristics and its presence in real job:

$$(1) \text{ IndexRealis}_n = X_{n,imp} - X_{n,real}$$

Here, the positive value of realisation index (or the “non-realisation” in this case) can influence the degree of work satisfaction negatively. (In the data set the negative cases were recoded as zero differences, as it's not logical to suppose that the negative difference can enlarge the satisfaction and commitment. In total, about 43 independent variables were tested in the models.

### 3. Data Characteristics and Modeling Methodology

The methodologies used in research of organizational culture and cross-cultural studies can significantly vary, ranging from pure qualitative approach (interview or case studies based) to quantitative modeling approach. At the same time the character of data, which is qualitative in nature (survey-based ordinal indicators (Likert scale) and categorical variables), poses a certain set of limitations for reliable statistical analysis, as:

- most of the variables are non-normally distributed
- no predetermined exact theoretical model specification
- non-linear dependencies can hold
- variables are nominal and ordered categorical variables.

Taking into account the data set characteristics and the absence of mathematically predetermined model type Bayesian classification modelling was chosen for the analysis (estimated in B-Course (see Myllumäki et al, 2002, pp 369-387)).

Bayesian approach is designed to analyse discrete categorical variables and helps to overcome a set of limitations, set by the semi-qualitative character of data. In general, Bayesian dependence network is a representation of probability distribution over a set of random variables, consisting of the directed acyclic graph, with the nodes corresponding to domain variables and the arcs define a set of independence assumptions that allow the joint probability distribution for a data vector to be factorised as a product of simple conditional probabilities (Nokelainen et al, 2004, p 872). Bayesian classification modeling means searching for the best predictors for group memberships and testing for class similarity, or estimating the probability that variable belongs to the certain class. Here, the models are compared by calculating the ratio of the following probabilities (B-Course, 2008):

$$(2) \quad P\langle c = c, v / D_m \rangle = \frac{\langle N_{c+1} \rangle \langle N_{c,1,v,1+1} \rangle \langle N_{c,2,v,2+1} \rangle \dots \langle N_{c,n,v,n+1} \rangle}{\langle N + |V_c| \rangle \langle N_{c,1+|V_1|} \rangle \langle N_{c,2+|V_2|} \rangle \dots \langle N_{c,n+|V_n|} \rangle}$$

where

$D$  - data set with  $N$  data vectors and  $n$  predictor variables

$D_m$  – transformed data set according to the model (variable discretization)

$V_i$  - the  $i^{\text{th}}$  column of  $D$  and it has  $|V_i|$  different values.

$V_c$  - the class column of data and  $|V_c|$  is the number of classes

$D_{C=c}$  - data matrix containing rows of the data matrix that have  $c$  in their class column,  $D_{C=c}$  has  $N_c$  rows

$N_{c,i,l}$  - the number of rows in data matrix  $D_{C=c}$ , that have value  $l$  in the  $i^{\text{th}}$  predictor variable. The sum  $N_{c,i,1} + N_{c,i,2} + \dots + N_{c,i,|V_i|}$  is denoted by  $N_{c,i}$

The predictive accuracy of each model is estimated on the base of leave-one-out cross validation. The number of estimated models for classification modeling equals  $2^n$ , with  $n$  – number of variables (B-Course, 2008).

The data used in the analysis is the partial data of the open archive of the ISSP international survey on work orientations (ZA Online Study Catalogue, 1997), the data for five countries are analysed, presented as Likert type scale answers (ordered variables) and a set of respondent profile related data (categorical variables). The countries chosen for analysis are Russian Federation, Germany, Japan, USA and Great Britain, representing different cultural clusters and, consequently, having the potentially different systems of work satisfaction and commitment. In the current analysis one general model for every commitment-reflecting variable was estimated by classification modeling with the aim to determine significant relationships. In addition, country effects were tested by re-estimation of separate models for each country.

#### 4. Work Commitment Determinants: Modeling Results

The general model was estimated for two dependent variables: 1) overall satisfaction from work and 2) pride related to be working within the organization. According to the results the best classification model included 16 factors: 14 different job and personal characteristics-related factors and two socio-demographic components: sex and age. (The general model included data from 25 countries and, thus, wasn't limited to five countries mentioned above.) The structure of the best predictors for the both models is presented in the following table.

