

# Marketable, Unique and Experiential IT-Skills Education for Business Students

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## Abstract

Educational programme for lab-lectures of Business Information Systems module is presented. There, first year undergraduate business students of Faculty of Economics Ljubljana University Business School acquire important hands-on knowledge, which is expected from them by future employers in business practice and by lecturers during their studies. The programme evolved over a course of years of instructors performing both seminars and consulting in real-life businesses and performing lab lectures in afore mentioned institution. The content is strategically rooted in combination of market- and resource-based view of the programme, and nature of performing the lectures is based on experiential education. Content of the programme along with mode of delivery (experiential learning) are presented.

**Keywords:** IT, Skills, Education, Business Students, Information Technology

## Introduction

Most of the employees today are “knowledge workers” – Drucker came up with the term in 1979 (Drucker, 1979) and Sveiby & Lloyd noted in 1987 that knowledge workers replace industrial workers as the largest group of the workforce. “Consequently, businesses should be seen from knowledge perspective” (Sveiby & Lloyd, 1987).

And indeed, we should. Businesses today are being performed “at the speed of thought” (Gates, Bryant, & Dean, 1999) and knowledge workers are using IT to help them solve problems they are faced with. It is therefore absolutely essential for higher education institutions (herein HE) to equip business students with appropriate IT-skills, which match the needs of their future employers, or better said nature of their future work.

Besides, resources (particularly time) for implementing appropriate programme in business HE institutions are usually limited. In our 3+2 year education (undergraduate + postgraduate level - See Baloh (2005) for detailed presentation of the curriculum, which is based on “Managing Information Technology” curriculum. However, it gives brief idea of the content.), less than 4% of

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the whole programme is constituted by compulsory IT-skills oriented modules, which have to be undertaken by all business students. Naturally, students get these skills in some other modules as well, doing assignments and other coursework; nevertheless, the ratio is far from favorable anyway.

As Naqvi (2005) presents, situation in the rest of the world is fairly similar:

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»Most undergraduate courses in Australian universities designed to develop managers and accountants are structured around 24 subjects, or units, and include a single compulsory unit in information technology, which constitutes less than 5% of the total subjects offered.

In China the business management students are offered a single subject regarding business IT knowledge - "Modern Management Information Systems" - and the credit for this course is only about one-tenth of the total credits.

The BBA students in Finish universities earn at most 7 credits for IT or only approximately 5% of the total credits required for a degree program. This 5% of the total is not sufficient for a future professional in the information society.

In Oman the College of Commerce and Economics at the Sultan Qaboos University offers a 124 credit B.Sc. degree in business discipline. Only six credit hours are allocated for compulsory IT courses, which constitutes only about 5% of the total degree program.« (Naqvi, 2005, pp. 424-425)

The Business Information Systems module is taken by all first year students (1000+ full time students of Business school and School of Economics, and 400+ part time students yearly). At the Faculty of Economics Ljubljana University, we have been trying to develop lab lectures that would fit above mentioned requirement on appropriate skills acquired by our students in the limited time allocated (15-week semester, 2 hours per week).

To succeed in that, we have been posing the *what* and the *how* questions to ourselves over a course of years. Based on performing both seminars and consulting in "real-life" companies, and performing lab lectures at the module, we have reached the programme, we are presenting in this paper.

### Lessons Learned: What Did Not Work?

Many approaches on *what* "appropriate" content of such programme would be, and *how* it should be delivered, have been developed and argued for and against. Examples include "Traditional" (Wordprocessor-First-Approach - WFA), "Spreadsheet-First-Approach" (SFA), "Database-First-Approach" (DFA) and "Information-Systems-Approach" (ISA) (see i.e. Naqvi, 2005) for thorough review).

