

Competence Orientation in Business Informatics International Master Program

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Abstract – The need for competence-based approach in professional and educational standards is required by modern economy. Development and improvement of systems of different competences provides a link between education and training and labor market. The discussion on the current state and prospects of development of joint master's program in Business Informatics is being held. Hereby there is a suggestion on competencies description for the Business Informatics Curriculum based on descriptors. To realize the competence oriented model for masters' program it is suggested to mark out educational concepts through the type of courses in each discipline.

Keywords – competences, employability, skills, stakeholders, descriptors, business informatics.

I. THE CHALLENGE OF BUSINESS INFORMATICS

The ongoing development of Information and Communication Technology (ICT) is challenging many aspects of business and management today. As the result of the transition of society from industrial to information labor market development requires professionals who have complex knowledge not only in traditional disciplines (economics, law, marketing, etc.) but also in informational technology. Implementation of the course in business informatics is caused by the urgent need for specialists in the field of information systems, information and communication technologies to improve the effectiveness of business. A field like business informatics is interdisciplinary in nature, meaning it combines several fields of study and expertise into one [1].

Business informatics is an emerging discipline that combines various aspects of business management, information and communication technology, and informatics [2]. The goal of business informatics is to integrate fully computer science and business administration into one field. Such a field is changing and developing rapidly, and teaching must therefore be constantly revised and reconsidered.

The educational system in this case should meet the requirements of economy, e-business management and Lifelong Learning principles [1, 3]. Professionals in business informatics will act as a go-between or a bridge to connect management and the information sphere in a company. By understanding both sides qualified experts in business informatics will be able to help perfectly both those who build and those who use computers and information systems. It is speculated by many scientists and practitioners that companies structured around business informatics will increasingly become the norm. This is particularly the case with businesses in the life science industries, which need large amounts of data

storage, and need it to work flawlessly. As business becomes more driven by quality of information, most enterprises and companies will likely see the need to apply business informatics, in order to remain competitive.

II. THE FIELD OF BUSINESS INFORMATICS IN UKRAINIAN EDUCATION

Today in Ukraine professionals in the spheres of informatics and computer technology are trained in such specialization as Computer Science, Computer Engineering, Program Engineering, Informatics and Applied Math. In Ukrainian educational market there are more than 140 universities, from which 46 thousand of Masters and Specialists graduate each year. The field of Business Informatics was never granted an independent formal recognition in the Ukrainian Tertiary Education. The most cognate field of study is specialization Information Systems and Technologies that is based on the bachelor program Computer Science. In the Ukrainian education system study majors are a subject of standardization by the Ministry of Education and Science. The State Education Standard is being developed for each area / specialty separately and it consists of three main parts: the educational and skill characteristics, education and qualification programs and diagnostic tools (in the terminology of Bologna Process - Quality Assurance System (QA)). Scientific and methodical commissions (curricula committee) and a specialized institution of the Ministry of Education and Science are responsible for development of the state standards. At this time neither employers nor students are involved in the process. Though it is obvious that employers should play a crucial role in developing standards, in cooperation with universities create a system and quality tools. In the sphere of Computer Science only while developing Bachelor Program in Programming Engineering the representative of the largest employers' association IT-Ukraine participated in the scientific-methodical commission.. Participation of students and students' associations seem helpful in such a process. In old classical educational process a student met the employer only during internship at the enterprise. This means that a student was a passive element of the system. In modern times a student becomes a consumer of educational services, their author.

In 2011 the Curricula Committee in the field of Computer Science developed a new Bachelor Standard. The Standard is based on recommendations CC2001-CC2004, international experience, existence of scientific schools, tendencies of

development of information and telecommunication technologies.

The Standard determines that a graduate from Bachelor Program in Computer Science should have general scientific in the areas of knowledge such as Mathematics, Programming, System and Computer Engineering. At the same time competence is defined as “ability to use knowledge and skills (in particular, the theoretical knowledge in the academic field) in professional activities (practical and operational application of knowledge in specific situations), as well as successful on the basis of practical experience in solving problems of general-purpose” [7].

The Standard represents competences in such groups as socio-personal, general science, instrumental, professional (general and specialized).

