"Mircea cel Batran" Naval Academy Scientific Bulletin, Volume XVI – 2013 – Issue 1
Published by "Mircea cel Batran" Naval Academy Press, Constanta, Romania

INFORMATION MANAGEMENT FOR ACADEMIC ENVIRONMENT

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Abstract: *Information management has the potential to contribute to the achievements of organizations. Information can be integrated into organizational processes and so it can influence organizational culture, structure and work patterns. Managing information is not an easy task and refers to information products, information services, information flow and information use in an organization. Useful measures of the effectiveness of information management can be based on the impact of information on the organization. Academic Information Management System (AIMS) offers the robust functionality needed to manage the entire academic processes and student life cycle starting from course planning, student enrolment and class registration to financial aid information and billing – providing a centralized data warehouse that gives a single source of information to make well-informed financial and operational decisions in real time. The current paper highlights the importance of information management in modern organization, in particular the impact of IMS in university.*
Key-words: *information management; management information system; intelligent organization.*

1. INTRODUCTION

Information management (IM) refers to the collection and management of information from different sources and the distribution of that information to various receptors. As organizational approach, information management represents a corporate responsibility that needs to be addressed and followed from the upper most senior levels of management to the front line worker. Organizations must focus to capture, manage, store, share, preserve and deliver information in an understandable way and form. Part of that responsibility lies in training the organization to become more familiar with the policies, norms, processes, technologies and best practices in IM.

The organizational structure must be capable of managing information and must be adequate regardless of source or format (data, paper documents, electronic documents, audio, social business, video, etc.) for delivery through multiple channels.

In this paper the authoress discusses about the important of implementing an information management system in universities pointing to the major benefits of it.

2. ABOUT INFORMATION MANAGEMENT WITHIN ORGANIZATION

Information management represents an important area in which its contribution can establish the organization's trajectory of organization regarding the competencies in business world. Organizations are continuously searching modern and powerful solutions to handle information within internal and external environments. IM requires the deployment of a diverse range of management skills in order to successfully and effectively deliver the benefits of information systems investments. IM refers to planning, organizing, controlling information within complex systems and the use of technology and techniques for management of knowledge resources [1, 2, 4].

The main task of IM is to seek to efficiently exploit the data, information and knowledge resources available in the organization. The quality of information influences the decision-making cycle and the achievement of company's goals and objectives. Managers need a high level of information quality and they have to find the best methods, techniques, equipment to collect, store, prepare, transform, interpret and deliver information within organization.

Management information systems (MISs) are more and more described in literature as solutions for manage the intellectual capital represented by knowledge. Defining MIS is simple: join three terms (management, information and system) and define one by one. The result is an information system that has the main role to manage the data, information and knowledge.

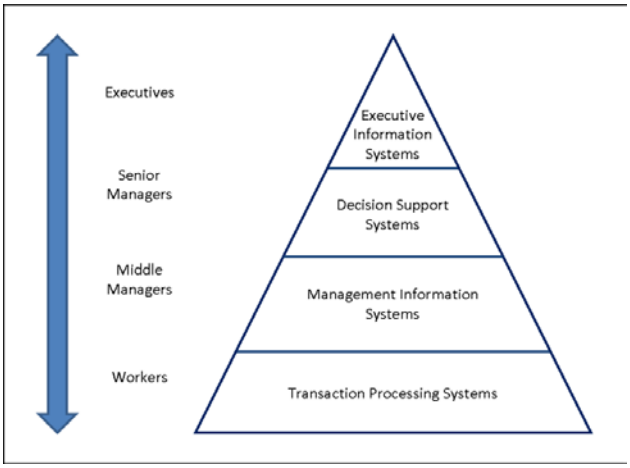

Fig. 1. The organizational pyramid

Organization owns four categories of information systems, as follow: transaction processing systems, management information system, decision support system and executive information system. MIS corresponds to the middle managers in the organizational pyramid representation (fig.1).