It is not our intention to recognize them all; we however admit that over the years we have considered most of them. The issue we could not get around was applicability of knowledge our students received when course was done in traditional manner. By "traditional" we refer to IT skills education as it is done in most of educational institutions, both public and private. Reviewing our and others' educational programmes we could see that the content had mostly been delivered through review / demonstration of *the tool itself* (i.e. functionalities, menus...). We guess that this approach to knowledge delivery followed contemporary literature approach on the subject. Book-titles in this field seem to follow publishers' need of "not to lag behind" when a new version of a computer package arrives: ("Office XP for dummies" (Chao & Wang, 2001), "Excel 2003 for dummies" (Harvey, 2003), "Access 2003 bible" (Prague, Irwin, & Reardon, 2004) , "Powerpoint 2003" (Denning, 1998)).

However towards the end of 90's and early 00's we have realized that such approach to lecturing does not deliver the value it should. Students knew where a certain tool was located in the programme and could use it if they were told to use it. The most important knowledge was missing, though: they were rarely successful when they were faced with particular problem and they had not been told which application and tool to use. Most of them failed at "real-life-setting" test, as they were not able to solve a particular business problem even though they knew the appropriate tool. When devising "IT for business professionals" educational programme, the latter observa-

tion was our starting point. To identify it exactly, we have leaned our thinking in well-known strategic management theories for the *content part*, and on learning theories for the *delivery-method part*.

## On Content – “Marketable and Unique”

When devising the *content* of our approach, we combined the “market-based view” and “resource-based-view” of our product, that is, the knowledge we provide to students. Views mentioned are well known in strategic management discipline, and the following two subsections present how they helped us pinpointing the content of our educational programme.

### **Market-based View of the Programme**

In the 1980’s Porter developed well known “Five-forces model” to analyze organization’s environment, assessing attractiveness of industries, competitive positions, etc (Porter, 1980). Five-forces model forced us to think about the end-results.

As a starting point, we leaned on business practice’ requirements. What do businesses expect of our graduates? What kind of skills does he need to bring to the practice? That approach coincides with strategic orientation of our school, whose mission is:

“FELU [Faculty of Economics Ljubljana University] creates and disseminates knowledge to enable students’ successful entry into the business world and offers a rewarding investment opportunity to the business community.”

The market requirements were not analyzed using a survey but rather through first-hand education and consulting seminars in companies. One of our findings, when looking at demands of business practice was that we located the applications that are mostly used in businesses (i.e. MS Excel and Database management systems for *data to information* transformation, MS Project for IT support for project management, etc.). However, this was not the only finding.

### **Resource-based View of the Programme**

When developing solutions with our clients we have come to a conclusion that each problem is of complex nature in a sense that only knowledge about the IT tool (i.e. spreadsheet) is not sufficient. The knowledge needed was about modeling the problem itself first (business and analytical knowledge), thinking which IT tool to use and how, and then applying a combination of them all.

This led us to think not only about the knowledge of current products (as it would if we only had the market-based lenses on), but sustainability of what is learned by our students. Business students need to learn how to approach to problem-solving aided by IT, not to know-by-heart every single menu and functionality of particular software. Therefore, we leaned on a resource-based view as well.

In its extreme form, market-based view pays attention only to (outside) market and the product delivered. The resource-base view draws strategic competitive advantages from superior quality of resources (Penrose, 1959; Prahalad & Hamel, 1990; Wernerfelt, 1984). That means, that we had to look at our qualities and *what could be the core competencies of our student*, compared to other IT-skills education institutions.

To elaborate on that: it is of no use to know *about* Word (here we define knowing *about* as user’s familiarity with menus, icons, ...), if we do not know how to create a document (including proper content); it is of no use if we know *about* Excel, if we do not know how to create a decision model beforehand in our mind and put it down on paper; it is of no use knowing *about* Access, if

we do not know the relational database model and at if we are not at least broadly familiar with working / business process for which database is intended; it is of no use knowing *about* PowerPoint, if we do not know how to perform the presentation properly using PowerPoint.

Based on our experience, employers do not care as to how many certificates an employee had and how many IT software solutions did they claim to know about. That might be a relevant criterion at initial stages of employment process when hundreds of job-applications are screened. What they were actually concerned with and about was whether or not the employee was able to look at a problem and then employ the most appropriate and relevant technologies to solve the problem to add value to the business. IT tools can aid in solving business problems significantly, however, they are merely (yet very powerful) *tools*, not *the brain*.

