

One Approach to Administrative and Educational Processes Modeling: Case of Bachelor Program

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Abstract

*Numerous actions and tasks in university practice may lead to confusion and can significantly reduce the effectiveness of the administrative and educational processes. Hence, this paper aims to present how Graduate School of Management of Saint Petersburg State University (GSOM SPbU) enhanced its business processes (BP) and knowledge management (KM) by developing model of information support for the undergraduate program Directorate and undergraduate students. The study presents the results of applied project that included the model development for information support of the activities of undergraduate programs Directorate, a visual representation of the scheme of business processes, directory structure for storing documents and students' academic calendar. The **educational** community has improved through creating the environment that efficiently employs business **processes**. Other universities or educational institutions can use this BP and KM experience of GSOM SPbU as an approach to modeling the administrative and educational processes.*

Keywords: business process management, knowledge management, educational process, information management

Introduction

Improving process management becomes a key objective of many companies. Low level of strategy success is primarily due to the fact that information maintenance and analytical support did not pass into the category of more or less proven technologies [Latunin, Bokova, 2003].

The ongoing advance of technology and civilization has influenced in people's actions and activities to become more complicated with likelihood of appearance of the new problematic situations. The educational sphere as well as precisely the sphere of high schools is not an exception.

apers regarding the issues of business processes and educational context tend to differ in the ways they are trying to look at the problem in order to solve it. Some [Gjoni, 2015] use the approach to develop information systems and implement a model-oriented approach since it focusses on the business logic (the “what”) rather than on the specific implementation technology (the “how”).

The problem of information support is getting into two science spheres and these are Knowledge Management (KM) and Business Process Management (BPM). KM allows companies and institutions to manage and exchange knowledge from the place where it is originally generated to where it is to be exploited. KM assists the needs of internal (in our case, the faculty, teachers, administrative staff, etc.) and external customers (in this case, students) by generation of organizational routines that facilitate creativity of individuals and effective processes [Marulanda, Montoya, 2015].

BPM is not only about designing, developing and executing business processes, it also considers the interaction between these processes, managing, analyzing and optimizing them [Kohlbacher, 2010]. Changing the approach to operational management of the company to a process oriented management approach involves defining the responsibilities for the conduct of the proceedings [Palmberg, 2010], minimize transfers, thereby reducing errors and time delays, maximize the grouping of activities and reduce the effort [Antonucci and Goeke, 2011; Paim et al., 2008].

Organizational design of business processes is a leadership competency and responsibility that is taking on even greater importance as organizations require agility to respond to the environment [Ritacco, 2015]. Human resources with developed talents and creativity who are able to reach and utilize information constitute the main power of competition in the world market. Those companies and institutions that make investments on human resources and attempt to create working conditions that are compatible with their requirements and wishes, are the ones who reach success [Burma, 2014].

Some research specify on the focused problems of curriculum upgrades in one educational program [Hauck, 1998] but in our paper we describe the case of dealing with 18 business processes regarding undergraduate program from two different perspectives.

Other research findings upon the curriculum design [Lin, 2015] present partially positive effects on fluency, flexibility, originality, and elaboration and reveal significant moderating effects on the correlations between curriculum design and creative potential developing. Effective business process management inside the institution in its turn allows to enhance the overall quality of the knowledge management policies [Cao, et al., 2013].

These changes are of top importance if company or institution desires to remain competitive. As means of support companies can employ various approaches, techniques, tools and models; these, however, are not always adapted to the needs [Vedenick, Leber, 2015]. In our case we have identified them before constructing the scheme of business processes and their implementation.

Business processes in the context of the current available information technologies (IT) leads business education towards sustainable development and highlights its ability to offer a missing link between business, IT and strategy [Seethamraju, 2012]. According McCormack et al. [2009], advancing in the management of business processes, the organization will have better control of results, better prediction of goals, cost and performance.

There are permanent requirements for the changes in performances, increasing flexibility and improving the economic position of the company or other institution through the process orientation [Milan et al., 2014]. As processes are aimed to the same goal, unnecessary and misdirected steps are redesigned or eliminated, concentrating resources on core processes and improving the organization’s performance [Segatto et al., 2013] and the systemic approach may be a key subject to clarify the inter-relationships among processes, and processes and their contexts. In this paper we have considered different approaches towards constructing the administrative and academic business processes.

