Evaluation Models of Investments to Education: Application Peculiarities

Vilda Gižienė, Asta Vasiliauskaitė

Kauno technologijos universitetas
Laisvės al. 55, LT-44309, Kaunas

XXI century is referred to as the century of a knowledge economy where the competitive advantage is determined not only by the size of a country, its wealthy natural resources and financial capital but also by the education and the level of accumulated knowledge of the society (Gallup, 1998). This implies the fact that economic development of a country is increasingly dependent on the investments to human resources preserving and educating intellectual capital. Many foreign scientists keep on analysing in what way human resources make influence on the economic development, and their works prove the importance of educational investments as the factor to develop country's economy and increase competition. Accumulated human resources turn to be the essential factor of the income and career perspectives of individuals, and are relevant when estimating the income level and its repartition.

In modern economy investments to human resources are constantly increasing which causes a top issue of Return of the Investments. In many countries calculations of the educational investment indexes are being done, and according to them the earnings differentiation by age, profession and sex are explained.

When analysing education and career preparation three main issues are focused on, that is the research of economic value of education and career preparation in separate enterprises; working out the relation between educational repartition, income repartition structures and optimal human resources development strategy. To solve above issue the estimation of educational investments becomes essential. Students, their families and the government function as reasoned investors devoting their limited assets for the education only under the condition that this will bring profit. The researches are dedicated to summarizing the methods of income, expenses and measuring educational profitability level, and their application.

Keywords: *investments, return of investments, human resources, the rate of personal and social return, university education.*

Introduction

For a long time economic growth was supported by an extensive use of various resources. However, a modern economy cannot develop in such a way anymore, as increment rates of many resources do not meet ambitious development projects. Nowadays there are obvious shortcomings of quality, natural production, and human resources. Such circumstances cause the refuse of extensive development principles and focus on the intensive development models. In return, this demands target necessary resources and evaluate in detail the efficiency of the usage of the resources.

Intensive development models can be implemented only with attracting highly skilled specialists.

In the knowledge economy the competences are becoming a critical resource that determines the position in the competitive actions. But, on the other hand, the approach that a competence is the same as a resource results in that educational and various educational programmes are considered as a specified subgroup of investment projects. The efficiency evaluation of such investment projects turns to become one of the relevant fields of scientific and practical researches.

The approach that resources targeted to acquire education and competences must be evaluated by using the same investment evaluation criteria as these evaluating production purpose projects is hardly accepted in the countries where education for many years had no direct connection with better financial perspectives. But, on the other hand, in this environment no emphasis that competence training is expensive and long lasting process was done, either. All post-Soviet countries can be referred to this type of country. In recent decades the education of skilled specialists in these countries did not become a strategically key task. The management policy of human resources turned to be so short-term that now many entrepreneurs are complaining that the shortage of highly skilled employees is very considerable.

It is obvious now that evaluation parameters of educational investments are relevant either in formating educational and study policy, or developing relations between employers and employees. The importance of educational investments for growing economic countries, and the variety of probable projects of such kind resulted in the subject and objective presented in this research.

The subject of the research – the efficiency evaluation methods of educational investments.

The objective of the research – to find out in what way efficiency evaluation models by investing to competence education can be applied in rapidly growing economic countries, and what tendencies of that are recognized in Lithuania.

The methods of the research – scientific literature analysis and generalization.

Evaluation presumptions of education as the investment project

Education is one of the most important factors of nowadays knowledge economy development (Palacios,

2004). But, however, to develop education and science fields considerable and long-term investments are needed. University education is especially expensive valuable. Universities need spacious classrooms, plentiful libraries and laboratories, up-to-date computer, other technical and technological facilities, highly skilled specialists. On one hand, educational investments should be stimulated, and on the other hand, their efficiency should be evaluated. In the environment of knowledge economy the variety of types of competence education is very dynamic, that is why evaluation experience and the methods applicable in this field can hardly bring an unambiguous answer. This leads to the fact that evaluation of educational investments is a complicated issue from the practical and scientific point of view.

In a real life only few make a decision to enter the university following calculations that show the efficiency of educational investments. One way or another school graduates perform some evaluation (of their parents or friends) and foresee the possibility to receive additional income after the university graduation, and the necessity for future educational costs. For the evaluation of these costs impersonal information must be applied (Sileika, Tamasauskiene, 2003). With the accelerating the lifetime the evaluation importance increases. In future the option to study or not will be more based on some evaluation models. Such evaluation methods formulation and researches in this field will turn to be a relevant assistance for a person to make a decision.