Findings from business-practice requirements were synthesized in the following motto:

»Employers do not care what employee “learned” (knows *about*), rather what he “knows” (knows *how* and *why*). Employer cares whether one can efficiently solve business problems which business practice puts forward. «

What business students need to be good at, is ability to draw up on three types of knowledge: business, methodological, and technological (IT); moreover, they need to synthesize all three of them in one coherent piece. This is where business students can show their strengths: understanding and delivering “model-based” approach to business-problem solving. That we elaborated in our next motto:

»Solving business problems requires using different types of knowledge: business, methodological and IT knowledge, and combination of all three types.«

### ***Combining Market- and Resource- View of the Programme***

Future work’ requirements don’t follow the logic of “certificates of knowledge of this-and-this computer package”. Instead of delivering knowledge *about* these tools, knowledge of *how and where* these tools will be applied in practice needs to be transferred to students. Delivering *know-what* is obviously much less effective as delivering *know-how* and *know-why*.

The third motto of our programme is how to deliver such knowledge to our students and educational/consulting seminars:

»Basic rule about demonstrating the use of a tool is a practical case-example. What doesn’t happen in real life, it doesn’t exist.«

Solving real-life examples show how to use a particular tool in the context of problem-solving, in which that tool will be used later as well. It is not worth explaining functionalities of IT tools on artificial and made-up trivial examples as the students do not see the real-life context. These principles are summarized in next motto:

»We do not demonstrate IT tools; rather, we show how to solve business problems using contemporary IT tools.«

Performing lab-lectures in this sense, we find that reduction of “ballast” (in a sense of “old school method” of showing application menus) is significant. Consequently, the most relevant functionalities of IT tools that come handy when solving business problems are learned more efficiently and effectively, as they are used in the course of problem-solving process.

## **On Delivery Method – “It is all about Experiential Learning”**

### ***Background***

It is not intention of this paper to ignite epistemological debate on knowledge and learning. We take the view that knowledge is acquired with learning and that knowledge can only reside with a person. What is of interest to us is the process of learning, as understanding them would help improve the role of instructor in that process. Behaviorism and constructivism are two main perspectives in learning theories which help us understand the process of learning.

Behaviorists argue that people need reinforcements to keep them interested and that the use of stimuli can be very effective in controlling behavior. The behaviorist theory of education is probably by far the most commonly practice because the behaviors of the learners can be easily viewed and therefore measured.

Cognitive theorists (starting in cca 1920's by Piaget (see i.e. Furth & Wachs, 1975)) recognize that learning happens inside the brain which therefore needs to be constantly trained. Constructivism views learning as a process in which the learner actively constructs or builds new ideas or concepts based upon current and past knowledge. Learning involves associations established through contiguity and repetition. Cognitive “preachers” therefore teach ex-desk: they set knowledge, learner listens. They hope students will later find ways to apply the knowledge in action. Critics focus on lack of connection of theory to practice.

Constructivists believe that "learners construct their own reality or at least interpret it based upon their perceptions of experiences, so an individual's knowledge is a function of one's prior experiences, mental structures, and beliefs that are used to interpret objects and events." "What someone knows is grounded in perception of the physical and social experiences which are comprehended by the mind." (Jonassen, 1994).

Related to constructivist theory of learning is experiential education. John Dewey (1938) was an early promoter of the idea of learning through direct experience, by action and reflection. Seminal work was done by (Kolb, 1984). According to experiential education theory, students should make discoveries and experiment with knowledge themselves instead of hearing or reading about the experiences of others. Students also reflect on their experiences, thus developing new skills, new attitudes, and new theories or ways of thinking (Kraft & Kielsmeier, 1995; Kraft & Sakofs, 1994). So teachers first immerse students in action and then ask them to reflect on the experience.

### ***Experiential Education ‘Our Way’***

As external limitations in our case (time, cost) do not allow strict experiential education we added instructors to the learning phases.