The managerial problem in GSOM SPbU that we analyze is typical for all educational institutions. Due to the changes in the organizational structure on the level of SPbU, insufficient staff and changes in the undergraduate programs Directorate, the integrity of the information had been flawed and that ultimately led to the need of developing a model of information support. This paper will describe how information support was maintained inside GSOM SPbU regarding the management of the undergraduate programs (see Fig.1).

2. Educational trends

2.1. SPbU organizational changes

GSOM SPbU is one of the Departments of SPbU. Up to the 2009 GSOM SPbU had divisional organizational structure in which the departments of the University were the divisions. Directorate of the undergraduate programs was submitting to the Dean, Office of the undergraduate programs was submitting its Director.

After September 2009 all departments of SPbU started to unite into separate branches and GSOM SPbU became a part of the branch “Geology and Management”. Each branch now was subordinating to the Vice rector of Academic affairs. These organizational changes were completed to increase the efficient use of the resources and reduce costs for individual control of every department.

In 2014 the basic principle of GSOM SPbU organizational structure was separation by the type of activities. This organizational structure can be called “matrix”.

Summarizing the main organizational changes we can outline six main circumstances on the level of GSOM SPbU that led to the emerging problem of the need for new information support model and these are:

- Implementation of the normative and regulative acts variation in departments of SPbU;
- Era of big change at SPbU and a strong need to respond quickly and to build business processes tailored to the new organizational structure;
- Need to support the particular quality level of business processes due to the requirements of international accreditations (see Appendix).
- Shift from the department towards the program management principle;
- Increase of the complexity of organization of educational processes under the certain conditions of world accreditations (students exchange program, internship exchange program, etc.);
- Complexity of the planning and interconnections between the processes under the conditions of high document volume.

They are typical for the changing nature of the educational sphere and are likely to happen in different educational institutions. These fundamental changes led to the initiative of the new business process model development at GSOM SPbU.

2.2. Need for new information support model

The problem of informational support for undergraduate programs splits into two perspectives: Directorate and students parts. This splitting allowed to work upon one managerial problem but from two different perspectives. On both levels there are three major needs to be fulfilled:

- Creation of information space for support of business processes;
- Development of tools for planning Directorate activities;
- Development of academic calendar for planning student activities.

The project employed qualitative method that consisted of in-depth interviews with key managers of GSOM SPbU and content analysis of the regulatory documents of GSOM SPbU. This allowed to gain valuable administrative insights, form and refresh the database of normative documents and get the understanding of the processes flow.

3. Approaches towards modelling business processes

During the process of the plan development numerous ways to allocate resources upon certain time limits appear. To make this process clear and understandable for everyone we should base on the four key selected elements and in our case these are: events, documents, participants of the process and time scale.

There are also four main approaches to the construction of the overall big plan (table in MS Excel) and these are: process approach, HR approach, complex approach and improved complex approach (used in our case). While choosing between these approaches we have to understand the goals of the final result and consider the limitations of each approach. The main limitation of the process approach is hard perception. We have the processes on the vertical axis and time on the horizontal one. But because some people are involved in different processes simultaneously there will be a large number of duplicate rows for the participants of business processes. Moreover, the line will appear to be too busy because of a large number of documents in a short period time.

HR approach differs from process in the way of presenting the information: the pushing off point (vertical axis) is for people while the horizontal remains the same. But major drawback of is the confusion in detecting the needed documents. First, the absence of the document-line does not allow directly (without passing through a hyperlink) to see which documents are involved in the process. Secondly, when a large number of processes are presented the picture will become complicated. Additional problems may arise if one participant will have different actions on multiple processes in a single day.

In the complex approach the horizontal axis (time) is divided into the educational weeks and enriched with the important dates (such as dates of the department meetings, commissions, etc.). Vertical axis also has changes – in this approach it outlines the descriptions of the ongoing actions. The disadvantage of that approach is inability to describe exactly what issues were discussed at a particular commission. Analysis of the possible approaches led to the choice of the fourth – improved complex approach. The horizontal axis stays for the working weeks and the vertical is for the business processes. By adding hyperlinks to the needed documents and storing them in particular folders in database we can minimize the time costs and increase efficiency.