Total educational time allocation to cycles of training has the following facilities:

- Cycle of humanitarian and socio-economic training – 24 ECTS credits,
- Mathematical and Scientific cycle – 48 ECTS credits,
- Cycle of professional and practical training – 108 ECTS credits (including 4,5 ECTS credits for Technological Practical Training and 4,5 ECTS credits for Diploma Research),
- Optional Courses – 60 ECTS credits.

Thereby the Standard is aimed at preparing professionals in the fields of Mathematics and Computer Studies, little educational time is dedicated to students’ practice in enterprises, and there is practically no educational time for Economy and Management.

But still the new standard for Master in Information System has not been developed. Today the old Standard that was developed in 1994 is functioning.

This Standard regulates training of Masters only for 1 year. And Universities can realize the vision of training of professionals only at the expense of elective courses (20% of studying time).

“IT Directors” Association in cooperation with University “KROK” (Kyiv) in 2009 started MBA Program with specialization “Information Management” (MBI). This Program is aimed at developing competences in the fields of corporate management in IT sphere of highest qualification (CIO) according to national and international standards. The MBI Program is focused on training middle and senior IT managers. The Program combines the issues of economics and management with a concentration on information resource management organizations and information business [8].

Developers of this Master Program consider that it is crucial to ensure students develop competences of strategic, value, marketing and systems thinking, deep understanding of customer requirements organization, and focus on entrepreneurship and continuous strategic and technological innovation. The program includes the following core modules:

- Introductory course.
- Scientific foundations of Business and Management.
- Strategic Management.

- Human Resource Management and Corporate Governance.
- Strategic Marketing and Sales Management.
- Organization of IT Services.
- IT Governance.
- The architectural approach.

The Program lasts for 1.5 years (3 semesters), the cost of education is 11 950 hryvna (1100 EURO) per 1 semester.

The other example of Master Program is a joint project of Ukrainian business school MIM-KYIV and one of the major IT companies INCOM «MBA in IT-management». This program is oriented on IT managers (CIO and IT Directors) and it consists of the following structural blocks [9]:

Features of a modern business environment:

Business Administration,
Business Economics,
Commercial Law,
Business Taxation.

Functional business management tools:

Management: Organizational Development,
Financial Statements,
Audit in Business Management,
Personnel Management,
Managerial Psychology and Communication,
Marketing,
Logistics Management.

Integration of knowledge management and information:

Information Systems Management,
Modern Development of IT Industry,
IT Enterprise Architecture,
IT Process Management (ITIL) and IT Organization Structure,

Business Modeling and Analysis of Business Processes (ARIS),

Information Security,
Development of Business Plans / Budgets (capex / opex),
Outsourcing / Insourcing,
The Process of Software Development, Product Life Cycle, Testing.

Business Development in a Global Environment:

Strategic Management,
Corporate Finance,
Financial Management,
Management Accounting,
Project Management,
Financing Business Development,
International Business / Productive Foreign Internships,
Computer business simulation Global Management Game (in partnership with the Tepper School of Business, Carnegie Mellon University, USA).

The feature of the program is that program participants will be integrated in one virtual audience through video. In the second year of study foreign students undertake programs in the USA (Silicon Valley), which includes meetings with top management of the leading companies on the IT market, lectures by invited professors, visits to companies that will give students an opportunity to summarize promising world

experience in building an efficient IT- infrastructure company and its management.

The Program will start in October, 2011 and it will cost 96 000 Hryvnya (10 000 EURO).

The analysis has demonstrated that there are only 2 Master Programs which have cycle training in the field of information technology as economics, management, project management on the educational market of Ukraine.

They are designed for top managers, their cost is very high and territorially they are located in Kiev. 10 students study at Master Program in University “KROK” and the Program of business school MIM- Kyiv will be launched in autumn of 2011.

III. ACM AND AIS COMPETENCES RECOMMENDATIONS

In the case of Information Systems and Business Information Systems Design two professional associations ACM (Association for Computing Machinery) and AIS (Association for Information Systems) develop models of curricula recommendations.