While analysing educational and qualification investments it is essential to work out the information systematisation model with the aid of which it could be easier to recognize money flow, that is to find out what kind of costs are experienced by a student (investor), and what benefits are if he has education or not because it results in the fact whether Labour market will accept his competences, and whether they will be paid for. Many investors participate in the process of human resources – investor itself, his parents and employer. The interests of the investors are different. Some competences acquired cannot be paid for as they can be too expensive to occupy a particular position. Thus, the resources used to acquire the competences can be considered as ineffective.

Human resources accumulation process can be viewed as a conventional economic model where a decision is considered as an investment project (Psacharopoulos, 1995). An individual invests to the education expecting to gain a great benefit from it in future. If the costs are not covered properly the investments will not bought off. A conventional economic model is oriented to a quantitative evaluation of educational expenses and benefit gained. An individual and society are willing to know how much to invest to education and what types of the investments are.

The evaluation of educational investments is based on money flows. Their estimation is a rather complicated issue as an accurate prognosis is needed to be done of how much money an individual will spend for his study per year, what earnings he will achieve after the university graduation, whether the earnings difference between a person with university and not university education will be so significant that the investments would be recog-

nized beneficial. The costs for the competences to acquire can be divided into two main types – direct and indirect (Lemelin, 1998). The essential difference when evaluating the investments to human resources and tangible capital lies in that the estimation of the benefit of human capital is very difficult process. This result in the fact that the investments are deposited in the early period of life, and the benefit is employed for the entire life, that is the period between the investment deposits and positive money flows gained is very lengthy. This leads to not accurate and risky evaluation; human capital is not realizable; the efficiency of educational investments is evaluated in accordance with social factors. This is the reason why classical investment evaluation methods must be modified to set the specific elements that influence educational investments, that is sex, age, life cycle levels (study period, employable period and retirement).

While evaluating the investment efficiency one of the foremost issue is a capital cost factor that determines the price of each source of sponsorship. This identifies what the sponsor of educational investments will be. Financial resources for a study process are directly or indirectly channelled by the government, business, individuals and their sponsors.

Summarizing the evaluation experience of educational investments, it can be stated that analysing the issues of such kind one can identify direct and indirect money flows, their sources, social and economic benefit, apply a proper method according to the specific elements.

The evaluation methodology of the investments dedicated for education and qualifications

The theory of human capital is a new concept of modern theory of economics that analyses the labour force creation and quality issues. American scientists (S. Becker, B. Weisbrood, D.Mincer, L.Chasen and T.Schultz) are considered to be the pioneers of this theory. These economists formed the core of the theory, which turned to be the subject of scientific researches.

After inspecting the researches analysed by the theorists that emphasise a positive impact of qualifications and education to the issues of personal and economic prosperity potential, it can be stated that education becomes one of the relevant production factors whose allocations can be considered as implemented investments. Once the education is treated as an investment subject, the efficiency of these investments must be analysed, as well.

Every investment project starts from the concept or problem formulation. For concept implementation and problem salvation particular means are to be prefigured. The latter ones become the basis to implement the project, and that leads to purpose achievement.

In scientific literature two main groups of investment project efficiency evaluation – static and dynamic methods – are distinguished. In static project efficiency evaluation methods time price is not taken into account whereas in dynamic methods discount is a necessary prerequisite (R. Norvaišienė, 2004).

Investment projects can be of various types – some can be dedicated for the establishment of a new company,

others serve as the new product and new market entering projects, efficiency enlargement or production development projects. Investments to the human capital can also be ascribed to the investment project.

As for the investment project efficiency evaluation the main methods are ascribed for the human capital evaluation, as well. These evaluation methods are very similar to the investment projects.

Having analysed educational investments evaluation methods suggested by foreign authors (Gohn and Geske, Arai, Psacharopoulos, Antony Davies, Mincer, J. Appleby, M. Fougere, M. Rouleau, K. Marshikova, Hiroshi Ono) they can be divided into following groups – Net Going Value, Rate of the Inner Return and a Short-Term. Different authors suggest different application forms both for net going value calculations, and these for the Rate of the Inner Return. The longer person works, the more beneficial dividends paid for education are. The Rate of the Inner Return shows what the largest purchase price would be acceptable for the investments to be profitable. A Short-Term method is very easy to use. This method allows calculating the Rate of the Investments Return of a year, but does not estimate annual earnings growth. The estimation of the Rate of Investments Return for a short-term is more accurate than the evaluation by the long-term profitability instruments. The advantage of a short-term method lies in the calculation of the Rate of Investments Return one can apply static earnings data. The method records a short-term earnings difference between an employee with a university education, and that with a high one.

It must be noted that first attempts to apply investments evaluation essentials with choosing a particular study form or trend are described in the module of Mincer (1974).

