

INTEGRATED REAL TIME ADVISORY SYSTEM FOR EDUCATIONAL AND INDUSTRIAL NEEDS

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Abstract: *This paper focuses on the integrated real time advisory system for educational and industrial needs as a main tool for realising the networking between companies, local authorities and educational organisations. In order to create the advisory system, a structure including modules of human resources databases, Internet based communication environment, description of the national qualifications awards system, links to study packages, and sectoral resources description is proposed.*

Key words: *real time advisory system, Internet solutions, production management; networking, education*

1. INTRODUCTION

We are living in the global, innovative, and rapidly changing manufacturing society needed in high technology as well as highly qualified labour force. Nowadays manufacturing is characterised by short life cycles of goods, minimal production throughput times and high quality of products. Derived from the results of manufacturing strategy the qualification structure of labour force and characteristic of their skills and knowledge are in changing. Academic world cannot react to these changes correspondingly without knowing the real needs of industry world. Hence the gap between the needs and reality of labour force structure and quality exists. By stimulating contacts and cooperation between the different factors both in business and educational systems, synergies can be achieved to realise the abovementioned main criteria successfully.

2. STRUCTURAL CHANGES IN MANUFACTURING SOCIETY

Simple management scheme “manufacturer — trade mark owner — wholesaler — reseller” has changed to multi-way realisation of products and mutual impact on their performance. Manufacturers are able to assist their suppliers by providing knowledge, skills, and experience, and to benefit in turn from suppliers’ improved delivery performance and from fewer production disruptions than are caused by poor quality materials (Lee et al., 2001).

In global large corporations dissipate production into smaller and flexible units. European enterprises can answer to that by establishment of technology and production co-operation networks to obtain the same assets like rapid growth due to flexibility of production and resources management.

Production chains precede with elaboration their separate marketing, design, technology segments into parallel, enabling to multiple the launching speed of new products. Separate teams consisted of different area specialists are put together for target projects, involving also more and more researchers and experts from universities. Therefore the primary objective of educational organisations is to increase the responsiveness of education institutions to business demands and to improve the access of vocational and higher educated specialists into labour market.

3. BOTTLENECKS IN INDUSTRIAL NETWORKING

Networks created so far in the world have problems in succeeding of co-operation of large and small sized enterprises, mutual relationships between competitive enterprises and shortage of really participating enterprises. Researches in Finland (Pyöriä, 2000) however have proved that representatives of enterprises respect the co-operation and majority of them have positive experience in that. Large and small enterprises have different motives for partnership. Large companies search possibilities for implementation of new and alternative technologies and try to benefit while small one needs in support. Such a trends as decrease of significance of size and increase of importance of know-how has been noticed as well. One of the important factors in co-operation is trust. Mutual trust creates presumptions to further investments of time and finances into co-operation. Trust also generally diminishes partners’ wish to gain unbalanced benefits. Therefore involving universities and industry field associations into the network is a key of success (Riives et al., 2002).

A survey of organisations, in which enterprise systems management solutions were deployed, found that only 24% of the implementations were considered successful, 64% of management had mixed feelings about the success of the projects, and the remainder felt their projects were failures (Gallagher, 1998). To minimise this risk the networking tools has to be planned and specified by current industry field specialists very carefully.

The new approach to knowledge and information extraction for strategic planning in the field of labour force is introduced in this paper.

4. INTEGRATION OF TECHNOLOGY AND MANAGEMENT BY ADVISORY SYSTEM

New manufacturing strategies bring to changes in the needs for qualified labour force and new types of skills and knowledge. In metal production, machinery and apparatus sector the most dominant problem is related to the shortage of labour force and insufficient co-operation between private sector companies and educational institutions. However, educational institutions cannot react to these changes correspondingly without knowing the real needs of industry world. Vocational needs of enterprises and the content and quality of existing programmes do not always match. Similar problems exist in Finland, Sweden, Hungary and Italy who are the partners in solving that problem. To solve this problem the idea about real time web based advisory system is initiated. The user interacts with the control module, the role of which is to work out the search strategy on the basis of initial data given by user, via user’s interface (Papstel, 1999).

