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Workplace Demands and Participation in Different Forms of Adult Education

Abstract: In this article author wants to determine how employee involvement in training courses varies depending on the main socio-demographic and job characteristics such as occupation, position at work, organization size, type of employment and the use of writing skills at work. The results show that the main determinants of integration in education are age, professional status and size of the company. Author notes that the significance of the observed factors vary according to whether they are involved in formal or non-formal education.

Key words: formal education, non-formal education, participation in education, workplace.

Introduction

Scientific and technological development in the 21st century has many impacts: on economy, and other social processes. In informational society, we are talking about knowledge society. Its main characteristic is the emphasis on the meaning of knowledge and skills on an individual and macro level. Employees cannot only posses basic skills of reading, writing and numeracy, because new computer-based technology demands skill for regulation (management) of information, decision-making abilities, communication, problem-solving skills, and learning skills. Knowledge and skills level, and the quality of the work force are becoming key factors of competitiveness in the global economies (ILO, 1999).

Economical knowledge, together with socio-demographic changes also has major impact on employment policies and training of work force. Several different studies about changes in the employment structure confirm decrease of

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employment in primary and secondary sectors that were in the past the main employers and service sector of less-educated and less-skilled work force.

Employment in the service sector is especially increasing in the so-called post-industrial services that are based on higher education and qualifications. These trends of employability lead to changes of occupational structure of employees: there are more and more "white collars" (experts, administrators, managers, officials, and vendors) and less "blue collars" (jobs in transportation and manufactures and jobs for more simple works).

In addition, inter-generational discrepancy and the quality and quantity of knowledge and skills is more and more evident. Educational structure of younger generations is improving; changes are also evident in the quality of knowledge and skill that are a result of an educational process. Age comparison from the 1990's show that in fact three from four adults in the 25 to 34 age group finished secondary school, while there is less than a half adults in the age group 55 to 64 with the same educational level (OECD & Statistics Canada, 2000). With an increased number of younger generations and tertiary education these differences becomes even higher.

Research also indicates that the demand for better-qualified work force is not only a consequence of technological and organisational change, but also some general increase of educational attainment and population (OECD, 1996).

Employers have responded to this with new practises and tightened the criteria for recruiting and hiring workers. Education for individuals is increasingly becoming a necessity defence and the main element of classification in a series of employment. A general shift to higher educational requirements leads to rising unemployment educational disadvantaged population. Increasing reimbursement for education and experience to the worsening of opportunities for those with lower educational qualifications and no experience in the labour market (ILO, 1999). There is extensive national and international record, which shows that unemployment is much higher and growing faster in less qualified and trained people, and the degree of participation in the labour force is lower in this population.

National and international research on occupational mobility and career development suggests that formal education (school certificate, diploma) of the individual lead to employment (e.g. Ivančič, 2000). Decisive roles in the future development of individual careers within the organisation have the factors other than school certificate or diploma. The focus is on specific management skills for companies represent a competitive advantage, key skills such as innovation, creativity, teamwork ability, communication skills, as well as certain cultural characteristics and social capital that enable the proper integration of man into the

workplace and effectively establishing contacts with the external environment (clients, customers, contractors etc.).

Enforcing flexible unstable employment, breakdown of traditional jobs and their replacement by work areas, or even with the competencies, functional flexibility, promoting the concept of lifelong learning have fundamentally altered the view of individual careers. Authors such as Kolb and Plovnick (cf. Cvetko, 2002), see a career in the form of continuous learning and adaptation and change management. It is therefore a central learning activity, extremely important throughout life. All these factors contribute significantly to the fact that the state, employers and individuals are increasingly recognising the importance of investing in education and training even after the initial formal education. Research findings so far confirm that performance at work and career developments are key factors, which encourage employees to participate in education and learning (Radovan, 2005). Results of previous national examination of the Slovenian population that participate in adult participation (Mohorčič Špolar et al, 2001, 2005a, 2005b) show that the share of population in education increases over time, with most of participation takes place non-formally.