- 1) In the experience-gathering phase, instructor helps (not presents!) students to get experience by mostly explaining, reasoning and solving a business-practice case, and also by role-playing and other activities.
- 2) That is followed by the experience-reflection phase – a discussion, where instructor helps students to reflect on the experience “What we did? Why we did that? What cases does it also apply”
- 3) Third phase is help in synthesizing conclusions: “What are we going to do differently in future?”

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- 4) Last phase is applying acquired knowledge and experience to a similar problem. It does not necessarily happen immediately after the third phase; it can be “towards the end of today’s lecture” or “next time”.

This approach adds the “*how and why*” dimensions of knowledge delivered.

## Synthesis

### ***Synthesis of Content and Delivery Method***

Based on the above discussed principles the educational programme titled “*Solving business problems with help of information technology tools*” was set up; it is accompanied by a book which includes a CD with all the examples and solutions covered (Baloh et al., 2005).

The programme can be broadly divided into three components, which are shown below, along with description of topics covered. Note that due to time constraints some of the topics listed below are actually performed in the 1<sup>st</sup> year of Business school. In example, IT support for project management is covered in “Project Management” and “Management of IT Projects” modules.

#### **1) Administrative tasks**

We all hate it, however, we all have to do it. It is a component that covers skills that most employees, regardless of their function, position, specialization, need on a regular basis:

- file and workspace (in personal computer sense) management,
- editing complex documents (word processor),
- data processing, table/chart presentation of information (using mostly spreadsheets),
- e-communicating, organizing calendar, contacts (using e-mail client),
- mass mailing (using combination of word processor and customer data base),
- doing presentations.

#### **2) Decision support**

The second component’s primary audience is employees who make decisions: analytics and managers. (“Managers” are considered using the organization- and management-sciences definition; they are the employees whose work includes planning, actuating and controlling; they do that with making decisions and delegating work.) It includes:

- creating decision models, with special section on financial modeling,
- creating databases to support simple business processes,
- creating information using spreadsheets and database-queries,
- finding decision-relevant information on the internet.

#### **3) IT tools for planning and actuating**

The third component is intended to support management processes of planning and actuating:

- creating forms and templates for system documents (i.e. directives),
- creating organizational structures,

- business process modeling,
- IT support for project management.

Note, that even though some of the above topics might feel trivial, they are all performed with extensive business-background relevance. I.e. before creating documents, types of business documents according to ISO standard are introduced; required elements of business-documents are introduced and explained, and so on. Doing the e-communication and mass mailing, legal constraints and etiquette for example are discussed. On the topic of presentations IT support for Project Management covers methodological approach to managing projects and IT tool (in our case, Microsoft Project), is used in the context of a particular project that students undertake in a case-study manner.

To sum it up, the main focus of delivery, as discussed in previous section, is practical examples, solved by students, in particular task- and/or process- context.

## Results

At the end of each term, a survey about the lab lectures: their content, literature and their execution is done.

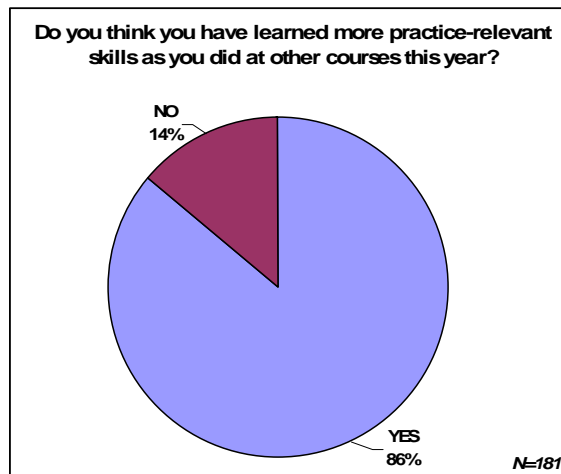
Some of the most important questions that we ask, relevant to this paper, are:

- 1) “Assess practical usefulness of newly acquired skills”,
- 2) “Do you think you have learned more practice-relevant skills as you did at other courses this year?”
- 3) “Rate the lab lectures in a scale from 1 to 4, 1 being the lowest and 4 being the highest score”

In 2004/05 study year, 183 first year Business school students (out of 420) responded to our on-line questionnaire with 36 questions, most of them using 4-point Likert-style rating scale (to rule out “sit on the fence” stance (Saunders,

Lewis, & Thornhill, 2003)), and three of them being open-ended questions. Students were asked to fill out the questionnaire at the last lab lecture with tutor introducing the purpose and explanation of the questions. Students were guaranteed anonymity and have a free-choice of participation.

Results were as presented in Figures 1, 2, and 3. Figure 1 presents the perception of the students about relevancy of newly acquired skills compared to other 1<sup>st</sup> year subjects. Figure 2 shows in more detail how they feel about practical relevancy; we can see that opinions are skewed in the “proper” direction. Overall assessment in Figure 3 shows a similar picture.



**Figure 1: Practical relevance of newly acquired skills compared to other 1<sup>st</sup> year courses**

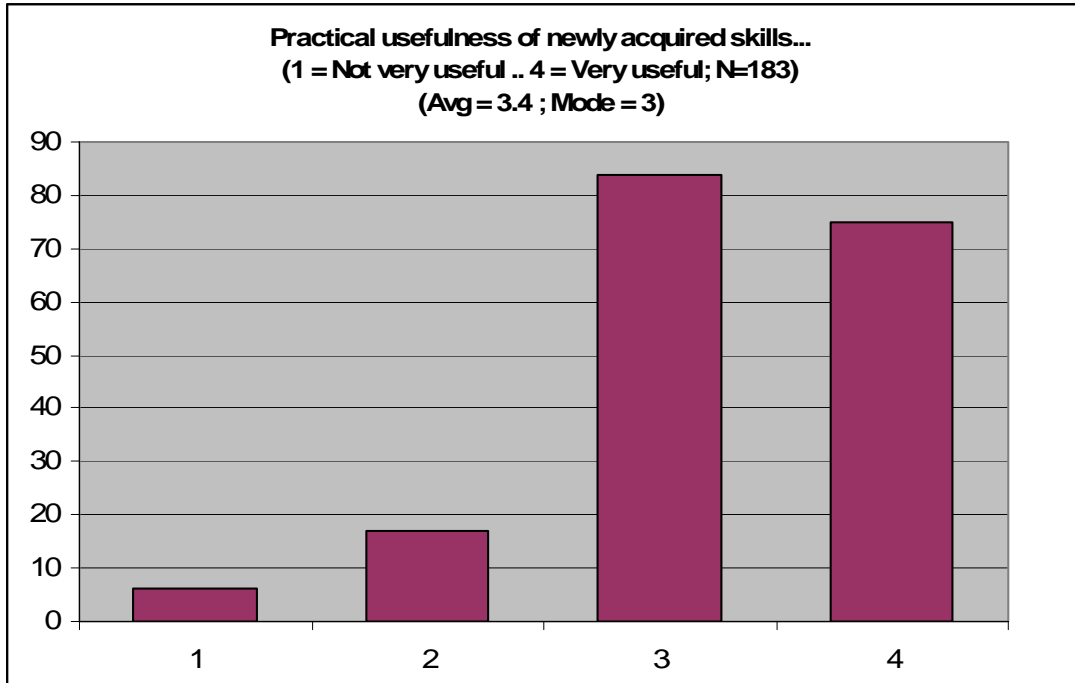


Figure 2: Practical usefulness of newly acquired skills as perceived by students

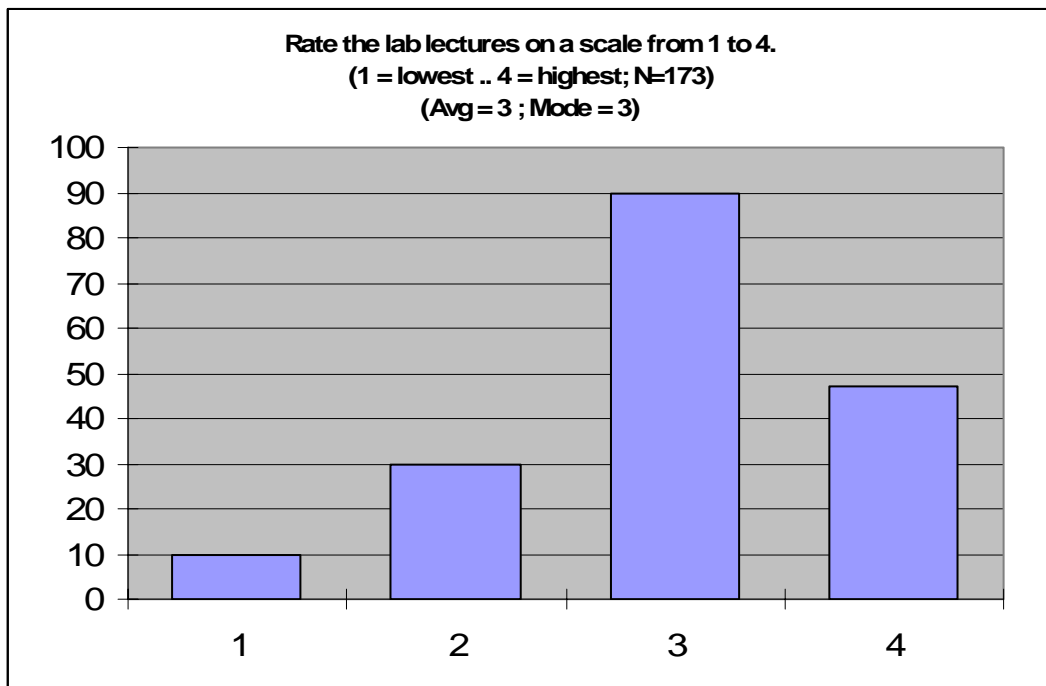


Figure 3: Overall assessment of the lab lectures as perceived by students



## Conclusion

Experiential learning with business-process focus are considered to be the most important pillars of presented educational programme. We believe that the concept presented helps our students - both at HEI and from practice - solve business problems using contemporary information tools in a more effective manner. Our experience in business practice shows that even with a high degree of usability of contemporary IT tools, there is much in the “every day work” that can still be improved in this area.

To conclude this paper, we cite the leading motto of the efforts of our programme:

*Today knowledge has power. It controls access to opportunity and advancement.*  
(Peter F. Drucker)

*If not today, when? If not you, who?* (Anonymous)