The scientific researches of a similar type experienced a robust take off in the XX century. This can be related with a notably growing demand of skilled specialists caused by the intensive economic development. Besides, it is connected with a earnings formation strategy because changing the principles of business organization the procedures of employee recruitment must be also revised. Summarized scientific evaluation methods of the investments to human capital are shown in Table 1.

Table 1

Methods of evaluation efficiency of human capital investments

Author	Description and applicability of the method	Calculation model
Net Present Value (NPV) method		
Gohn and Geske (1992), Arai (1998)	*NPV method:* assesses costs incurred, difference in earnings of university graduates and non-university graduates, number of years during which individual expects to obtain some benefits (before leaving labour market, retiring on a pension) Method depends on discount rate. Education present value depends on presumable labour age, the higher the age, the more believable, that NPV will be positive. Direct and indirect education costs are not excluded. Potential growth of earnings is not assessed.	$$V(i) = -C_1 - \frac{C_2}{1+i} - \frac{C_3}{(1+i)^2} - \frac{C_4}{(1+i)^3} + ... + \frac{R_T}{(1+i)^{T-1}} \quad (1)$$ i – discount rate, T- years, during which individual expects to obtain benefit.
Antody Davies (2004)	*Modified NPV method:* evaluates not only costs and future benefits, but also the growth of earnings, unemployment rate, possibility of successful participation in labour market for university graduates and non-university graduates, annual tuition fees, risk and inflation. It is difficult to determine value of unemployment rate, and earnings growth extent. When applying this method instead of discount rate the difference between risk rate for long-term investments and inflation rate, which is difficult to evaluate, is used.	$$NPV = \sum_{t=1}^{n} \frac{E(f_t)}{(1+IRR)^t} = \sum_{t=1}^{n} \frac{w_t^c p^c(1-u^c) - w_t^h p^h(1-u^h) - T_t}{(1+IRR)^t} = 0 \quad (2)$$ r- risk rate for long-term investments; π – inflation rate. w_t^c – annual growth of a wage of university graduates (%); w_t^h – annual growth of a wage of non-university graduates (%); p_h^c – possibility of participation in labour market for university graduates; p_c^h – possibility of participation in labour market for non-university graduates; u_h^c – unemployment rate of university graduates; u^h- unemployment rate of non-university graduates; T_t – annual costs for studies.
Inner Return Rate (IRR) method		
G. Psacharopoulos (1995) Arai (1998)	*IRR for private individual:* assesses personal benefit from education (difference between earnings of university graduate and non-university graduate), direct university education costs, earnings of individuals having only high school education. Life cycle of individual is used. Inner return rate for investments is equated to discount coefficient, NPV = 0	$$\sum_{t=1}^{42} \frac{(W_u - W_s)}{(1+r)^t} = \sum_{t=1}^{5} \frac{(W_s + C_u)_t}{(1+r)^t} \quad (3)$$ $(W_u - W_s)$ – is the earnings differential between a university graduate and a secondary school graduate; C_u – direct costs of university education (tuition and fees, books,etc); W_s – wage of high school graduates.

Author	Description and applicability of the method	Calculation model
G. Psacharopoulos (1995)	**IRR for society:** evaluates difference between earnings of university graduate and non-university graduate, lease of buildings and wages of professionals.	The main difference between desirable return rate for private person and for society is such, that desirable return rate for the society is calculated taking into account costs designated to education by the state, and society.
Antody Davies (2004)	**Modified IRR method:** evaluates costs and future benefits, growth of earnings, unemployment rate, possibility of successful participation in labour market for university graduates and non-university graduates, annual tuition fees. The higher IRR, the more profitable investments into education.	$IRR : \sum_{t=1}^{n} \frac{E(f_t)}{(1+IRR)^t} = \sum_{t=1}^{n} \frac{w_t^c p^c (1-u^c) - w_t^h p^h (1-u^h) - T_t}{(1+IRR)^t} = 0$ (4)
Short-term period method		
Mincer (1974) G. Psacharopoulos (1995) J.Appleby, M.Fougere, M.Rouleau (2002)	**Wage function method or Mincer's method:** individual wage is calculated as natural logarithm, which depends on plenty of independent variables, such as period of studies, practice, experience, working time, etc.. For determination of personal education benefit econometric methods are used. Method does not analyse costs, due to that reason this method is not cost-income method.	$$\mathbf{lnY = a + bS + cX1 + dX2 + eX3 + ...}$$ (5) S – years of studies; X1 – practice; X2 – experience; X3 – time, when individual is working; a,b,c,d,e – coefficients.
G. Psacharopoulos (1995) K.Maršikova (2004)	**Short-term method:** evaluates difference of earnings between university graduates and non-university graduates, and duration of university studies. Method allows making approximate calculations of education benefit for one year. An individual applying this method and statistical data may easily calculate in which University and which speciality to invest.	$$private\ r = \frac{\bar{W}_u - \bar{W}_s}{5(\bar{W}_s)}$$ (6) $(W_u - W_s)$ – difference in earnings of university graduates and secondary school graduates ; W_s – wage of persons with high school education.
G. Psacharopoulos (1995)	Adapted short-term period method – **inverted costs benefit method.** Annual benefit is equated to educational investment sum multiplied by earnings growth of the year of calculation (e.g. 10 percent) The method allows evaluating annual wage growth, and facilitates forecasts.	$$(\bar{W}_u + \bar{W}_s) = (0,10)\left[5(\bar{W}_s + \bar{C}_u)\right]$$ (7) (C_u – direct university education costs (fees for studies, books and other);
Hiroshi Ono, 2002	**Adapted short-term period method:** investments return rate for men ad women is calculated by comparing earnings of the same gender.	$$ROR_{men} = \frac{Y_{c,men} - Y_{h,men}}{S \times (Y_{h,men} + d)};(8) \qquad ROR_{women} = \frac{Y_{c,women} - Y_{h,women}}{S \times (Y_{h,women} + d)}$$ (9) ROR –rate of return; Y_c – average earnings of university graduates; Y_h – average earnings of high school graduates; S – years of university studies; d – direct costs, which are incurred by individual during one year of university studies.