Despite a strong emphasis on the need to improve the educational level of the population in various national development documents, the proportion of employees involved in formal education, rather low: in 2004 near 10%. Half of the staff, who was educated through formal programs, has studied the programs of tertiary education (Ivancic, 2005: 38). From the analysis of the motives for involvement in programs of formal and non-formal education (Radovan, 2005: 95) we can learn that in formal education dominate motives related to their work, progress in their careers, and the joy of learning. On the other hand, in connection with the involvement in non-formal education is dominated by far greater success at work (76% of responses), are quite important but also demands of the employer (50% of the responses to formal education, only 15%) and the joy of learning. Employees participating in non-formal education as opposed to those in formal, are not giving more importance to the progress in their careers. The data also show that non-formal education is more often financed by the employer, while the main drivers of the cost in the formal education of employees themselves, only 22% of the cost is (co-) financed by the employer (Ivancic, 2005: 42).

In this study we determine how the employee involvement in training varies depending on the main demographics (gender, age, education) and to the character of employment, which is limited to activity (standard classification of activities), occupation, size of the organisation, situation at work and the nature of the employment relationship. These standard variables are added in the variable use of reading, writing and numeracy at work.

In this paper, we want to determine whether the factors that the examination of adult participation in education is traditionally regarded as the key determinants of participation – age, education and gender – are confirmed as a key, even when it comes to employment or employment characteristics are those who decide on involvement in education. In addition, we are interested in whether these factors cause any differences in participation in formal and non-formal education.

Method

Statistical analysis

To reduce the number of variables of the characteristics of written practice at work, we carried out factor analysis. To determine the adequacy of our hypotheses, we used simple descriptive statistics such as chi-square, analysis of variance (ANOVA) and multivariate logistic regression.

Sample

Slovenian population aged 16 to 65 years participated in this research. In the sampling procedures to the representativeness of the following indicators was provided: gender, age, education and statistical region. Information on participation in education has been collected by the method of CATI – Computer Assisted Telephone interviewing. The survey was conducted in 2004 on 2809 respondents. In the design of a final set of database, we first excluded from the analysis regular students, in the second phase, we selected a subsample of working population. As economically active, we chose only those who described their current employment situation as an employee in a company, self-employed (in his own business, crafts, in the liberal professions) or employed in agriculture. The final included 1680 people aged 16-65 years.

Method of data collection

For the collection of data we administered survey questionnaire, which was primarily developed under the International Adult Literacy and Lifeskills Survey (ALL). The questionnaire consists of seven lots, namely: (1) General Information, (2) Information about the work, (3) Written practice at work, (4) Education (5) Reading and the computation in a daily life, (6) Information and communication technology (7) Information on the household.

Variable description

In the analysis, we used variables concerning socio-demographic, employment and educational characteristics of participants and characteristics of their reading and writing practices in the workplace.

For the purposes of this analysis, we have merged the "activities of the company" variable into 3 categories:

- Primary and secondary sector (agriculture, hunting, forestry and fisheries, manufacturing, construction);
- Traditional services sector (electricity, gas and water, commerce, catering and sales, marketing, storage and communication);
- Post-industrial services and public administration (financial intermediation, insurance, real estate and business services, community, social and personal services).

In the statistical analysis of the model, we wanted in addition to the standard features of employment such as occupation, activity, organization size and type of employment, include the complexity of the work in terms of their skills in reading, writing and numeracy at work. In order to reduce the number of variables in the analysis, we performed factor analysis. In the factor analysis were included all the original variables with which we measured the frequency and diversity of reading, writing and numeracy at work, ie. in their original values. First, we did principal components analysis, to assess the number of factors. Preliminary results and Cattell's scree test showed that there are four components with eigenvalues more than 1. Together they explained 55.8% of the variance, with only the first component of over 36.1 % share. This suggests that there is one, particularly strong dimension, which is to some extent expected, because the variables involved in the factor analysis, largely consist of reading and writing and less of computational practice in performing their work. The final factor analysis revealed two dimensions (writing and computational). The first dimension explains the use of an advanced practice reading and writing at work, such as use of electronic mail, reading charts and tables, writing letters and correspondence, use of manuals, dictionaries or catalogs and the like. This factor was called the frequency of use of an advanced practice reading and writing at work. The second dimension concerns mainly the use of calculations at work, so we named it the frequency of use of computing practices at work. Similar factor structures were obtained in some other studies (Ivancic & Gnidovec, 2006).

