Chapter 13
A New Methodological Approach of Job Requirement Assessment

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13.1 Introduction

Human capital accumulation, education and training skills, is one of the main determinants of individuals' earning capacity and employment prospects and therefore plays an important role in determining the level and distribution of income in

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society. Many countries seek to ensure that all young people enter working life with a minimum amount of human capital acquired during the years of compulsory education (Wende van der 2003). However, governments are also heavily involved in the financing and delivery of post-compulsory education and training where returns may to a larger extent accrue to the individual and where participation is by choice. An important motivation for individuals to invest in education is that the acquired knowledge and skills tend to raise their productivity and hence earnings potential. Education appears to provide not only an initial earnings advantage but also a wage premium that increases with time spent in the labour market. The strategic objectives for the European systems of education and training were grouped in three big categories that concern:

- The improvement of quality and the effectiveness of systems of education and professional training in the EU
- Facilitation of access to overall systems
- Opening of the systems in the third part world

At the level of initial and ongoing training, there is an effort to encourage business and organisations to invest in the development of workers, skills and promotion of high quality and flexibility in the training schemes. This chapter attempts to examine the job requirement assessment (JRA) in a research study through a questionnaire carried out by a project of OECD, and it attempts to measure the implications and the effects in Greece.

13.2 Job Requirement Assessment

13.2.1 Training Needs Assessment Process

A training needs assessment is the process of separating the job tasks into those for which training is needed and those for it is not and then developing an individual training plan for accomplishing the needed training. This does not merely mean selecting those knowledge, skills or abilities, which are critical to the job performance, but also means determining which the capabilities of the current job incumbents are. Worker skills and job requirements is a policy-oriented study on the skills mismatch debate, which is intended for academics, policymakers and the general public (Alba-Ramirez 1994). Figure 13.1 illustrates the training needs assessment model.

Assessment of the job requirement (skills and competencies) is imperative in the final selection of employees or training candidates. Every effort is made to objectively formulate exactly what the requirements in terms of skills and competencies are. The assessment and development of people forms a cornerstone of the strategic and operational management of human resources, for instance, human capital development and succession planning (Barron et al. 1989).

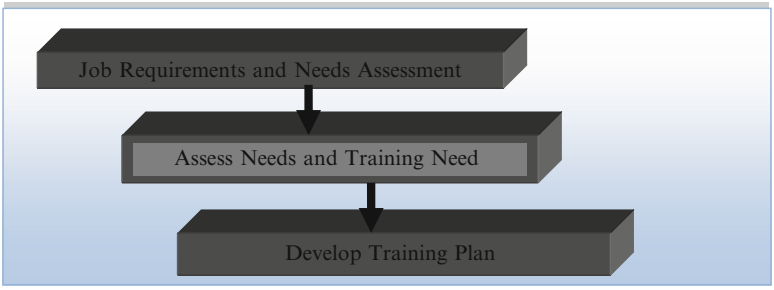

Fig. 13.1 Job requirement assessment

13.2.2 Factors Affecting the Job Requirement Assessment

Despite recent progress owing to positive actions and sensitization campaigns undertaken by governments, disparities in education and training still exist. The various factors which hinder education and training may be grouped into the following main categories (Freeman 1991):

- On the *demand side,* socio-economic and cultural factors which affect the behaviour and the choices (such as poverty budget constraints, structural adjustment programmes, direct costs of training, inconsistent educational and training policies, parents' low level of education, limited school/classroom space, sceptical attitudes towards the benefits, distance from info for education and training)
- On the *supply side,* political and institutional factors (such as insufficient public support, political instability, limited employment opportunities for graduates, lack of clear strategy for education and training, lack of public support for scientific activities)

There is an obvious need to measure the job requirement assessments and to carry out research on their interrelation with the social, economic and cultural characteristics of the countries and communities, as well as with the supply and quality of educational and training opportunities (Holzer et al. 1993).

13.3 Methods of Collection Variables Collected on Job Requirement Assessments

13.3.1 Methodology, Data Channels and Analysis

Data required for measuring the job requirement assessment can be collected from different sources using a variety of existing methods of collection. Essentially, the data sources may be categorised into (OECD 1997, 2008):

(a) Households and individual persons
(b) Teachers

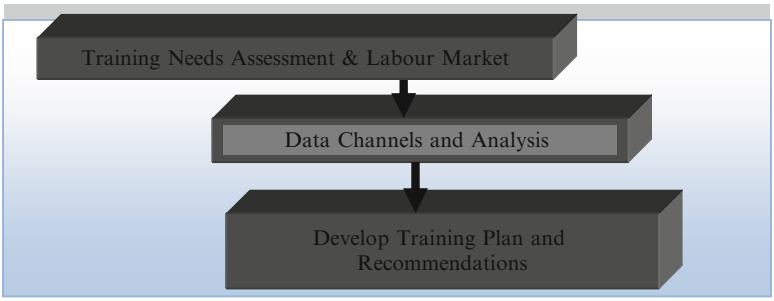

Fig. 13.2 The structure of research approach

The individual persons (households) in this respect refer not only to the students and teaching staff but can also include the parents, other members of the same family, employees, employers, etc. Moreover, the methods of collection may include the regular surveys and the household surveys. Each of these methods has proved to be effective for collecting specific types of education and training statistics.