Investment return from education for individual and state depends on human capital supply and demand. Individuals wishing to convert their knowledge and capacities into bigger earnings will be interested in seeking for appropriate education. In fact they will allow the contribution of particular forms to financing of acquiring process of necessary capacities. Of course, these processes are more actively than other investment projects influenced by various social factors. Such factors as intellectual and physical abilities, motivation, and social-economic environment have some impact on education investment return rate (Fox, Loon, Whitton, Tunny, 2001).

To apply methods analysed (table 1) it is necessary to identify money flows, i.e., to determine costs incurred and benefit obtained. According to Lemelin (1998), when talking about education costs and benefit, not only social or costs incurred and benefit obtained by an individual, but also benefit obtained and costs incurred by a state, are necessary to assess. Parameters analysed may be classified as direct and indirect costs as well as income, incurred by community, an individual himself, and government. Classification of money flows specific to educational investments is presented in Table 2.

Table 2

Classification of money flows specific to educational investments

	SOCIAL (of community)	PERSONAL (of student)	STATE (of government)
Costs	**Direct costs**: total educational costs consist of wages for academics, University maintenance costs and capital value. **Indirect costs**: Product and service costs, which are not assessed directly.	**Direct costs**: total value of tuition fees and related costs. **Indirect costs**: income lost because student during the studies is not able to work and earn money. Rent costs.	**Direct costs**: Subsidies paid to students and institutions. Ensure lower interest rate of loans for studies and is a warrant of credit procuration. Scholarships to very good students are awarded. **Indirect costs**: income-tax is not sufficient because students are not working and not earning.
Positive money flows	Additional benefit for entire society, due to increased wage with respect to education.	Difference between earnings, which individual would get as non-university graduate and as university graduate.	Higher taxes from bigger earnings are paid to the state.

Each individual has the right to choose whether to make investment to nurture his capacities, or not. If assessing costs and prospetctive benefits, a benefit will be higher than costs, so it is worth to make investments. Intangible investments are difficult to evaluate, since the scope of benefit, after individual has obtained education, is not known. The benefit to an individual highly depends on his personal features, ability of entrenching in labour market, of revealing his skills, of using knowledge obtained, depends on age, employer's attitude, University image, etc.

Analysing the efficiency of educational investments it is important to carry out research on the basis of which it would be possible to forecast already today, what expectancies of individuals are in respect of efficiency of investments into capacities' acquisition. Analysis of such expectancies is especially significant under growing economy conditions in Lithuania. Over recent decades the cost of labour force in the state was ridiculously low.

After the analysis of advantages and disadvantages of evaluation methods of educational investments efficiency, the conclusion can be made, that the conditions of growing market are best evaluated by short-term period method (adapted and adjusted for calculation of rate of return for women and men) of Hiroshi Ono (2002). This method was used in performance of empirical research in OECD countries (Hiroshi Ono, 2002) and was applied for research made in Lithuania.