Results

Firstly, we used chi-square analysis to analyze the relationship between observed independent variables to participation in education in general and separately in the formal and non-formal education. The results are shown in Table 1.

Shares in the table represent the percentage of adults involved in education in general, formal education or non-formal education.

Table 1: Comparison of socio-demographic characteristics and job characteristics with participation in adult education in general, formal and nonformal education, 2004 (in %).

	Participation In All Education Formal Educ.		Participation In Non-Formal Educ.	
	N=~1680 N= ~170		N= ~760	
Gender				
Man	46,1 16,3*		77,6*	
Woman	44,2	20,5*	72,0*	
Age				
16-24 years	47,3***	38,8***	64,2	
25–39 years	49,2***	26,0***	76,8	
40-49 years	45,8***	9,8***	76,0	
50–65 years	33,0***	2,7***	72,3	
Education				
Primary education or less	24,4***	12,3***	77,2†	
Vocational education	30,9***	9,1***	71,1	
Secondary education	53,8***	24,4***	73,4	
Tertiary education	73,1***	21,0***	79,7	
Company's activity				
Primary ande secondary sector	33,2***	15,7	74,8	
Traditional service sector	48,9***	19,4	69,9	
Post-industrial and public admin.	56,9***	21,8	75,4	
services Occupation				
Legislators, senior officials, managers	71,8***	14,5*	88,6***	
Experts	75,1***	26,1*	78,8***	
Technicians and other assistants	56,2***	23,3*	73,7***	
Officials	38,6***	23,3*	64,4***	
Service occupations, sales	45,6***	13,5*	75,2***	
Non-industrial occupations	33,2***	14,3*	61,0***	
Operators of machinery and equipment, industrial manufacturers and Compilers	18,4***	10,0*	72,5***	

Elementary occupations	12,3*** 10,5*		73,7***
Work position			
No supervisory responsibility	40,2*** 18,7		72,5
Limited supervisory responsibility	43,2***	20,4	75,2
Broader supervisory responsibility	61,3***	17,7	79,7
Enterprise size			
Less than 20	35,0***	13,0	79,0
20–99	51,3***	22,8	73,3
100–199	47,2***	12,7	75,5
200–499	39,3***	21,6	73,9
500–999	43,7***	18,6	71,9
1.000 and more	53,7***	20,1	74,3
Type of employment			
Permanent	45,5 17,0***		75,9*
Fixed-term	41,2	28,1***	64,8*
On contract	39,6	42,3***	73,1*

p < 0.05; **p < 0.005; ***p < 0.001

Socio-demographic characteristics and employee participation in education^o

Preliminary analysis, in which we studied the participation in education in the entire adult population, is indicating a high statistical relationship between participation in education and socio-demographic characteristics, for example age and education (Mohorčič Špolar et al., 2005a, 2005b). The question is whether such a pattern may be automatically generalized to the population of employees. As noted in the theoretical introduction, we need to take in account of the employees and their employment context, which is often a function of external coercion when it comes to training employees. The inference is that the demands of work require that the training include all employees, i.e. regardless of their socio-demographic characteristics. We can also count on a lot of variability when it comes to the type of education and training and frequency of participation. These are two variables, which are not controlled in this analysis.

Gender comparison, opposite to the whole population in our sample, generally does not confirm a significant difference between men and women in participation in education. The differences become significant only when involvement in formal and non-formal education is viewed in isolation. Women are slightly more likely than men participate in programs of formal education; on the

other hand men more frequently participate in non-formal education and learning, compared with women.

