

Management of Tutorial Software Quality Programs

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Abstract

The paper presents the requirements for rising the quality of educational processes. There are defined the context in which the activities of our course are unreel. It is supposed a series of measures for changing the human factor role toward efficiency and creativity.

1. The particularity of business informatics master program

The Master of Economic Informatics has some particularities and the most important are the following:

- the presence of the multi-cultural elements at the students and professors;
- the heterogeneous of the study programs trying to contain the characteristics of the all Business Informatics schools from the different countries;
- the structural novelty of a practical stage semester in multi-national software companies; it is known that in Romanian universities de Master Courses contain theoretical approaches, being a continuation of the faculty courses for three more semesters;
- the introduction of the research elements in the all disciplines using case studies, personalized solutions variants and the participation at the thematic workshops through the group papers;
- the enforcement of the students to approach the problems in complex, multi-national, inter-disciplinary teams in order to obtain a new way of approaching and to use the learnt techniques and the methods in the courses; the goal is to resolve practical problems;
- the work on modules level for the disciplines to ensure the development continuity of some subjects and to supply solutions variants to complex problems;
- the availability of some professors to go to university and who wish to be involved in the development of this project; the conditions offered by university city;

The quality problems of the Master Course must leave these characteristics. The course quality is given by the quality of the students, professors, course plan, educational process conditions and, especially, by the quality of the administrative environment and the framework in which the important decisions are taken.

The short history of Master of Economic Informatics shows that a positive thought, the emphases on the understanding and action side to get to the goal established initially represents the only way to develop the processes and to pass from a stage to another one as progress steps.

The analyzed particularities generate a new hierarchical system of the contributions and it must be considered that only the positive events are considered in the development of assessment criteria of the persons who participate in the framework of this project.

2. The management oriented to efficiency

The organization of the master course has as objective the instruction of some young people with analysis and development skills in informatics application for the Small and Medium Enterprises. In general, the hierarchical structures are common to achievement of an adequate and efficient management, figure 1:

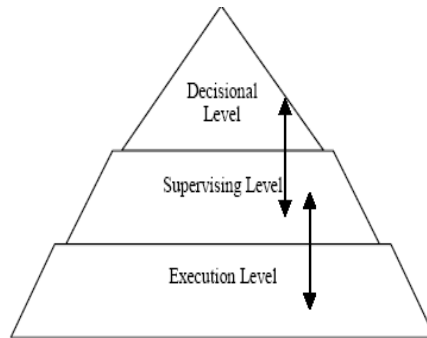


Figure 1: Management structure organized in levels

The quality of the management is decisive to obtain an efficient development of the project. In the case of some complex projects appear more aspects. It is considered the following set of financial supplier of the project: F_1, F_2, \dots, F_n . It is considered the following partner universities: U_1, U_2, \dots, U_m and the general manager of the project M . Also, on the execution level there are the persons E_1, E_2, \dots, E_k . To guide the execution it is made a work group G , and the decisions regarding the activities development are made by the D group. The hierarchical structure organized on levels is also ensured in such a project, figure 2:

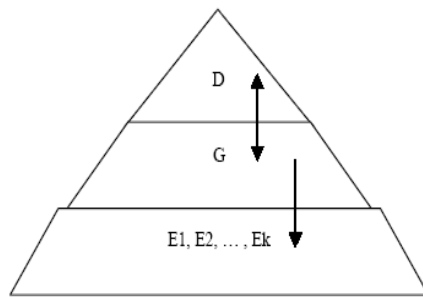


Figure 2: The hierarchical structure for project Master Course

The elements in addition appear including the financial suppliers and general manager of the project, figure 3:

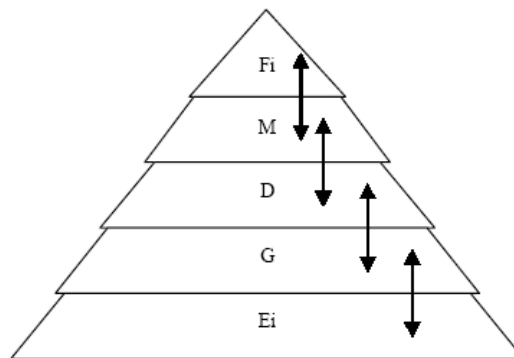


Figure 3: The complete structure.

