

## The Regression Model For Adults Participation In Non-Formal Education: *Public vs. Private Sectors*

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**Abstract.** This paper reveals both theoretical and empirical data on adults' participation rates in non-formal education activities in Lithuania on the basis of public and private sectors. Firstly, the chosen phenomenon is discussed in theory, presenting some relevant schools of thought, such as Functionalism and Conflict theory statements on the importance of participating in non-formal education processes through the life-span. Secondly, authors of this paper deal with some statistical and mathematical evidence about reasons that make the meaning are meaningful in participation/non-participation within such kind of education. The multiple regression analysis is discussed and interpreted leaving some space for readers' reflection on what other influential factors may cause adult decision making to participate in non-formal education in the contemporary world.

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**Short title:** Regression Model.

### Introduction

Education, especially in the context of some particular social tendencies, plays almost essential role in developing economics of society, social and political growth [1-3]. It is impossible to put education aside from all what is happening within education processes and social contexts as well, i.e. demographic changes, progress of technologies, economy ups and downs, political changes and social transformations [4-5]. Thus, not learning for life, but lifelong learning paradigm becomes extremely important for a person, who wants to remain employed and competitive.

However, there's not much place or even attention paid for adults' non-formal education in Lithuania these days, especially in regards with education as to a separate field, which does not have a long term legal regulations and traditions neither to prepare pedagogues or manage adult education.

Consequently, the research object is the main factors influencing adults' participation in non-formal education on the basis of public and private sectors. The goal is devoted to analyze and describe most important factors/regresses for either participation or non-participation of adults in non-formal education activities in Lithuania.

### 1. Learning activities. Review of paradigms

Learning activities are important in any period of life when a personal goal is set to upgrade personal features, both civic, social and professional skills along with competences as well [6-7]. In this regard adult education is mainly identified as the tool for developing and sustain *human capital* [8]. This is exactly what is stated in the European strategic and growth scenario plan for the forthcoming decade – *Europe 2020* - which stresses the importance of education in the future society, fulfilled with intelligent and sustainable economy [9]. Besides, in this strategy we may follow the strive of adults (aged 24-35) to learn and constantly upgrade their own skills while satisfying both self-realization needs and the demands of labour market. Functionalists (Durkheim, Parsons, and Giddens et al.) put the emphasis onto adults' successful integration into the labor market and discuss the education as one of the functions – favorable socialization – through effective individual's input into economy growth of the society. They would examine education on the basis of *consensus* perspective: analyse society in terms of how it is maintained for the common good [10]. According to the functionalists point of view, education helps maintain society by socialising young people into values of achievement, competition and equality

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of opportunity. Skills provision is also important: education teaches the skills for the economy; moreover, education allocates people to the most appropriate jobs for their talents, using examinations and qualifications.

Yet on the other hand, education could be seen as a powerful tool to consolidate different social groups or arise even more tension among them. Especially *social conflict* theory [11] deals with such rather paradoxical situation: globally, education is also regarded as an essential tool for human development and poverty eradication; however, efforts to widen access to education need to focus more on how education can affect conflict [11]. As social conflict theorists would argue, that there is an urgent need to develop methods to track whether *progress in education* may also create tensions that could spark or exacerbate conflict; it must be understood as well that education can be either a part of the problem or a part of the solution.

According to the European statistics and indicators (OECD) [12], investing in education and training after leaving initial education is essential for upgrading the skills of the labour force. Globalisation and the development of new technologies have broadened the international marketplace for goods and services. As a result, competition for skills is fierce, particularly in high-growth, high-technology markets. An ever-larger segment of the population must be able to adapt to changing technologies, and to learn and apply a new set of skills tailored to meet the needs of the growing services industries, in order to function effectively [12]. Adult learning, as a part of lifelong learning, is considered crucial for coping with the challenges of economic competitiveness and demographic change, and for combating unemployment, poverty and social exclusion, which marginalise a significant number of individuals in all countries.