In the JRA project for Greece, in order to overcome the problems of low budgeting, we have chosen to survey exclusively the Attica region. The estimated target population comprises 1,693,887 individuals, residents of the Attica region (islands excluded), and aged 18–64 years old and currently employed, who belong to 1,079,122 households. This estimation of the population was based on the data of the 2nd quarter of the year 2008 (the 2nd quarter was chosen as the most representative quarter of the year) of the labour force survey (LFS), conducted by the National Statistical Service of Greece (NSSG). The estimation of households is robust as it was based on a sample of 7,500 households, which were selected in a way that the sample was self-weighted (sampling fraction 0.55%). Figure 13.2 illustrates the structure of the research approach (GNSS 2008).

The addresses of the LFS sample of households were not available in electronic form (GNSS 2008). Therefore, the sampling households of the EU-SILC (European Union-Statistics on Income and Living Conditions) survey of the years 2003, 2004 and 2005, in which there were eligible individuals for the survey, were used as our sampling frame. The EU-SILC survey offered the advantage of having in electronic form all the necessary data for the survey such as all the personal information of the individuals (first name, surname, address, telephone) as well as information on the synthesis of the households and the employment status of the household members. The households of the sampling frame with eligible members are 1,608, while the individuals of these households that hold the characteristics of the target population sum up to 2,491. The research sample results can be classified in two main categories, for teachers and households. In the sample of households included the following categories: labourers in mining, construction, manufacturing and transport, sales and services; elementary occupations; drivers and mobile plant operators; machine operators and assemblers; stationary plant and related operators; other craft and related trades workers; precision, handicraft, craft printing and related trades workers; metal,

machinery and related trades workers; extraction and building trades workers; skilled agricultural and fishery workers; models; salespersons and demonstrators; personal and protective services workers; customer services clerks; office clerks; other associate professionals; teaching associate professionals; life science and health associate professionals; physical and engineering science associate professionals; other professionals; teaching professionals; life science and health professionals; physical, mathematical and engineering science professionals; managers of small enterprises; corporate managers; legislators and senior officials; and armed forces.

Current data gathered from regular surveys and household surveys are essential for obtaining a general outlook of job requirement assessment. Specific additional data are necessary if one wants to study more in depth the reasons for inequalities in order to identify appropriate measures to reduce disparities. Similarly, information is needed about the aspects of the supply of education, for instance, public policies, resources allocation and school infrastructure. For this kind of information, ad hoc (sample) surveys are best suited, although cost considerations limit their use.

The two-phase sampling was adopted for the selection of household members. The sample size was defined at 709 individuals, according to the available financial resources.

At the first phase with the use of the LFS survey results (two-stage stratified sampling), we defined the distribution of the target population per classes (strata). The total sample of 709 individuals was distributed proportionally in every stratum (stratum = gender × age group) with sampling fraction (GNSS 2008):

$$f = \frac{sample\_size}{target\_population\_size} = \frac{709}{1{,}693{,}887} = 0.0004.$$

In order to select the sample of primary school teachers, we used a relatively reliable register of primary school teachers found in the Ministry of National Education and Religious Affairs. At first, we selected the primary school teachers belonging to the Attica region (islands excluded) and then we allocated them by sex, type of teacher and longevity, inserting at each one of them a number of ascending orders. Additionally, we should point out that primary school teachers are aged approximately from 22 to 60 years old.

The sample size distribution per stratum, *h*, is the following:

Stratum	Gender	Age group	Sample size
11	1 (male)	1 (18_24)	24
12	1 (male)	2 (25_34)	112
13	1 (male)	3 (35_44)	124
14	1 (male)	4 (45_54)	101
15	1 (male)	5 (55_64)	51
21	2 (female)	1 (18_24)	19
22	2 (female)	2 (25_34)	99
23	2 (female)	3 (35_44)	90
24	2 (female)	4 (45_54)	67
25	2 (female)	5 (55_64)	22

Source: GNSS (2008).