## References

- Baloh, P. (2005). Analysis of information systems management (post)graduate program: Case study of Faculty of Economics, University of Ljubljana, Slovenia. In *Proceedings of IS2005: Informing Science + IT Education Conference*. Flagstaff, AZ, USA, June 19-21 2005: Informing Science Institute, Santa Rosa, CA, USA. Available at <http://2005papers.iisit.org/I22f93Balo.pdf>
- Baloh, P., Cibej, J. A., Popovic, A., Skrinjar, R., Trkman, P., & Vrekar, P. (2005). Resevanje poslovnih problemov s pomočjo informacijskih orodij (Solving business problems using IT tools). Velenje, Podplat. (in Slovene).
- Chao, P. Y., & Wang, Y. C. (2001). A data exchange framework for networked CAD/CAM. *Computers in Industry*, 44(2), 131-140.
- Denning, S. (1998). Building communities of practice. In *Knowledge Management: Lessons from the Leading Edge* (pp. 48-50): APQC.
- Dewey, J. (1938). *Experience and education*. New York: Macmillan.
- Drucker, P. F. (1979). *Managing for results*. London: Pan Books.
- Furth, H. G., & Wachs, H. (1975). *Thinking goes to school: Piaget's theory in practice*. New York; London: Oxford University Press.
- Gates, B., Bryant, S., & Dean, M. (1999). *Business @ the speed of thought*. Harlow: Pearson Education.
- Harvey, G. (2003). *Excel 2003 for dummies*. Hoboken, N.J.: Wiley.
- Jonassen, D. H. (1994). Thinking technology: Toward a constructivist design model. *Educational Technology*, 34(4), 34-37.
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs; London: Prentice-Hall.
- Kraft, R. J., & Kielsmeier, J. C. (1995). *Experiential learning in schools and higher education*. Boulder, CO: Association for Experiential Education; Dubuque, Iowa : Kendall/Hunt.
- Kraft, R. J., & Sakofs, M. (1994). *The theory of experiential education* (2nd ed.). Boulder, Colo.: Association for Experiential Education.
- Naqvi, S. J. (2005). An overview: approaches for the development of basic IT skills. In *Proceedings of IS2005: Informing Science + IT Education Conference*. Flagstaff, AZ, USA, June 19-21 2005: Informing Science Institute, Santa Rosa, CA, USA. Available at <http://2005papers.iisit.org/I34f12Naqv.pdf>
- Penrose, E. T. (1959). *The theory of the growth of the firm*. Oxford: Basil Blackwell.