Therefore rapid changes in almost every human life's sphere demand adequate individual's educational transformations; thus the whole education system along with its institutions seek for a new quality in order to prepare people to live and work effectively in a changing society [13]. Having this aspect in mind, we may witness even higher education institutions' quite obvious orientation towards the needs of labour market rather than unleashing human's self-realization and creativity. All this is caused mainly by economic and some ideological reasons. Therefore, both formal and non-formal adult education in most cases are interpreted through *socio-cultural* and/or *constructivist* points of view, when *socio-cultural* deals with the role of more specific contexts within learning processes (e.g. emotional, organizational, physic, cultural etc.), while on the other hand *constructivist* - reveals a learner's active participation and the reconstruction of knowledge.

As it is stated in UNESCO (2006) documents on non-formal adult education [14], for adolescents in particular, non-formal educational activities may greatly expand their opportunities for learning. In situations of conflict, many

adolescents will have missed years of formal schooling and may not want or have the time to attend primary classes with younger children [14]. As a consequence, they may drop out of the educational system completely if other options do not exist. Some may want to enter the formal school system but may be prevented from joining because of space constraints or due to legal age restrictions. Adolescents who do not have readily available and accessible educational options are much more vulnerable to dangerous situations, such as recruitment to armed militias, engagement in illegal activities and involvement in unsafe income-generating activities.

Non-formal education therefore serves as a positive alternative, and can often be a vital protection strategy. In this way non-formal adult education in Europe is well known and clearly identified as sociocultural phenomenon both sociologically and educationally. Such education is dedicated for several purposes: a) give an impulse for personality's growth, its active citizenship and solve issues of peoples' employability rates within modern labour market; b) guarantee individual's socialization favorability [2, 7, 15]. Besides, Lithuanian experience and government movements show the acceptance of European standards for adult non-formal education – to form a person, through upbringing the competences, who is able to become an active role player in the society and also a person who is willing to satisfy the needs of knowledge, education, and self-realization [16].

## 2. Research: materials and methods

Within this research, that was carried out back in 2011-2012 among Lithuanian adults from public and private sectors, the main task was to identify main factors that could be a cause for adults' participation in non-formal education activities; also their attitudes towards lifelong learning, course content, experienced obstacles etc. The most important feature of this survey – the scientific attention to participants' expectations, reasons for learning and the ways that adults learn in today's society.

While preparing the research instrument, firstly the international project *LLL2010 – 2010* was taken into account with some of its methodological suggestions and way-outs to explore adults' participation in non-formal education [17-19]. Also the questionnaire was constructed along with the previous experiences of surveys such as: *Applied Research on Adults' Education* [20], *The Adult Education Survey* [21] and *Significant country differences in adult learning* [22] demographic indicators.

The questionnaire was sent to adult learners throughout Lithuania who were targeted on purpose, having their contacts from several learning centers (e.g. *JSC Pačiolis* etc.). Statistic data was analyzed by using *SPSS* package [23] with its descriptive methods, *Chi* test, *Student's T-test*, *Factor analysis* and *disperse ANOVA analysis*, *Spearman Rho* correlation and multiple linear regression analysis, when adult partici-

pants were treated as separate cases who make much influence to a non-formal adult education processes [24-25].

The reliability analysis confirmed that the questionnaire both internally and externally is constructed appropriately, i.e. valid and homogenous (Cronbach  $\alpha=0.58$ , ANOVA F test=131.81,  $p<0.000$ ). In this case ANOVA  $p$  mean shows those regresses that are closely related with dependant variable: if value  $p<0.05$  then the regression model is considered to be sufficient enough for that kind of statistics. *Factor analysis*, using the method of *Principal Components* and the rotation of Varimax along with KMO (Kaiser-Meyer-Olkin) normalization (0.65) and Bartlett’s test ( $\chi^2=1125.062$ ,  $p<0.000$ ), has revealed that most of identified components are quite important in this research.