The second phase includes the selection of the survey units (GNSS 2008). The individuals comprising the sample were selected in every stratum using as sampling frame the EU-SILC survey data described above. The sampling units' selection was based on equal probabilities and systematic sampling while the sampling frame used had been previously sorted per municipality. During the individuals' selection, in case a second member of the same household was about to be selected, an individual of a different household replaced him/her. So during the individuals' selection, great attention was paid in order to select only one individual per household.

With the implementation of two-phase sampling, the sampling fraction, f, is about 0.0004 ($f = (709/16,93,887) = 0.0004$), and since both LFS and EU-SILC surveys have self-weighting estimators, the selection probability of the sampling units almost coincides with $1/f$ (design weight). Furthermore, since we also have non-response in the survey, in order to properly calculate the extrapolation factors, the initial weights were corrected by being multiplied with the inverse of the response rate in every stratum, thus somehow abolishing self-weighting (GNSS 2008).

The structure and the tasks of questionnaire for the job recruitment assessment were organised into the following activity areas: gender, age and sexual orientation; education and training; litigation and compliance; description classification; personnel information; development of personnel selection procedures; administration/implementation of personnel selection procedures; empirical validation research; training programme development and evaluation; general supervisory/management; personal/professional growth/development/service/continuing education; and general activities applying to multiple categories.

Moreover, the questionnaire for skill domain and underlying skill requirements includes the following categories:

1. *Cognitive skills*: Such as literacy, numeracy, scientific knowledge, problem solving and computing
2. *Interaction/social skills*: Such as influence, managerial skills, self-direction, interaction/social, horizontal interaction and client interaction
3. Physical: Such as strength, manual skill
4. Broad: Such as occupational knowledge and ongoing learning requirement

13.3.2 Results and Implications

The fieldwork has been based on questionnaire formation and interviewing on the questionnaire formatted. The method used was the personal interviewing (GNSS 2008). The questionnaires have been answered by a statistical sample consisted of one hundred eighteen (118) primary school teachers and four hundred and seventy-eight (478) households, located in Athens Prefecture, Greece. The sampling method, as well as the corresponding sample selection, has been executed by the Greek National Statistics Service, Athens, Greece. The draft questionnaire supplied to Greek participating authorities by OECD was translated twice in order to acquire its final form, regarding the Greek language (GNSS 2008).

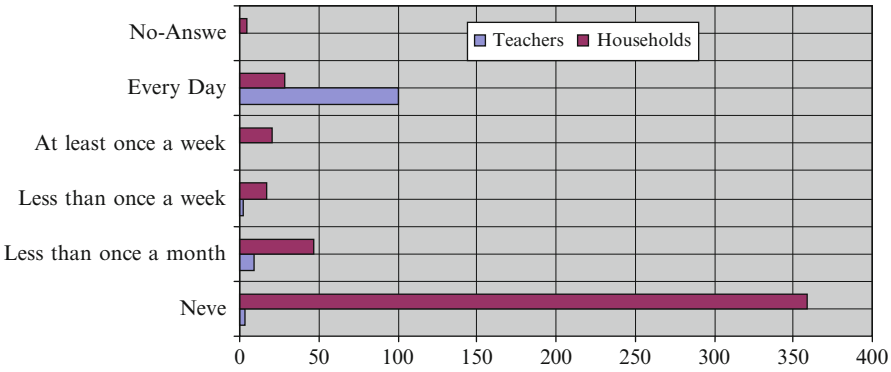

Fig. 13.3 The impact of training in the job

The sample was selected and interviewed by the Greek National Statistics Service. The questionnaire interviews resulted in interviewing one hundred eighteen (118) primary school teachers and four hundred and seventy-eight (478) households in Attica Prefecture, Greece. The data collected have been controlled and confirmed by the Greek National Statistics Service and the General Secretariat of Adult Education (Ministry of Education). Gross response rate (GRR) and net response rate (NRR) coincide in our survey, and they are depicted in the following table (GNSS 2008):

Stratum	Gender	Age group	GRR_NRR (%)
11	1	1	29
12	1	2	83
13	1	3	80
14	1	4	54
15	1	5	39
21	2	1	37
22	2	2	100
23	2	3	62
24	2	4	52
25	2	5	32

Source: GNSS (2008).

The following Figs. 13.3, 13.4 and 13.5 illustrate some of the main findings.

The role of education and training is more and more designated as a major factor of survival and progress of the societies. The current social needs due to their nature place emphasis on knowledge, adaptability and inventiveness. The educational and training system, basic structural element of formation of the future human potential, needs to move gradually so as to meet the new needs and challenges.