There is a negative correlation among the variables age and participation in education – with increasing age, participation is lower. This is particularly evident in the learning in formal education programs, where a linear relationship with age is highly statistically significant (p <, 001). In contrast, association of age and involvement in non-formal education are not statistically significant. Usually, participation in adult education is related to the attained level of education. Statistical calculations confirm that, in general, employees with higher educational attainment more often attend training as lower educated. If we distinguish between formal and non-formal education, we can again talk about statistically significant differences only in formal, but not in non-formal education. From these findings, we can already suggest that the correlation of socio-demographic characteristics, such as age and education, with participation in education in the context of employment differ to findings in the overall adult population. If both factors are important for participation in formal education, we can assume that participation of employees in non-formal education depends on some other (more relevant) factors.

Involvement in education and employment characteristics

From our theoretical assumptions logically follows that the activities of employment and occupations that are associated with greater knowledge and higher education and qualification requirements, also require additional education and training. Do calculated statistics follow such logic? The data in Table 1 show that most often participate in education employees in post-industrial and traditional services, and less frequently in primary and secondary sector. The differences are highly statistically significant. This again does not apply if participation is viewed separately in formal and non-formal education by industrial sectors. The data in Table 2 do not confirm the statistically significant association either with formal or non-formal education. Highly statistically significant relationship was also calculated for the type of profession. In education, most often participate experts, legislators and managers and less frequently employed in the elementary occupations and operators of machinery and equipment.

For inclusion in formal education statistical significance is slightly lower (p <0.05), and the data show that in formal education programs more often include professionals, technicians and officials, while the category with the least opportunities remain the same for the simple occupations.

When we take into consideration participation in non-formal education, we can also find highly significant relationships to the profession. Occupational group with the best opportunities for non-formal education are legislators and managers, fewer opportunities are reflected in the non-industrial occupational groups (craft occupations) and public officers. Among other occupational groups, relative differences are less significant.

Company size is traditionally stressed as an important factor in access to education and training of employees. As particularly disadvantaged shall be considered employees in small and medium-sized enterprises. Our results do not show such large differences in participation in education according to the size of the organization, although they are statistically significant.

Employees in large companies have more educational opportunities than employees in firms with fewer than 20 employees. However, the same data also show that firms with 20-99 employees are on the second place as for participation in education, i.e. immediately for most businesses. It is significant also that the observations of organization's size separately for formal and non-formal education, does not confirm statistically significant associations.

Contrary to our expectations, the relationship between employment relationships with involvement in education is generally not statistically significant. Statistically significant differences occur when involvement in formal and nonformal education by type of work contract are separately analyzed. The formal education is typically consisting of employees who work under the contract, followed by those working on a temporary basis. For participation in non-formal education, it can be seen that the most representative are permanent employees and employees under contract.

In Tables 2, 3 and 4 are shown the results of analysis of variance (ANOVA), with which we examined differences in employee participation in education in relation to frequency of use of reading, writing and accounting practices at work.

Table 2: Mean values, standard deviation and analysis of variance (ANOVA) for the use of clerical resources in relation to adult involvement in education (all forms)

	Yes		No		ANOVA
FREQUENCY OF:	M	SD	М	SD	F (1, 1640)
Written sources and activities	,41	,92	34	,87	286,39***
Computational sources and activities	,06	,86	05	,89	6,89*

Note: Arithmetic means represent standardized z-value.

^{*}p < .05; **p < .005; ***p < .001

Table 3: Mean values, standard deviation and analysis of variance (ANOVA) for the use of clerical resources on the involvement of adults in formal education

	Yes		No		ANOVA
FREQUENCY OF:	M	SD	M	SD	F (1, 962)
Written sources and activities	,51	,92	,24	,93	10,74***
Computational sources and activities	,08	,86	,06	,88	,03

Note: Arithmetic means represent standardized z-value.

Table 4: Mean values, standard deviation and analysis of variance (ANOVA) for the use of clerical resources on the involvement of adults in non-formal education

	Yes		No		ANOVA
FREQUENCY OF:	М	SD	M	SD	F (1, 988)
Written sources and activities	,37	,94	,09	,88	16,94***
Computational sources and activities	,08	,87	,02	,89	,77

Note: Arithmetic means represent standardized z-value.

The results show statistically significant differences in education and training particularly in the field of reading and writing practices. It is more than obvious that the employees, who at their work use more complex reading and writing practice, get more training than other employees. However, even in this case calls into question the distinction between formal and non-formal education. Rare use of an advanced practice of reading and writing at work is negatively related to involvement in formal education, but not with involvement in non-formal education.