A transaction processing system (TPS) is find at the operational level and its task is to collect, store, modify and retrieve the transactions of an organization. Examples of such systems are automatic telling machines (ATMs), electronic funds transfer at point of sale (EFTPOS – also referred to as POS).

A management information system gives the business managers the information that they need to make decisions. MIS describes applications providing managers with information about sales, inventories, and other data that would help in managing the enterprise.

Decision support systems (DSSs) serve the management, operations, and planning levels of an organization. The main role is helping to make decisions, which may be rapidly changing and not easily specified in advance by managers. Decision support systems can be either fully computerized, human or a combination of both. An example of DSSs is knowledge-based systems.

An executive information system (EIS) is a type of management information system that facilitates and supports senior executive information and decision-making needs, providing easy access to internal and external information relevant to organizational goals.

In the next section the authoress will discuss about university management systems, as an example of MIS and the importance of implementing this type of information system.

3. UNIVERSITY MANAGEMENT SYSTEM

Universities are organizations with dynamic and complex processes, with entries and outcomes, with objectives and goals. Keeping track to all transactions and all documents generated by transactions, reports and other important tasks is not as easy as it seems. The University Management System (UMS) can help in streamlining of various university functions. It can reduced time required on various activities and can also help in improving employee performance [2].

The UMS is a viable solution to improve the efficiency and effectiveness of academic and administrative functions by adopting innovative technologies to automate all tasks with transparency and inclusiveness [5, 7].

A typical structure of UMS consists in four main modules: student information module, faculty information module, library information module and finance module (Fig. 2).

Student information system (SIS) is the information system responsible for managing students' data at the university. A example of typical student record in the SIS might includes the student's ID, name, age, gender, address, email, username, password, date of birth, faculty, university status and department.

Library information systems (LIS) are responsible for managing and automating libraries processes within faculties or universities. The database records in these libraries reflect the managerial tasks performed by librarians in order to effectively manage the libraries. A typical record will include ISBN, name, authors, keywords, and data like a list of all books, a list of available books, a list of borrowed books, who is borrowing, when the books are due to return etc.

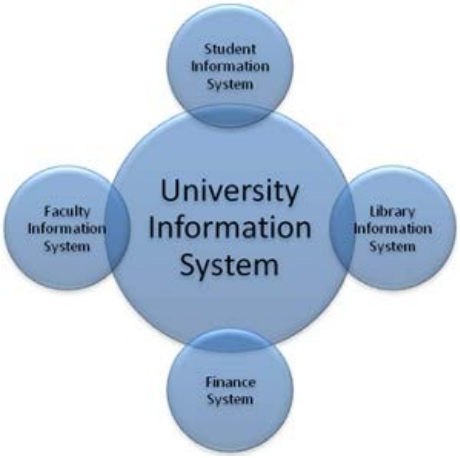

Fig. 2. An example of University Management System [3]

Faculty information systems (FIS) manage and automate managerial activities related to instructors, employees, courses, and the intersections between them. A typical faculty information system database record includes four categories of data: faculty data (ID, name, departments, courses data), course information (course id, name, description, instructors), faculty personal data (ID, name, age, gender, address, email, username, password, date of birth, year, department) and employee data, which is the same as the instructor's data but with customized data about one's job [6].

A finance system (FINS) manages financial issues related to any organization, even if this organization is a faculty or university. This architecture can be extended with more modules such as: enrollment management module, exam management module, evaluation module, graduation module etc.

A solution for university management is tested at University Petroleum – Gas of Ploiesti, for educational use as a result of development of a POSDRU research program. The software was provided by a Romanian software team (The Red Point) and was the basis for a training program for academic staff and students.

University Management System software is the result of a complex and comprehensive research study of how universities work, processes and regular activities in this type of institution [8].

Its primary objective is the assimilation and harmonization processes specific academic management, offering the opportunity to create their own methodology of work.