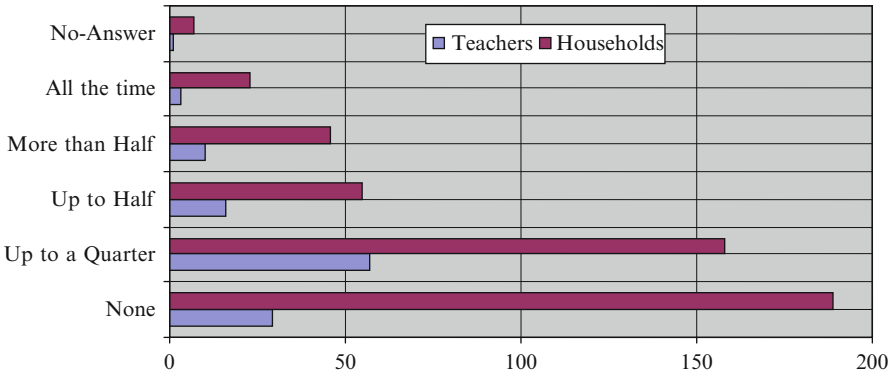

Fig. 13.4 Scientific knowledge: time using scientific knowledge

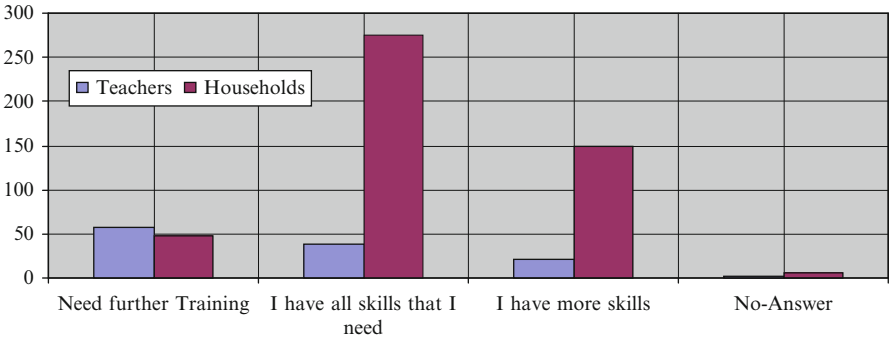

Fig. 13.5 Skills at the work

The main results can be summarised as follows:

- Limited access to training
- Low skills
- Low female participation in scientific and technical fields
- High proportion of illiterate and training
- Scarce or low-scale employment opportunities
- Reduced contribution to national economic and social development
- Limited bargaining power
- Absence from the political decision-making processes

13.4 Summary Conclusions

The Greek national policy in the past for the education and training in relation to employability and vocational training has been emphasised towards the following points:

- Prevention of the unemployment through personalised interventions
- Promotion of the opportunities of access to the labour market
- Empowerment and upgrading of effectiveness and the quality of the interventions in the labour market
- Promotion of entrepreneurship and adaptability of the human resources
- Improvement of the access and participation of women in the labour market

Following our results from the above analysis, in order to ensure the active participation of all in the knowledge society and to improve the position of Greece within the EU and towards the future strategy for the job requirement, assessments have to be emphasised in the following main objectives:

- Teaching of the new ICT as a basic subject, through the use of the new technologies
- Training of the teaching staff
- Improvement of the infrastructure and the communication network in schools, universities and research institutes
- Empowerment of the production and dissemination
- Empowerment of the research, tapping of the new technologies in the research and dissemination of the scientific results

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References

Alba-Ramirez A (1994) Formal training, temporary contracts, productivity and wages in Spain. Oxford Bull Econ Stat 56 p. 151-170.

Barron JM, Black DA, Loewnstein MA (1989) Job matching and on-the-job training. J Labour Econ 7 1-19.

Freeman R (1991) Labour market tightness and the mismatch between demand and supply of less-educated young men in the United States in the 1980s. In: Schioppa FP (ed) Mismatch and labour mobility. Cambridge University Press, Cambridge

Holzer H, Block R, Cheatham M, Knott J (1993) Are training subsidies for firms effective? The Michigan experience. Ind Labor Relations Rev 46 625-636.

GNSS (Greek National Statistical Service) (2008) Report for Job Requirements Approach (JRA) Pilot Survey: specification for National Technical Reports, Programme for the International Assessment of Adult Competencies (PIAAC), Athens, Greece

OECD (1997) Implementing the OECD jobs strategy—member countries experience. OECD, Paris

OECD (2008) Job Requirements Approach (JRA) pilot survey: specification for National Technical Reports, Programme for the International Assessment of Adult Competencies (PIAAC), OECD based in OECD' research project job requirement assessment. In: collaboration with General Secretariat of Adult Education, General Secretariat of Life Long Learning, OECD conference, Paris, 1-2 December 2008.

van der Wende M (2003) European higher education policy: the EU's continuing impact. Int High Educ 32:15–18