- Porter, M. E. (1980). *Competitive strategy: techniques for analyzing industries and competitors*. New York: Free Press.
- Prague, C. N., Irwin, M. R., & Reardon, J. (2004). *Access 2003 bible*. New York; [Great Britain]: Wiley.
- Prahalad, C. K., & Hamel, G. (1990). The core competence of the corporation. *Harvard Business Review*, 68(3), 79.
- Saunders, M., Lewis, P., & Thornhill, A. (2003). *Research methods for business students* (3rd ed.). Upper Saddle River, NJ: Prentice Hall.
- Sveiby, K. E., & Lloyd, T. (1987). *Managing knowhow*. London: Bloomsbury.
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171-180.

## Biographies



**Peter Baloh, MSc.**, is full time graduate assistant at Information Management department of Faculty of Economics Ljubljana University, Slovenia. Currently he is on study leave, researching at Informatics Research Institute of University of Salford, Manchester, UK. His main research interest is concentrated in the fields of information systems and knowledge management. He is intrigued by the question of knowledge management strategies and their successful implementation, and by question of supporting businesses with contemporary information technologies. He has authored a good dozen of articles which were presented at conferences and some published in journals. He has co-

authored two editions of a book *With practical examples through MS Office* (2001,2002), which have recently been followed by *Solving business problems with help of information technology tools* (2005). Both of them use in-business-practice-affirmed *experiential learning* and are used by future and existing business professionals in Slovene higher-and other-education institutions and industry, to acquire skills for using contemporary IT tools in a more successful manner.



**Talib Damij, PhD**, received his PhD in Information-Management Science from the faculty of Economics at University of Ljubljana in 1988. He is currently a professor of MIS at the faculty of Economics, University of Ljubljana, Slovenia. Dr. Damij's research interests include Information Systems Development Methodologies, Information Systems Project Management, Business Process Reengineering, and Linear Programming. He lectures at undergraduate and graduate levels the following three courses: Information Systems Development, Information Systems Project Management, and Programming. He has authored numerous articles and books in the mentioned fields, including Springer-published *Tabular Application Development for Information*

*Systems*.



**Peter Vrecar, MSc**, received his Information management masters degree at Faculty of Economics Ljubljana University, Slovenia. He has been involved in educational process at the University since 1995, firstly as teaching assistant and after graduation as external expert from business practice. Pedagogically he is involved with Business Information Systems, Statistical methods for business, and Organization modules at the Business School. He has co-authored books *With practical examples through MS Office* (2001, 2002) and *Solving business problems with help of information technology tools* (2005), which have been used at numerous educational programmes in higher education and other educational institutions, as well as business practice. His full time position of Manager of Projects at one of Slovenian biggest companies, Merkur d.d., helps bringing business-practice-relevance to modules he is involved with at University. He has pointed his career to project and process management, as well as optimizing everyday business practice with IT tools.