Implementation of Integrated University Management System software allows quick access to information and the achievement of strategic objectives through optimal management of human, financial and technical resources.

Universities receive a flexible, adequate solution for their business and which gives them an increased competitive advantage due to its capabilities:

- ✓ intuitive, easy to understand and use;
- ✓ access to real-time data;
- ✓ interconnection and sharing of database computers in different locations;
- ✓ accurate and updated information;
- ✓ saving time by automating operations and processing information quickly, easily;
- ✓ making the right decisions is provided for quick access to information, leading to proactive approach to managing issues related to university management;
- ✓ modular structure enables the addition or detachment of modules and sub-modules;
- ✓ system's architecture allows integration with other applications, activities of higher education institutions.

The University Management System has a modular structure, organized so as to ensure a high degree of independence between modules. Adding and removing modules is possible without affecting the rest of the modules installed. Of course, using this structure, it is possible to develop further and adding new modules and functionality to existing system.

The application is organized into several functional modules, some standard and some optional.

The standard modules are: "Universitate", "Candidati", "Studenti", "Taxe", "Administrare", etc., and the optional modules: "Cazare", "Burse", "Modulul Web"(fig.3).

In the next section of paper the authoress presents and example of UMS usage.

4. EXAMPLES OF UMS USAGE

The main modules of UMS solution described below are presented in the figure 3.

Fig. 3. University Management System main modules[8]

For example, the distribution of student dormitories is on the basis of accommodation practiced by each college and generates lists of students who received accommodations (fig.4). Students that meet the condition to receive a room can be listed both by specialization, and by specialization and year of study. This allocation is performed by staff at the secretariat each faculty/college, corresponding to the limited beds distributed before the start of the academic year.

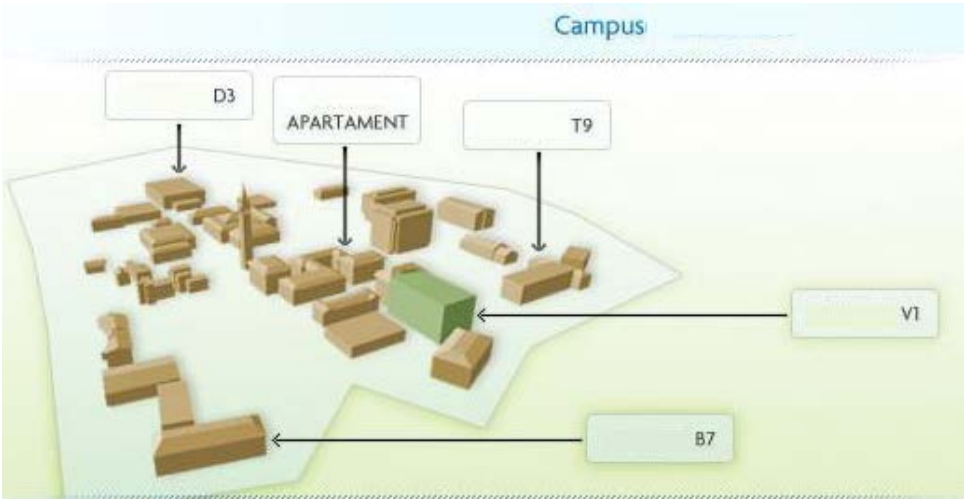

Fig. 4. The students' campus[8]

Admission represents all processes starting with announcement of admission data, enrolling candidates to examination, candidates studying records, generating ranking candidates according to criteria established by the University Senate, to prepare lists of candidates declared admissible.

UMS basic processes are:

- ✓ definition and management of organizational structure of university;
- ✓ define and manage academic structure;
- ✓ managing the admission of candidates;
- ✓ activities related to the management of students;
- ✓ management of exam sessions;
- ✓ management fees and taxes;
- ✓ management scholarships;
- ✓ subscriptions transport management;
- ✓ management and monitoring of the student accommodation;
- ✓ management and operational processes related to graduate diploma;
- ✓ management of Web module;
- ✓ management reports and analyzes.