4. Development of the Model of Information support

To start with we have defined 18 key business processes. A large number of participants in the proceedings of business processes greatly complicates the implementation and execution control. This determined the need for beforehand planning of the operations of undergraduate programs Directorate, both in relation to employees and teachers and to the students of undergraduate programs.

Therefore, we have one managerial problem to solve regarding two perspectives: Directorate of the undergraduate programs and student's perspectives. From the students perspective we developed a model of information support for 8 major business processes (preparation/organization/fulfillment) and also the academic student calendar:

- Questionnaires about the quality of teaching;
- Profile distribution;
- Start of the semester in “Blackboard” SPbU system;
- Organization of the State Attestation Commission;
- Registration for the choice disciplines;
- Educational process;
- Diploma preparation;
- Graduation ceremony.

From the undergraduate programs Directorate perspective managerial problem was to develop the model regarding other 10 key business processes. List of business processes can vary in different high education schools but usually it presupposes the following positions (preparation/organization/fulfillment):

- “Students exchange”;
- “Internship exchange”;
- “Draft standards of SPbU”;
- “Study plans”;
- “Teaching assignments volume”;
- “Syllabus development”
- “Reinstatement and transfer”;
- “Bachelor term-papers and thesis development”;
- “Invited professors recruitment”;
- “Freshman day”.

Then the initial challenge was to develop the administrative schedule that will improve control over the order and timing of the execution of business processes throughout the school year. Information support of the operations of management of the undergraduate programs basically consists of three major elements: storage of documents, schemes of visual representation of business processes (in our case developed on the basis of Microsoft Excel) and the administrative timetable of the directorate of undergraduate programs. To achieve the goal there is the need to solve the following sub challenges:

1. Analyze the existing tools to build the model of information support;
2. Develop a visual representation of the scheme of business processes;
3. Develop a framework of the document repository;

4. Plan business processes for directorate of undergraduate programs;
5. Identify peak periods;
6. Develop the administrative schedule for directorate of educational programs.

5. Case description

We will focus on one particular example of the information support for one business process of the undergraduate programs Directorate – “Students exchange” business process.

GSOM SPbU has 60 international university agreements. In charge of this business process are employees from Procurement sector and International office. Competition for the exchange semester abroad is held twice a year. Competition is fulfilled through the following algorithm:

- 1) Order distribution – announcement of the beginning of competition and its key important dates are sent via email to the undergraduates including online publishing;
- 2) Application acceptance – International office collects the applications filled in with respect to all GSOM SPbU standards (1 week);
- 3) Application processing – International office processes all the applications:
 - a. Creating a database of students regarding their preferences and scores;
 - b. Meeting of committee. (1 week)
- 4) Project of the order approving the results of the competition;
- 5) Nomination of the students and fill-in the online forms of the partner business school;
- 6) International office gets the invitation from the partner business school and transfers it to the student;
- 7) Before departure students approve plan for education;
- 8) Order for study abroad departure;
- 9) All orders approval;
- 10) If there are any changes in the study plan student is responsible to send the new one signed by the partner business school;
- 11) After arrival back to GSOM SPbU student brings copies of passport, visa, etc.;
- 12) Documents of return:
 - a. Official note if student arrived on time;
 - b. Official note if student arrived long after scheduled date;
 - c. Order if student arrived before scheduled date.

By analyzing these steps we can organize them into one business process and structure all the needed documents into the document repository. It is a set of structured files stored on the server. Access is either by hyperlink in the overall plan in MS Excel or direct. The defining point is the structure of the data. It does not only easily find the documentation for business processes and is convenient for immediate access but also allows to understand all of the steps of the business process at once. Each process has the abbreviation before the naming. For “Students exchange” business process we will have the folder named “SE_Students exchange” (see Figure 2). Next the structure of the process is logically subdivided into additional levels (for example, “Planning” folder contains of all necessary documents for the start of the process, there is also the separation for fall and spring semesters, the last document catalogue in this case will be “Results”).