While the coefficient is very low, but positive, which in turn can be concluded that in non-formal education also participate employees in jobs with low requirements for cognitive skills.

As regards the frequency of use of computing practices at work, according to the calculated statistics, we can conclude that this variable is not linked either to the inclusion in the formal or non-formal education. Only when talking about inclusion in education in general, we see a weak positive relationship with employees, which often use such practices, and weak negative relationship in the category, which are not used often.

^{*}p < .05; ***p < .005; ****p < .001

^{*}p < .05; ***p < .005; ***p < .001

Conclusions and observations

Research has shown that when considering the factors of participation in education employment environment is particularly important. At the level of analysis of education in general, it can be stated that the main factors of participation are age, professional status and size of the company. The higher the age of the employees, the less the likelihood of inclusion in education. The likelihood of participation in education is reduced also by the employment in one of the following occupational groups: elementary occupations, operators of machinery and equipment, officials and trades work. Even the size of the organization of work is important, but we did not observe any linear effect. We confirmed previous findings about the most limited educational opportunities for employees in organizations with fewer than 20 employees. Similarly to other studies (Ivancic, Gnidovec, 2006) we noticed the importance of the complexity of work involved in education is confirmed also by the new variable 'frequency of use of an advanced practice reading and writing at work', except for frequency of use of computing practices at work.

The characteristics of the employment environment are less important for participation in formal education. Age remains the main factor for inclusion in the formal education of employees; most often young adults attend it. Effects of educational attainment are lower than we initially expected, in general employed with the lowest educational attainment more frequently participate in formal education than more educated. The need to retrain adults with lower educational attainment is clearly a result of the restructuring of part of the economy, which is slowly being phased out the need for less-skilled labour. Finally, we conclude is that formal education is more significant for employees with less stable employment, which is not surprising, since access to better and more steady jobs is associated with better educational attainment. Depending on the specific situation of the Slovenian labour market, this feature can also be due to the frequent practice of more flexible employment, which most commonly affects the same population that participate in formal education.

As regards participation in non-formal education, our results show in particular the impact of the complexity of work. Employees, whose work increasingly demands more complex forms of reading and writing, are also more likely to participate in education. Among the findings concerning the relationship of participation with individual characteristics, we should stress on disadvantaged women compared with men. In our estimation, this is a result of impairing access of women to professional positions, which are associated with better opportuni-

ties for non-formal education and training. Same as for formal education, lowest age category also more frequently participate in non-formal education.

We've also found that education does not directly affect the likelihood of participation of employees in non-formal education, but better education opens the way to demanding professional positions, and thus to greater opportunities for non-formal education and training.

The findings highlight the need for two types of measures to increase employee involvement in education. On the one hand, the necessary incentives to employers to invest in education and training of older categories of employees and employees in professions that provide fewer opportunities for education. On the other hand, it is also necessary to introduce incentives for employees in less demanding work, to prepare themselves to invest in their education and training, so they can receive confirmation that their education has paid-off. Although the proportion of employees involved in non-formal education who responded that they participated because of the joy of learning, rather large, however, is dominated by external reasons, which include an expectation of reimbursement for investments in education.

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Zahtevi radnog mesta i participacija u različitim formama obrazovanja odraslih

Rezime: U ovom članku autor želi da utvrdi na koji način učešće zaposlenih u daljem obrazovanju varira u zavisnosti od glavnih socio-demografskih karakteristika i osobenosti posla, kao što su zanimanje, položaj na poslu, veličina organizacije u kojoj zaposleni radi, vrsta zaposlenja i upotreba veština pisanja na poslu. Rezultati pokazuju da su glavne determinante participacije u obrazovanju godine starosti, profesionalni status i veličina preduzeća. Autor napominje da značaj posmatranih faktora varira u zavisnosti od toga da li su zaposleni uključeni u programe formalnog ili neformalnog obrazovanja.

Ključne reči: formalno obrazovanje, neformalno obrazovanje, učešće u obrazovanju, radno mesto.

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