Research

Political, economic and social reforms, started at the beginning of 1990 in Lithuania, resulted in essential changes in all society's life fields, including wage labour field: the decrease in output necessarily affected the decrease of employees number and growth of unemployment rate; as a result of privatization and economic modernisation processes, a framework of inhabitants' occupation has changed, new groups of occupied individuals according to economic status have occurred: employers, independent and hired employees. Only after commencement of economic growth in 2000 the demand of qualified professionals started increasing. Due to changes occurred, requirements for employees' qualification and

competence have changed, and already decreased labour force supply resulted in necessity to revise wage determination policy.

These changes were very rapid. There was no possibility to refer to previous practice in decision making regarding competitive wage, since such practice simply did not exist. To follow tendencies in neighbouring countries would be also complicated, because different levels of prices and structure of expenses have their effect. To decrease the impact of price level differences in formation of different earnings' system, relevant values may be used, and in such a way a proper level of wage differentiation, which induces people to make educational investments, may be chosen. It should be noted, that usually during very rapid changes people tend to extremities, i.e., their expectancies go far beyond the possibilities. In order to assess the situation in respect of profiles discussed, the research in Lithuania was carried out in two aspects:

1. Comparative analysis of differences in earnings of university graduates and non-university graduates in OECD countries and in Lithuania.
2. Questionnaire was performed in order to find out, whether expectancies of persons having chosen master's studies in management about influence of capacities on earnings conform to tendencies in the market.

A comparative analysis objective was to determine, whether difference in wages stimulates people to make investments in order to obtain capacities. Research was made using adapted short-term method of Hiroshi Ono (2002) presented in table 1 (Table 1, formulas 8 and 9). The advantage of short-term method is that for calculation of return rate statistical data of employees' wages may be used. This method records the difference of short-term earnings between university graduate and high school graduate. This method assesses only the difference during a certain period, and it does not assess annual increase of earnings. Rate is a relative value, therefore it is useful to compare results of the countries having different levels of prices. Of course, individual's decisions in the sphere of personal finance management, which may involve also decisions regarding expenditure related to

studies, are evaluated also by psychological factors. The mentioned author has made similar research in 17 OECD countries. Results obtained allowed stating, that invest-

ments to acquire university education in OECD states are effective, since average ROR_{men} is 14.6 percent, and ROR_{women} − 15.2 percent (Figure 1).
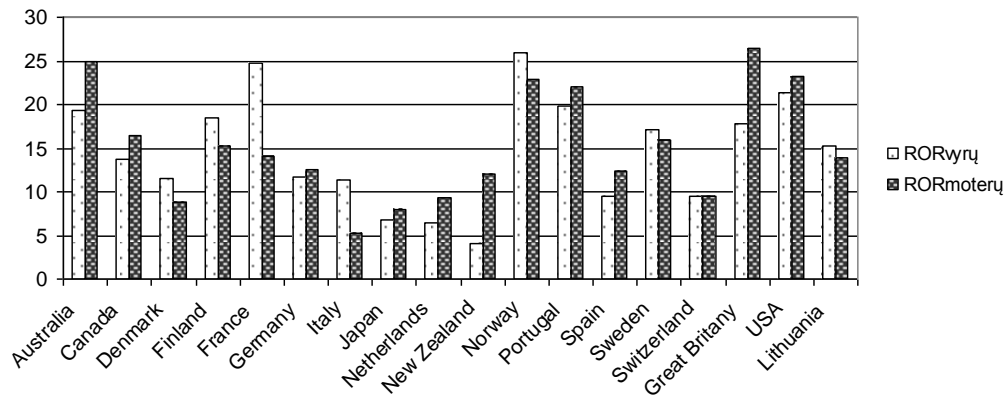

Figure 1. Rate of investment return (men and women) in OECD states and Lithuania (according to Hiroshi Ono, 2002)

It is difficult to perform an identical research in Lithuania, since there are only fragments of statistics, characterising level of employees' income and education acquired. However after summarising fragmentary information available it may be stated, that efficiency level of investments for education acquisition in Lithuania is close to OECD states, since in 2003 average ROR for university graduates was 13,44%, where ROR for men was 15,25%, and for women − 13,82%. Summarising results obtained the conclusion can be made, that in Lithuania acknowledgement of capacities in differentiation of earnings is poor, and this can be seen in table 3.