6. Findings and Conclusions

In this article we united the two perspectives of one common managerial problem and solved it through applying the effective use of the BPM and KM policies. The main outputs of model development of information support for student processes were:

- List of business processes:
 - Questionnaire upon the teaching quality;
 - Launch of the new semester in Blackboard system;
 - Educational process;
 - Profile distribution;
 - Registration on the choice disciplines;
 - State Academic Commission (SAC) organization;
 - Diploma preparation;
 - Graduation.
- Development of forms to describe business processes in the Excel spreadsheet format;

- Development of structure of information space on the basis of the file system directory;
- Description of the business processes on the basis of the submitted documents;
- Conducted analysis of business processes;
- Development of student's academic calendar.

The major outputs of model development of information support for Directorate processes were:

- Analysis of the available tools for building the model of information support;
- Development of the visual representation of the business processes scheme;
- Plan of the business processes of Directorate of the undergraduate programs;
- Conducted analysis of peak loads in business processes;
- Development of Directorate's administrative calendar.

We had the experience to picture all main business processes for undergraduate programs in GSOM SPbU. This generalized representation served to determine the period of greatest workloads regarding the management of undergraduate programs (see Figure 3). This is a crucial moment in the overall planning process and it allows to understand where intensive resource allocation is needed.

On the basis of planned business processes administrative schedule was developed for undergraduate management programs to provide information that supports business processes flowing.

6.1. Practical Implications

Before the model construction we formulated the primary requirements that can be seen as further benefits of this approach:

1. Planning – due to the large number of legal documents with different expiration dates the model of business processes must be constructed with respect to time limits and should comprise top point events in these business processes;
2. Need to describe input and output documents in relation to business process – the description of business processes is subject of educational institutions and it is obvious that they will be governed by a large number of input and output documents. In GSOM SPbU there are three document flows: the flow of incoming and initiating documents ("what"), documents regulating the operation of the business processes ("how") and results documents ("what happened").
3. Possibility of scalability – it can be called by another term – flexibility. The model should be designed for next academic year use. Hence it should be adapted to changes in the regulatory framework and standards.
4. Multi-user interface – flexibility can also be expressed in the ability of several people simultaneously to work with the system. This requirement is important because the administrative department of GSOM SPbU consists of a few dozen employees, each of whom is a participant of a particular business process.
5. Low cost – the final requirement is that the cost of implementation of this model.

These requirements set the conditions for the model and can be implemented in different educational institutions.

Implementation of the basic business processes varies from year to year, as members of the business processes of the two main educational undergraduate programs (in the direction of "Management" and "State and municipal management") are 750 students and 80 teachers and 50 GSOM SPbU actively involved in different parts of the educational process.

The applied projects that this paper describes did not aim to detail every action of the Directorate during the 2013-2014 academic year, on the contrary, on the basis of knowledge about the processes and official documents there was the goal to develop a model that describes the information support of the educational process. The goal was successfully achieved and that allowed forming a general idea of the list of objectives to be carried out beforehand in order to maintain the quality of educational services provided to the student.

Considering the practical implementations, we have:

- Ability to observe the links between the organization activities and how to monitor ongoing implementation of business processes;
- The possibility of the analysis of processes and sub-processes and their optimization;
- Clear view on the role of each business process in the whole functioning of the institution;
- Transparency and visibility of the Department's actions;

- Introduction of the improved process approach towards educational management will improve the quality of the educational services.

To analyze the efficiency of the processes inside educational institute we advise to use the following criteria:

- Time for processes execution;
- Quality of the execution (no delays);
- Costs on resources for each particular process.

6.2. Limitations and further research directions

There are several points on which the researchers can explore more and that were not covered by this applied project:

- Depth of study – although we managed to build the big picture of the ongoing business processes and make the research of high latitude we have not considered the sub processes of each action/operation;
- Influential factors – we have not considered the possible influence of psychological/motivational factors to the fulfillment of the described business processes;
- Focus of research – we analyzed business processes of undergraduate programs Directorate and students and we see potential in research regarding other educational programs (for example, master/doctoral/executive);
- Applicability – we provided detailed description of the construction and implementation of business processes on the particular example of GSOM SPbU but nevertheless there are practical implications that can be used in other educational institutions.

Appendixes



Graduate School of Management of Saint Petersburg State University (GSOM SPbU) is a recognized leader in Russian business education.

GSOM SPbU has been ranked by the Russian daily newspaper Izvestia as the #1 business school nationally since 2011. The School has also been ranked by EDUNIVERSAL as #1 business school in Russia for 6 consecutive years since 2008 and #1 business School in Eastern Europe since 2012.