The integrated real time advisory system for educational and industrial needs in the sector includes also a real time database of existing educational opportunities – different levels of study programmes; industrial needs for human resources

based on the employee qualification standards. The proposed structure is shown in the fig. 1. The system connects in a certain field manufacturing enterprises, consultancy firms, educational organisations and universities to handle regional resources for larger subcontract orders and production volumes.

It focuses on enhancement of the competence of students, employees and industry to act successfully on the European market in order to strengthen the competitiveness of the European industry, especially the manufacturing industry. This will bring together a critical mass of “customers of education” and “suppliers of education” for resolving above mentioned shortcomings. Such a system increases directly competitiveness of the enterprises located in periphery regions. Elaborated model is usable with minor changes in any other industry field. This system (see Fig. 1) has a wide range of target groups.

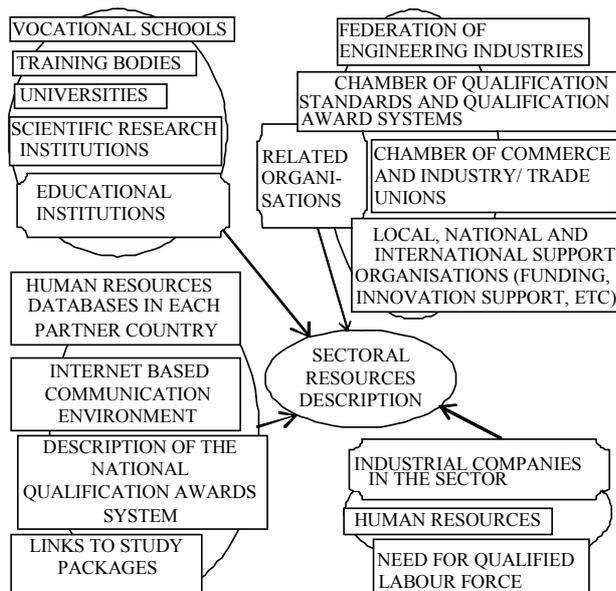


Fig. 1 The structure of the integrated advisory system

Primary target groups are the following:

- Vocational trainers, training bodies, national and regional authorities in education,
- Students of vocational and higher education institutions
- Enterprises and employees of the metalworking, machinery and apparatus sector,
- Unemployed people seeking for job possibilities.

At the European level the interaction between training and working life increases between different countries. Through the advisory system it is possible to compare vocational practices and working methods in different countries on European level. The system contributes opportunities for greater labour mobility and creates possibilities for the recognition and accreditation of know how and skills in Europe.

The system can also be made use of in the development of trans-national skills' passports in Europe.

Such a system forming the networking between Estonia, Finland, Sweden, Hungary and Italy is under the development.

5. IMPLEMENTATION OF THE ADVISORY SYSTEM

Estonia is under the reform of vocational education and training (VET), which main objective is to prepare skilled workers, who are competitive, both in the Estonian and European labour market. Considering the objective, the VET system must be attractive, flexible, accessible, relevant, and efficient as well as of high quality and adapted to demand of labour force. The main result of the VET reform in Estonia 1996-2000 is the preparation work of national employee qualification system,

whereas 12 vocational councils are working and 135 vocational standards has been already confirmed in accordance with European countries.

The system provides know-how and practical examples how similar issues are dealt in different European countries. However, the system will be a practical tool not only for young vocational students, but for the use of re-training and life-long learning concerning the sector of metal engineering, machinery and apparatus.

The sectoral co-operation system and networking model helps to activate the labour market, transparency of labour force demand, lack of qualified labour force and links between all the different organisations of the sector locally and internationally. Pooling sector-wise information from different parties – companies, education institutions, students, and trainees is a very innovative approach. In implicit way, current project provides a set of tools: dynamic web-based sectoral job market, traineeship market, dynamic profiling of sector companies for analysing human resource needs with current situation.

There is no similar co-operation network model or database built for this purpose in any of the EU countries.

6. CONCLUSION

The use of the integrated advisory system in networking radically changes the traditional approach to collaborative activities. The experience of world leading industrial countries suggests that implementation of networking not only provides an effective approach for the management of industry resources, but also cultivates a better working environment for SME. Presence of universities, industry associations and research institutions is a key factor for success. Adequate training has to provide to all participants to increase their confidence in the use of the system. The findings of this study should have practical implications to the development of real system. Elaborated model of the advisory system can be implemented with minor changes also in other fields of industry.

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