Table 3

Rate of investment return in Lithuania in respect of occupation, gender, and education, 2003

Main occupational groups	gender	Amount of earnings according to education, Lt			Rate of investment return, ROR, %	
		High school	Higher school	University	University education	Higher education
All occupations	**Total**	**870**	**1075**	**1713**	**13.44**	**3.27**
	Men	970	1226	2018	15.25	3.73
	Women	739	977	1497	13.82	4.34
1. Legislators, head officers and governors	**Total**	**1135**	**1455**	**2409**	**16.21**	**4.07**
	Men	1222	1548	2604	16.49	3.89
	Women	1021	1348	2097	14.99	4.56
2. Professionals	**Total**	**1019**	**1171**	**1514**	**6.91**	**2.12**
	Men	1113	1236	1737	8.07	1.59
	Women	969	1149	1417	6.53	2.62
3. Qualified workers and craftsmen	**Total**	**942**	**1071**	**1263**	**4.79**	**1.92**
	Men	984	1122	1312	4.72	1.98
	Women	773	875	964	3.36	1.79

Lithuanian Statistical Department data

It may be noted, that rate of investment return (ROR) for higher education graduates is very low. This means, that employees underrate such capacities. This is perhaps one of the reasons why higher schools in Lithuania are not popular.

Most scientists, having analysed efficiency of education investments, emphasised, that proposed models of analysis should be modified taking into account different abilities of women and men, as well as their different needs for carrier. Hiroshi Ono has applied models modified in such a way, and performed research in 17 OECD countries, which al-

lows predicating, that in many cases acquirement of education is more important for women than men, since ROR (rate of return) for women in twelve out of eighteen analysed countries is higher than for men (Figure 1), and only in 6 countries (Denmark, Finland, France, Italy, Norway and Sweden) ROR for men is higher than for women. Results obtained in research made in Lithuania add to the list of six mentioned countries. ROR for women is lower than for men, except public sector. Such situation has not changed recently, table 4.

Table 4

Rate of investment return according to sectors

		Earnings, LTL						ROR men	ROR women	ROR common
		workers			officers					
		total	men	women	total	men	women			
2003	National economy	844.30	941.18	700.03	1459.48	1807.20	1251.48	12.93%	10.50%	10.06%
	Public sector	795.75	977.87	601.80	1394.20	1772.63	1224.28	11.49%	13.36%	10.27%
	Private sector	867.50	926.85	762.92	1556.48	1841.10	1304.13	13.83%	9.62%	11.01%
2006	National economy	1173.12	1323.30	930.07	1959.07	2358.02	1712.72	11.51%	11.80%	9.72%
	Public sector	1019.57	1255.87	788.17	1927.47	2382.60	1733.55	13.12%	16.36%	12.67%
	Private sector	1222.72	1339.62	997.90	1992.92	2341.27	1683.40	11.02%	9.74%	9.18%

Lithuanian Statistical Department data

The results of this analysis allows presuming, that in Lithuania capacities of women are underrated, because most part of employees working in positions of officers are university graduates, including women as well, but their earnings are significantly lower than those of men.

During educational investments' research in Lithua-nia the expectances of people from postgraduate studies were also analysed. Research was performed in a form of questionnaire. 150 of questionnaires were distributed; most of respondents were postgraduates of management studies program. 74% of respondents were women, and level of response was 82%. Summarised results of survey are shown in table 5.

Table 5

Resume of questionnaire results

	Men	Women
Number of years of studies (on the average)	6	6
Average costs incurred for studies during all study years, LTL	10200	10800
Average annual study costs, LTL	1700	1800
Desirable earnings for non-university graduates, LTL	1600	1200
Desirable earnings for university graduates, LTL	3300	3200
Rate of investments return in Lithuania (ROR)	**16.27**	**24.69**

After the analysis of results it may be stated, that respondents basically acknowledge only direct personal costs. They believe that a wage of person having acquired education should significantly increase. The expectancies of questionnaire respondents clearly show, that studying individuals expect, that their decision to invest in order to obtain education, should substantially improve their future perspectives. Having applied average rate of investments university education return in OECD states, and having calculated ROR in Lithuania – referring to Lithuanian Statistical Department data and questionnaire data we may predicate, that according to questionnaire data, assessing women expectancies, their rate of investment return should be 1,6 time higher than of OECD countries average ROR for women (Figure 2).

Comparative analysis of men and women expectances shows, that women with university education expect higher wage increase than men, and more optimistically evaluate benefit provided by education. Having applied data of the analysis made in OECD states, rate of investment return in Lithuania was estimated, taking into account expectancies of respondents and actual situation, using Lithuanian Statistical Department data.