After 20 years of dynamic growth GSOM SPbU has gained an unprecedented for a Russian business school international recognition through a set of institutional memberships in the most prestigious international professional associations. The School today is the only Russian business school to be accredited by both AMBA and EQUIS (EFMD), the only Russian member in the Global Alliance in management Education (CEMS) and Partnership in International Management (PIM), as well as GBSN, GMAC, EABiS and GRLI.

International reputation of GSOM SPbU is also confirmed by a unique and strong network of international academic partners. 60 partner business schools from Europe, Asia, Australia and the Americas are among top-3 business schools in their respective countries.

(Source: <http://gsom.spbu.ru/en/gsom/international/>)

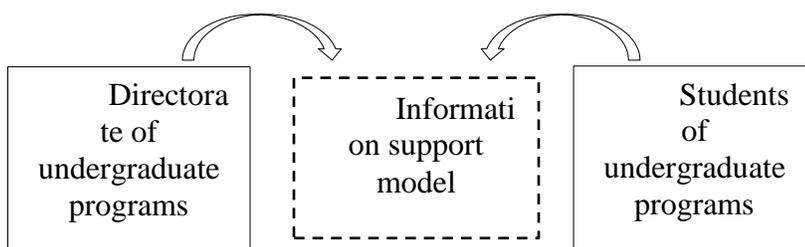


Fig.1. Scheme of the overall applied project

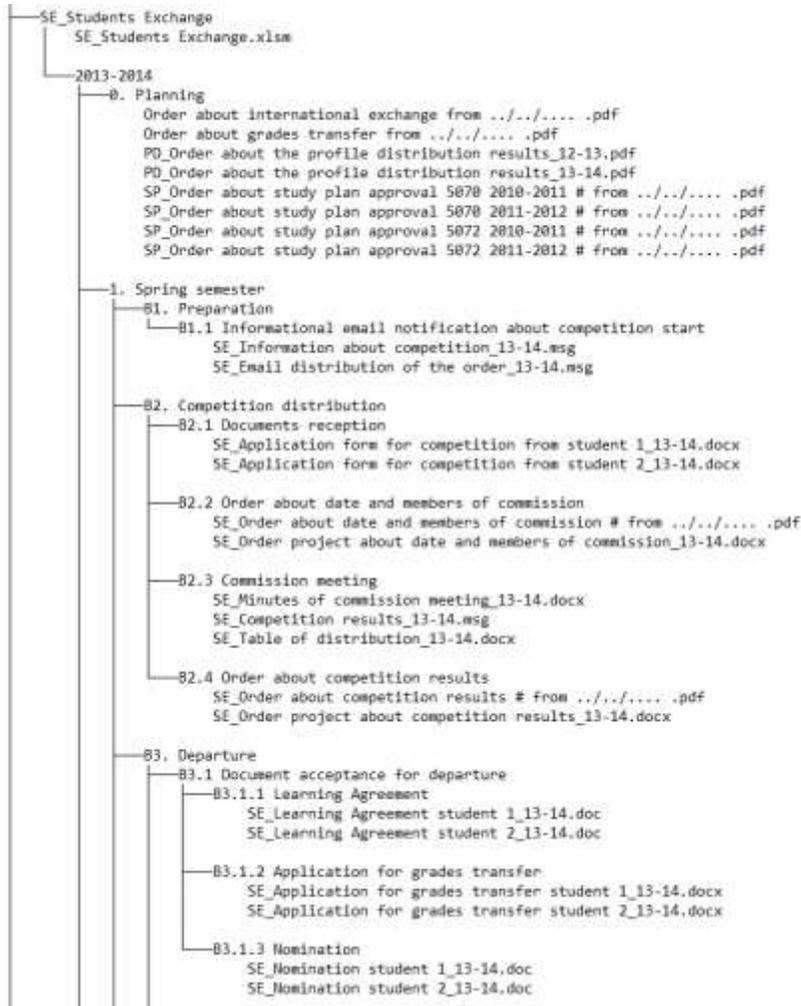


Fig.2. Part of the structure of “Students exchange” business process.



Fig.3. Big picture of the business processes of GSOM SPbU with highlighted peak load at the beginning of the new semester.

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