**Table 1. Structure of the best predictors of the Bayesian classification models for overall satisfaction and pride related to organization**

	Satisfaction	Pride
<b>Work is most important activity</b>	*	*
Job is a way for earning money		*
Working hard		*
<i>Opportunities for advancement are high</i>	*	
Job is interesting	*	
Flexibility working hours		*
<i>Relations management/employees</i>	*	*
Relations colleagues	*	
Fatigue	*	
Stress	*	
Pride related to the type of work	*	*
Worry about losing the job	*	
Realisation advancement	*	
Realisation help people		*
Sex	*	
Age	*	

Three factors were common for the both models: one factor from the group of work climate (relations between management/employees), one factor from the group of personal attitudes (work as a most important activity) and the factor of the pride related to the type of work. From the job characteristics group the important factors are possibilities for advancement and the realisation of the current factor, interesting job and flexibility of working hours. Three factors of stress group were significant as well: stress, fatigue and the worrying about losing the job. The factor of relations between colleagues was important in satisfaction model. The factor of perception of the job as a way of earning money (or

more), working hard (or not) and realisation of the possibility to help other people are significant in pride model.

Models for the countries were estimated for three dependent variables: 1) overall satisfaction from work, 2) pride related to be working within the organization, 3) intentions to change the job. The structure of the best predictors for the fifteen models (3 x 5) is presented in the following

**Table 2. Structure of the best predictors of the Bayesian classification models of overall satisfaction, pride related to organization and intentions to change the work for Germany, Great Britain, USA, Russia and Japan (G – Germany, GB – Great Britain, J – Japan).table.**

Job as a way of earning money	USA
Work as a most important activity	USA, G, GB, RUS
Working hard	USA
Importance of job security	USA, G, J
Importance of high income	J
Importance: help other people	USA, G, RUS
<i>Importance of good advancement</i>	USA, G, J, GB, RUS
Importance: useful to society	J
Importance of independent work	J
Importance: flexible working time	USA, G
High income	G, J, GB, RUS
Possibility using skills	RUS
Job useful for society	GB
Job is secure	USA, G, GB, RUS
Opportunities for advancement are high	USA, J
Job is interesting	USA, G, J, GB
Can work independently	USA, J, RUS
Pride related to the type of work	USA, G, J, GB, RUS
<i>Pride related to organization</i>	J, RUS
Training at work	GB
Stress	GB, RUS
Hard physical work	USA, G, J
Fatigue	USA, G, GB
Dangerous conditions	USA, G, GB
Flexibility of working hours	G, J, GB
Work place (home/office)	RUS
Relations management/employees	USA, G, J, GB, RUS
Relations colleagues	G, J, GB, RUS
Worry about losing the job	J, USA
Realisation high income	USA, G
Realisation secure job	USA, RUS
Realisation advancement possibilities	USA, G, GB
Realisation interesting job	J, RUS
Realisation independent work	USA, G, RUS
Realisation help people	G, GB, RUS
Realisation useful for society	USA, G, RUS
Age	USA, J, GB
Sex	USA, G, J, GB
Position	J, GB

The cross-cultural comparison analysis yielded the relative non-homogeneity of the best predictors across the countries, as about 18 factors were significant for 1 or 2 countries and only 9 factors were common for 4 or 5 countries. The factors which were significant in the most (4 or 5) cases were: both factors from the group of work climate (relations between management/employees and relations between colleagues), one factor from the group of personal attitudes (work as a most important activity), three factors from the group of job characteristics (job security, interesting job, income), one factor from motivation group (motivation factor of advancement possibilities), pride related to the type of work, and one factor from socio-demographic group (sex). The countries with the unique factors were mainly Japan, Russia and USA.

For the **USA** the most common predictors (predictors significant in 3 or 2 models from 3) are: possibilities of advancement at work (motivation, presence, realisation), independence (presence and realisation), job security (presence, realisation), interesting job, perception of the work as a mean of earning money and pride related to the type of work.

For **Germany** the most common predictors are: high income (presence, realisation), relations between management and employees, interesting job, possibility to help other people (motivation, realisation), flexibility of working hours, sex, perception of work as a most important activity and pride related to the type of the work.

For **Japan** the most common predictors are: age, income (presence and motivation factor), relations between colleagues, presence or realisation of the factors of interesting job, independence and advancement.

For **Great Britain** the most common predictors are: job security, interesting job, degree of fatigue, flexibility of working hours, relations between colleagues and pride related to the type of the job.

For **Russia** the most common predictors are: job security (presence and realisation), independence (presence and realisation), and realisation of the possibility to help other people, pride related to the type of work, both factors of relations group: relations between management and employees and between colleagues, work stress and realisation of interesting job factor.

Presented results are the part of the study. Additional details can be available from the author by request.

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