Women expectancies regarding wage increase after acquiring higher qualifications are significantly higher, therefore higher rate of return is expected than average in OECD states. Rate of return for men, after assessing expectancies, is just a bit higher than the average in OECD countries. Having assessed estimation made, it may be stated, that women in Lithuania seek equal earnings to men for the same work performed.
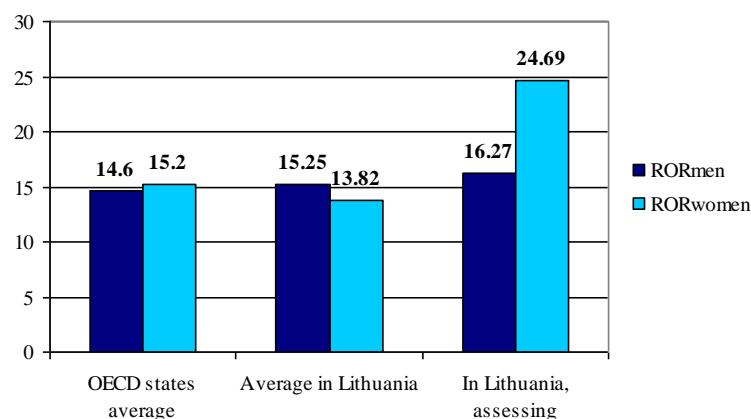
Figure 2. Average rate of investment return in Lithuania, in OECD states and in Lithuania when assessing questionnaire data, %

Conclusions

1. The expenses dedicated to acquire education and competences should be considered as a special investment field. The evaluation of these investments' efficiency will assist in effective earnings system development, which could preserve employees with particular competences and encourage people to study and invest in order to acquire proper knowledge and skills.

2. For efficiency evaluation of educational investments modified models of discounted money flows are applied (a modified net going value model, a modified inner profit rate model calculated in terms of an individual and society). These models are not widely used, as they demand the long-term prognoses of earnings levels. Short-term methods are also applied (the method of Mincer, the adapted short-term method, the inverted expenses-profit method).

3. Having accomplished the efficiency research of educational investments with a short-term method applied it can be stated that the Rate of Return (ROR) in developed countries amounts to average 15 percent. A similar rate of the ownership profit is also earned by the investors. According to this, it can be stated that education sets presumptions for the efficient human capital formation.

4. In accordance with the researches performed, it can be affirmed that the Rate of Return (ROR) of educational investments in point of men exceeds OECD countries average while it is lower than OECD average in point of women. However, the indexes of the Rate of Return (ROR) of educational investments are compared to the indexes of the Rate of Ownership Profit (ROE) in Lithuania. This should encourage people to develop their competences.

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Vilda Gižienė, Asta Vasiliauskaitė

Investicijų išsilavinimui įgyti vertinimo modeliai ir jų taikymo ypatumai

Santrauka

XXI amžiaus vadinamas žinių ekonomikos amžiumi, kai konkurencinį pranašumą lemia ne tik šalies dydis, turtingi gamtos ištekliai ar finansinis kapitalas, bet ir išsimokslinimas bei visuomenės sukauptų žinių lygis (Gallup, 1998). Tai reiškia, kad ekonominė šalies plėtra vis labiau priklauso nuo investicijų į žmones, intelektualinio kapitalo išsaugojimą ir ugdymą – žmogiškąjį kapitalą. Daugelis užsienio mokslininkų nagrinėja žmogiškojo kapitalo įtaką ekonomikos augimui, jų darbai patvirtina investicijų į išsimokslinimą, kaip ekonominio augimo ir konkurencingumo didinimo veiksnio svarbą.

Šiuolaikinėje ekonomikoje nuolat didinama investicijų į žmogiškąjį kapitalą, todėl aktuali tampa investicijų grąžos problema. Daugelyje šalių skaičiuojami investicijų į išsilavinimą rodikliai, kuriais remiantis paaiškinama darbo užmokesčio diferenciacija pagal amžių, profesiją ir lytį.

Tiriant išsilavinimą ir profesinį parengimą, tyrėjai daugiausiai dėmesio skyrė trims pagrindinėms problemoms: išsilavinimo ekonominės vertės ir profesinio parengimo atskirose įmonėse tyrimui; ryšiui tarp išsilavinimo pasiskirstymo; pajamų pasiskirstymų struktūrų ir optimalios žmogiškųjų išteklių išsivystymo strategijos parengimui. Sprendžiant bet kurią šių problemų aktualus tampa investicijų į išsilavinimą vertinimas. Moksleiviai, jų šeimos, valstybė veikia kaip racionalūs investuotojai, kurie savo ribotus išteklius skiria išsilavinimui, jeigu iš to tikisi naudos. Šie tyrinėjimai skirti pajamų, išlaidų ir išsilavinimo rentabilumo lygio išmatavimo metodų apžvalgai ir jų pritaikomumui. Tyrinėjimų pradininkai yra amerikiečių mokslininkai S. Becker, B. Weisbrood, D. Mincer, L. Chansen, T. Schultz. Šie ekonomistai savo darbuose suformulavo žmogiškojo kapitalo teorijos branduolį, ir tai tapo mokslo tyrinėjimo objektu.