The *sample* of the research was based on *non-probable and convenient sampling* principle, when picking those who keep learning through their life-span (in sum  $n=613$ ). According to the work of several sociologists. for example Ref. [26], not only the ammount of participants but their active participation ratio must be present in such kind of researches. Thus in this study we paid much attention on contextualization of problematic field and correlation between empirical indicators and it was more quolitative approach rather than quantitative [27-30].

### 3. Research ethics

The research was conducted following/matching all necessary ethic requirements, when main principles were taken into account:

- a) research participants’ free will to be a part of the survey;
- b) all data presented is strictly used for only scientific purposes and confidentiality is guaranteed;
- c) the same level of communication with the respect of human rights based on humanistic values and the equal partnership between researcher and participant was established;
- d) research participants are updated with the data that was

obtained after making both quantitative and qualitative approaches within analysis of chosen problematic field.

### 4. Results

In mathematical statistics, multiple linear regression in most cases is defined as the regression that attempts to model the relationship between two or more explanatory variables and a response variable by fitting a linear equation to observed data, see Ref. [31]. Every value of the independent variable  $x$  is associated with a value of the dependent variable  $y$ . According to M. Friendly [32], using of multiple linear regression within social sciences let the researchers to prevent/avoid of some systematic flaws: for instance, the evaluation of all tests’ answers/items, especially in cases of ANOVA, MANOVA, ANCOVA or MANCOVA tests. For more detailed info – see Refs. [25, 32]. Putting into other words, such kind of analysis, when we have too many variables, helps to understand the structure of correlations among those variables, i.e. the importance and meaning of participants’ choices for dependent variable – towards constant [24, 32].

Therefore, after making the Spearman Rho correlation analysis, the existence of correlation between some variables was set; thus it has become highly important to assess the consistency of those correlations. The multiple linear regression model was used, especially in the context of public (Yv) and private (Yp) sectors as in this research several independent variables were of much importance. Only significant values are presented in this paper.

Results are expressed by the following equation of multiple linear regression:

$$y = \beta + \beta_1x_1 + \beta_2x_2 + \dots + \beta_kx_k \tag{1}$$

Therefore symbols, presented in this equation, have the following explanation: Y (constant) – teaching sector;

Table 1. Symbols and explanation.

$X_1$	gender	$X_{13}$	projects management courses
$X_2$	education obtained	$X_{14}$	accountancy and finance courses
$X_3$	living/working place	$X_{15}$	learning for better professional performance
$X_4$	respondent’s age	$X_{16}$	learning for knowledge
$X_5$	duration of participation in non-formal education	$X_{17}$	learning because of duties/responsibilities
$X_6$	learning areas	$X_{18}$	learning for the certificate
$X_7$	learning languages	$X_{19}$	learning for not losing a job
$X_8$	IT literacy and skills upgrading	$X_{20}$	learning because of meeting with others
$X_9$	knowledge deepening in entrepreneurship	$X_{21}$	organizers of non-formal education
$X_{10}$	art/craft courses	$X_{22}$	willingness to participate in non-formal education
$X_{11}$	health courses	$X_{23}$	obstacles
$X_{12}$	psychology courses	$X_{24}$	relation between personal intentions and chosen courses

$$Y_v = 0.013 \cdot (B) + 0.206 \cdot X_8 + 0.117 \cdot X_{12} + 0.143 \cdot X_{13} - 0.250 \cdot X_{14} + 0.120 \cdot X_{24} \tag{2}$$

$$Y_p = 1.974 \cdot (B) - 0.206 \cdot X_8 + 0.117 \cdot X_{12} - 0.143 \cdot X_{13} + 0.250 \cdot X_{14} - 0.109 \cdot X_{19} - 0.120 \cdot X_{24} \tag{3}$$

After getting the regression's numbers the equation of multiple linear regression was set for public sector (when model's  $R=0.54$ , ANOVA  $F=9.029$ ,  $p<0.000$ ), including only statistically significant and influential variables - see Eq.(2) and Eq.(3). Therefore we may observe that much of influence in public sector is made by learning areas, especially choosing such courses as IT literacy, Psychology, Projects' management, and accountancy. Also one of the regresses was the relation between intentions that learners would have and what courses they choose. All of this is much clearly demonstrated in a figure bellow where normal probability plot is presented (see Fig. 1).