The Curriculum Guidelines for Undergraduate Degree Programs in Information Systems (2010) assume that understanding and improving organizational processes is one of the key capabilities of all IS graduates [6]. The competences that graduates in Information Systems are expected to have can be divided into three categories and subcategories:

1. Information Systems Specific Knowledge and Skills:
 - Identifying and designing opportunities for IT-enabled organizational improvement,
 - Analyzing trade-offs,
 - Designing and implementing information systems solutions,
 - Managing ongoing information technology operations.
2. Foundational Knowledge and Skills:
 - Leadership and collaboration,
 - Communication,
 - Negotiation,
 - Analytical and critical thinking, including creativity and ethical analysis,
 - Mathematical foundations.
3. Knowledge and Skills Related to Domain Fundamentals:
 - General models of the domain,
 - Key specializations within the domain,
 - Evaluation of performance within the domain

Integrated Curriculum for a Bachelor of Science in Business Information Systems Design (BISD 2010) differs from many of the current IS model curriculum discussions in modeling for a European tertiary education context and the Bologna accord, expected learning outcomes, structure and basing on a capability driven pedagogical model [5].

These recommendations relate to education bachelor programs, but the approaches, the list of disciplines, hi-level capabilities, structure of basic concepts, leaning outcomes can be studied and used for the development of Curriculum for Master Program.

IV. DEVELOPMENT OF DOUBLE DIPLOMA JOINT MASTER PROGRAMS. THE EXAMPLE OF COOPERATION BETWEEN UNIVERSITY LYON 2 (FRANCE) AND KHARKIV NATIONAL ECONOMIC UNIVERSITY (UKRAINE)

Double Diploma International Master Program in the field of Business Informatics of Lyon 2 University and Kharkiv National Economic University developed from Master Program «Informatics of Decision Making and Statistics», which has been functioning since 2005.

92 graduates of the Program gained degree of the Master of both Universities from 2005 till 2010. As the analysis has shown successful students of the Program are those who have basic economic or computer science education (Fig. 1).

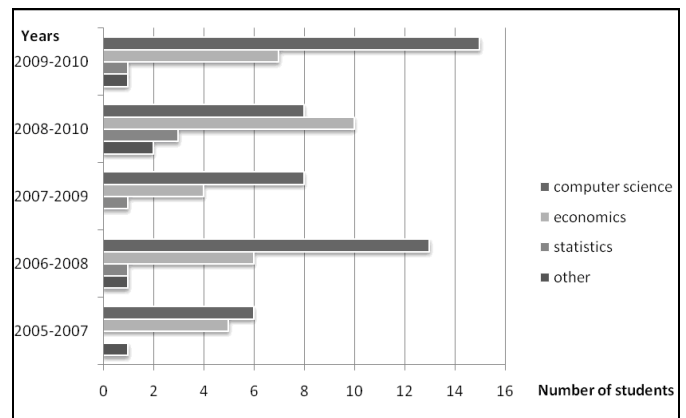


Fig. 1. Distribution of students according to their bachelor degree

This Master Program prepares professionals with high level of knowledge in Informatics (Information System Principles, Programming, Web, Data mining, Data warehouse), Statistics (Testing, Questioning, Projection), and related disciplines. It gives students the vision that they have to realize the needs of enterprises, to provide them with ideas how problems can be solved and then to implement the ideas. This diploma involves students in conducting projects at enterprises supervised by their professors.

In 2010 the Program was impartially and independently evaluated by Agency for Evaluation of Scientific Research - AERES (France), and got the highest rank Awards A+ 2010. The Commission also recommended paying attention to such an aspect of educational cycle as business management.

It was decided to take into account the changing needs of the society and current and future demands in the labor field. In the design of the Business Informatics program, it is expected that students will have a full competency and skills in the following areas: research and development; general management; information systems and technology; finance; economics; accounting; international business law; project management related to general education.

The main attention was paid to such aspects as analysis of employers' view of different competences, providing opportunities for graduates to be demanded in today's labor market, organization of cooperation of the main stakeholders (the education system, employers and students). Both Universities (KhNEU and Lyon2) are very experienced in

application of competence approach in education. A special approach to improving the technical requirements and the formation of competencies is fruitful cooperation among Kharkiv National Economics University and Ukrainian employers, "Job Fair", survey of potential employers. This survey was conducted by the Center of Innovative Technologies of KhNEU.