Apžvelgus teoretikų nagrinėjamus tyrimus, kuriuose akcentuojamas kvalifikacijos, išsilavinimo teigiamas poveikis asmens, ekonominės gerovės pajėgumo klausimams, galima teigti, jog išsilavinimas tampa vienu iš svarbių gamybos veiksnių, kuriam vystyti nukreipiamos lėšos gali būti traktuojamos kaip investicijos. Jei išsilavinimas traktuojamas kaip investicinis objektas, tai turi būti nagrinėjamas ir šių investicijų efektyvumas.

Straipsnyje išnagrinėti užsienio šalių autorių (Gohn and Geske, Arai, Psacharopoulos, Antody Davies, Mincer, J.Appleby, M.Fougere, M.Rouleau, K.Maršikova, Hiroshi Ono) investicijų į išsilavinimą ir kvalifikaciją vertinimo metodai. Išskirtos trys pagrindinės metodų grupės: grynosios esamosios vertės, vidinės grąžos normos ir trumpalaikio periodo. Aptarti investicijų į žmogiškojo kapitalo formavimo modeliai ir jiems įtaką darantys faktoriai. Išnagrinėtos išlaidų ir grynųjų pinigų srautų identifikavimo galimybės – asmeninės, socialinės ir vyriausybės patiriamos išlaidos ir gaunama nauda. Remiantis teoretikų išvadomis, nagrinėjami investicijų į išsilavinimą kriterijai, aptariamas jų pritaikomumas. Apibendrinant investicijų į išsilavinimą vertinimo patirtį galima teigti, jog nagrinėjant tokio pobūdžio klausimus svarbu identifikuoti tiesioginius ir netiesioginius pinigų srautus: jų šaltinius ir gaunamą socialinę bei ekonominę naudą, atsižvelgiant į specifinius veiksnius, parinkti tinkamą metodą.

Tyrimų dalyje aprašomi Lietuvoje atlikto tyrimo rezultatai. Siekiant įvertinti situaciją aptartais požiūriais Lietuvoje tyrimas buvo atliktas dviem aspektais:

1. Atlikta lyginamoji atlyginimo skirtumų darbuotojams įgijusiems aukštąjį išsilavinimą ir jo neįgijusiems, analizė OECD šalyse ir Lietuvoje.

2. Atlikta anketinė apklausa, siekiant išsiaiškinti, ar vadybos magistro studijas pasirinkusių asmenų lūkesčiai apie įgytų kompetencijų įtaką atlyginimui atitinka rinkoje pasireiškiančias tendencijas.

Lyginamosios analizės tikslas – nustatyti, ar atlyginimų skirtumas skatina žmones investuoti siekiant įgyti kompetencijų. Tyrimas atliktas naudojant 1 lentelėje pateikiamą Hiroshi Ono (2002) adaptuotąjį trumpalaikio periodo metodą (1 lentelė, 8, 9 formulės). Trumpalaikio periodo metodo privalumas, kad investicijų grąžos normai apskaičiuoti galima pasinaudoti statistiniais duomenimis apie dirbančiųjų atlyginimus. Šis metodas užfiksuoja trumpo periodo atlyginimų skirtumą tarp turinčiojo aukštąjį išsilavinimą ir turinčiojo tik vidurinį. Šis metodas įvertina tik skirtumą tam tikru laikotarpiu, bet neįvertina kasmetinio atlyginimų augimo. Rodiklis yra santykinis dydis, todėl tinkamas ir palyginti rezultatams šalių, kuriose kainų lygis skirtingas.

Išanalizavus rezultatus, galima teigti, kad respondentai iš esmės pripažįsta tik tiesiogines asmens patirtas išlaidas. Jie mano, jog išsilavinimą įgijusio žmogaus atlyginimas turi gerokai padidėti. Anketinėje apklausoje dalyvavusiųjų lūkesčiai aiškiai rodo, kad besimokantys tikisi, jog jų apsisprendimas investuoti į išsilavinimą turėtų gerokai pagerinti jų ateities perspektyvas.

Moterų lūkesčiai dėl atlyginimo augimo, įgijus aukštesnes kvalifikacijas, yra žymiai didesni, nes laukiama didesnė investicijų grąžos norma nei OECD šalyse vidutinė. Vyrų investicijų grąžos norma, įvertinus lūkesčius, yra tik šiek tiek didesnė nei OECD šalių vidutinė. Įvertinus atliktus apskaičiavimus, galima teigti, kad moterys Lietuvoje už tą patį atliktą darbą siekia tokio paties atlyginimo kaip ir vyrai.