Again it is obvious that variables, mentioned above, crossing the line, are significantly influential for adults' participation within non-formal education, while other variables have scattered quite away and are not considered as significantly important ones.

Respectively regression equation was set for private sector as well (when model's  $R=0.54$ , ANOVA  $F=9.029$ ,  $p<0.000$ ) - see Eq. 3.

Also presenting the normal probability plot for the private sector, we may see quite similar distribution of variables, except one that differs from the public sector case, i.e. the reasons of participation in non-formal education (see Fig. 2).

Thus, after having these equations, it becomes much easier to analyze some of variables' direct influence in regard of teaching sectors. The regression analysis has shown existing differences between those two sectors, especially having in mind learners – adults – decisions whether to choose or not non-formal education activities/courses. Even though there were only few significant differences within public and private sectors, however, in both cases much influence to the organization/management of adults' non-formal education is made by:

- i) learning areas that adults would choose (i.e. IT literacy and skills upgrading  $p<0.000$ , psychology  $p<0.005$ , projects' management  $p<0.000$  and accountancy –  $p<0.000$ );
- ii) relation between personal intentions and chosen courses ( $p<0.002$ ).

Also it was found that in private sector, as the significant regress, is one of the reasons that force adults to choose non-formal education courses – learning for not losing a job ( $p<0.05$ ). Thus it is one of the major influential variables within private sector that separate both sectors and reveals some further tendencies of human vs. social capital expression.

### Conclusion

1. Non-formal adult education is defined as the main socio-cultural instrument to form a person, through upbringing his/her competences, who will be able to become an active role player in the society and also a person who is willing to satisfy the needs of knowledge, education, and self-realization.
2. Multiple linear regression analysis has revealed some significant differences between public and private teaching sectors and that the most important reason for adults to become a lifelong learning participants is rather highly expressed fear not to lose a job and this fact is mainly predominant within private sector.
3. Public sector differs from a private in few aspects as well: people become learners because of more qualitative work, meeting new friends and socialization ( $N=57$ ,  $t=4.10$ ,  $p<0.000$ ), duties at work ( $N=35$ , ANOVA  $F=21.66$ ,  $t=55.76$ ,  $p<0.000$ ).

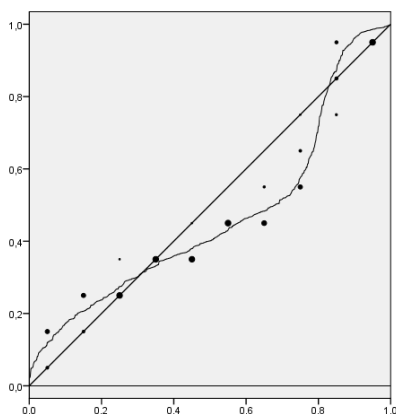


Fig. 1. Normal probability plot for adults' participation in non-formal education (case of public sector).

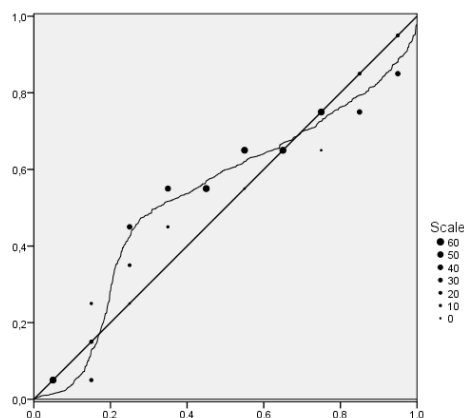


Fig. 2. Normal probability plot for adults' participation in non-formal education (case of private sector).

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