Effectively, an admissions flow consists in:

- ✓ submitting to the secretariat or the admissions committee;
- ✓ fee payment for admission by the candidate;

- ✓ attachment proof of payment to the file;
- ✓ takeover candidates committee or secretariat files, validation and eventually introduce them into the computer to make the ranking of candidates.

The application allows searching candidate directly by cashiers, following the introduction of a virtual folder by members of the admissions committee.

After completing the final ranking of admission, each applicant will be registered as a student. In this case, will be completed other information about student (address, phone numbers, email accounts, web addresses and other personal information), then the student is enrolled and receives a registration number. Depending on the system practiced within that faculty, college, the student may be immediately recorded in the school register or later.

The module responsible with admission process is "Candidati", submodule "Dosare Incomplete".

After completing the necessary tasks for candidates files, the status of files changes to the "incomplete" in "complete". In the figure 5 is presented the GUI for admission process.

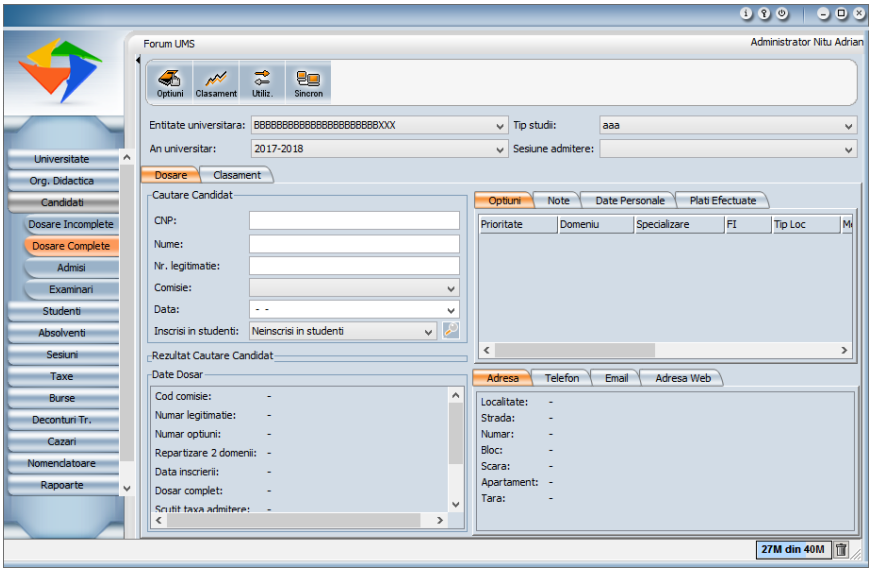

Fig. 5. Filling the candidates files

The students' module refers to the students' personal information management, scholar situation and financial status (if all the taxes attached to the students are finalized). The "Examinari" module is responsible with the exam sessions (winter, summer and autumn sessions).

For example, the scholar situation of a student is presented in figure 6 and describes the marks obtained during exam sessions.

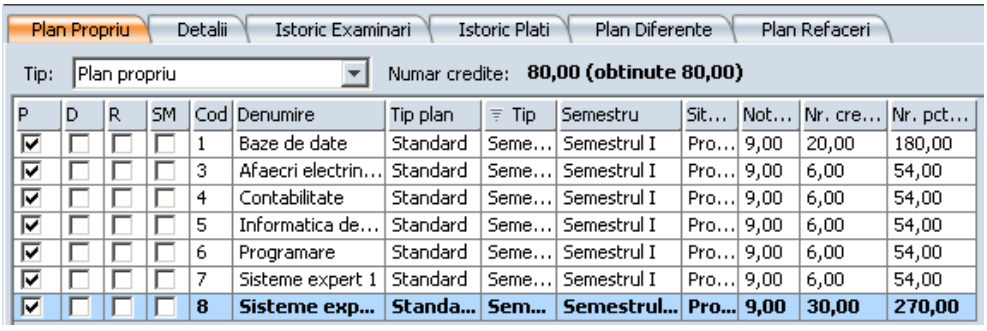

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Fig. 6. "Plan Propriu" tab

The final operation associated to the exam module consists in finalization of semestrial situation and then the annual scholar situation (fig.7). If the number of credits is equal or more than minimal number of credits necessary to promote the university year, then the students is enrolled to the next year (fig.8).