The aim of the survey was to obtain information about the most valuable competences that a graduate should have during the competition for a job and during further professional activity (employability). Employability covers the following general competences: level of self-organization, ability to work in teams, ability to solve concrete tasks, accuracy, and command of Informational Technologies. The results of the survey showed that a chance to get the best job on labor market depends on:

- Competence that shows the employability of the graduate – 78%,
- Positive attitude to work – 72%,
- Practical experience – 54%,
- Specialization of education – 41%,
- Level of assessment during training – 28%.

The University Lion2 achieves the employability of students by the organization of internship at enterprises for six months, co-operation of professors with employers' associations, chambers of commerce, support, ongoing contact with alumni.

New Business Informatics Master Program is based on the idea of applying the competence model as a source of information for designing a curriculum.

The following competences have been set up for Joint Master Diploma based on Dublin Descriptors (Table 1).

TABLE I
DESCRIPTION OF THE COMPETENCE FOR BUSINESS INFORMATICS CURRICULUM

| Decriptors (based on Dublin Descriptors) | Description of the competence for Business Informatics Curriculum |
|---|---|
| Knowledge and understanding | <p>Have demonstrated knowledge and understanding of business and informatics extending the one typically associated with First cycle degree.</p> <p>Able to develop and apply original and creative ideas within the environment which requires knowledge in overlapping and cross-linked areas of business and informatics.</p> <p>Able to deploy interdisciplinary knowledge and demonstrate specialist competence in the field of business informatics.</p> |
| Applying knowledge and development | <p>Have demonstrated knowledge of the methods of modelling and analysing business processes.</p> <p>Have been exposed to situations to identify and analyze real world, mainly business settings parameters and scenarios and to provide argument devising and sustaining and a solution in the main fields of business with computing support in terms of programming, databases, web programming, and networking. On the basis of practical examples demonstrate competences in applying technical computing tools to the managerial and business problems in general.</p> <p>Can apply the interdisciplinary knowledge in real-world settings and with real world data. A variety of educational settings (practical works, team work, projects and presentations) supports their professional approach for deploying informatics solutions in the business context.</p> <p>Able to choose the correct statistical method when compiling statistical analyses and the ability to interpret the results.</p> <p>Can apply business strategies and the newest developments in ICT.</p> |
| Making judgement | <p>Able to creatively integrate and synthesize knowledge across several areas related to business processes and using appropriate computing tools and techniques.</p> <p>Able to deal with complex issues related to business processes, to address appropriate specialized instances both in business and informatics domains, make sound judgments in situations of lack of complete information or data, and based on personal, social and ethical responsibilities linked to the application of their knowledge and understanding.</p> |
| Communicative and social competences | <p>Able to clearly and unambiguously communicate conclusions, results, study outcomes and knowledge to both specialist audiences form the business and informatics fields along with the ability to appropriate the style and form of expression to non-specialist audience.</p> <p>Have competency for critically independent and creatively argued research, to evaluate methodologies and develop critiques and where appropriate to propose and defend new hypotheses.</p> <p>Follow rules of ethics in business and information systems development.</p> |
| Learning skills | <p>Able to identify personal needs and directions for individual and autonomous study and to perform it in self-directed and autonomous manner of common business and informatics areas.</p> <p>Able to take responsibility for ongoing individual learning in specialized business and informatics fields within the networked economy.</p> |

V. SUMMARIES

The analysis of the labor market has shown the need in highly qualified professionals that have multidiscipline competences. The current Masters Programs in Ukraine are aimed either on IT development or applied use of IT in professional activity. Participation in international project leading to joint Business Informatics studies gives an opportunity to develop a Master Program based on Bologna Process principles. Such programs allow taking into account influence of different competences on graduates' success on the labor market, the role of main stakeholders in developing educational standards and system of quality control of the education. International cooperation shows a crucial role of internship while teaching a qualified professional. International mobility gives an opportunity to gain international experience as a factor that increases chances to be well employed and to obtain a competence of the future.

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