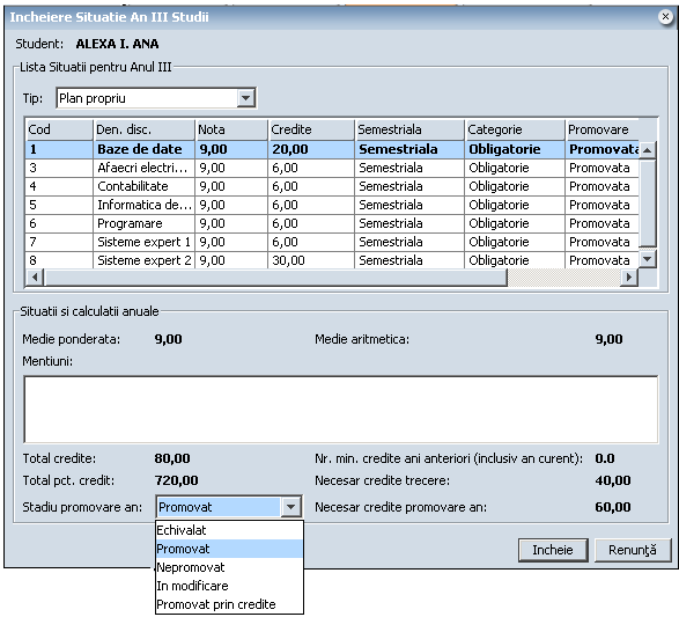

Fig. 7. The final scholar situation of a student

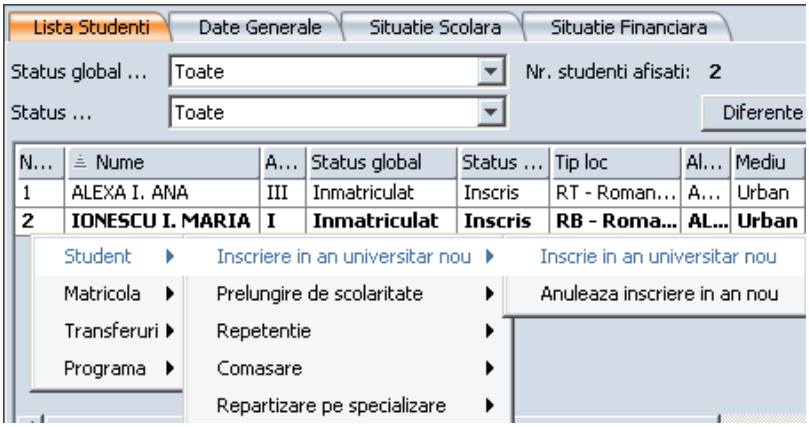

Fig. 8. Student enrollment in the new academic year

The examples presented above serve to highlight how detailed are operations and management for the admission of students and for the school situation.

5. CONCLUSIONS

This paper shares the experiences of the authoress regarding the application of a management information system within universities.

The strengths of the UMS are mentioned as follow:

- ✓ More efficient and faster processes related to the entire student life cycle;
- ✓ The system can fully manage the examination process from the time the student enrolls to the time they graduate and produces both transcripts as well as certificates.
- ✓ Greater management control in line with university strategic plans over the processes at the university that have resulted in higher performance in all areas.
- ✓ Better performance in collection, management and reporting of student information.

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