In the hierarchical structure the information flows organized a five levels include a set of restrictions which it must take care from. The communication way is essentially to development quality instruction processes. The communication democratization must leave from the clear idea to development the changing of the messages with a positive character. Each message is characterized by author,

initiation moment, receiver, length, content, type. The group message has an author and more adherent. The messages have more types:

- suggestions through there are proposed activities, persons, events without indication of the sustaining resources and the persons who have responsibilities; it is normal that one of these persons to be the author, but this thing doesn't happen;
- practical proposals that regard positive evolutions, including resources, effects, responsibilities, engagement; this type has an active role in a project development;
- damnations to a person, to some activities without to propose solutions and to engage the author; these have the role to determine some aspects; anonymous that include selections of some real facts and need a very big energy consuming; they are the result of a irresponsible way of a project management, encouraging the negative flows in accordance with the principle "divide et impera" that it is unproductive on long term;
- informative that present personals or group aspects with a precise goal: they characterize some persons without practical results who have no backbone, without initiative who cannot engage themselves to resolve a problem and, especially, they wish to get advantages using any kind of method.

Also, in the Master Course are done messages exchanges. The messages considered positive regard the exchanges in the decision levels L_1, L_2, \dots, L_r , regarding adjacent level, $M(L_i, L_{i+1})$ means that the message M is sent from de level L_i to the level L_{i+1} , and $H(L_{i+1}, L_i)$ means the response message from the level L_{i+1} to the level L_i .

The transparency regards the knowledge of the messages that are transmitted in the system. It is preferred to build complete sets of messages for different problems.

The management oriented to efficiency take into consideration the problems P_1, P_2, \dots, P_s and the coordinates in which they are resolved. When a problem P_i has a resolving term it leads to the obtaining of results and it has participants, then it is very important to get an estimation of the way in which it got the result R_i for the problem P_i .

The managerial efficiency is given by the following formula:

$$e = \frac{\sum_{i=1}^s p_i a_i}{s}$$

where:

s – number of problems;

a_i – the points accorded to the solution on a scale from 0 to 10 points;

p_i – the importance coefficient accorded to the class in which it is included the problem P_i .

In case the management activities are considered inefficient. If the management activity is efficient and if e the management is very efficient.

The defined ranges are the results of the experimental evaluations. For managerial efficiency evaluation it is studied the correlation between the efficiency level and the average length of messages routes. Let's consider a message sent at level $L_i, i < j$. The length of message route is $l = j - i + 1$. For a amount of messages $M_1, M_2, M_3, \dots, M_g$, the average length of the routes length l_m is:

$$l_m = \frac{\sum_{i=1}^g l_i}{g}$$

An efficient management is the one that have the following indicator near value 1: . In case that $I_m \gg 1$ that means there are inefficient ways to solve problems in system, the communication process being not accomplish in a proper way. The communication from last level to the top of pyramid proves that the executors misunderstand managerial process. The lack of transparency through invoking inappropriate principles leads to the pressures with negative effects regarding the project.

It is reasonable that all the messages to be analyzed in front of all parties involved. It must be known all actors of an action for could be complete interpreted the whole text of message. In decisional level they are pass using routes that must be complete. A message send from level L_i to level L_{i+k} , is usually passing though the levels: $L_{i+k-1}, L_{i+k-2}, \dots, L_{i+1}$ for recognizing all problems from level L_i and all resources involved in that level in order to solve that problems.

The efficiency oriented management implies using some principles like:

- maximal transparency degree;
- any message have an author;
- the messages generate always a positive or negative response;
- the message structure is following the rules of a standard and include some elements that are making more responsible the author of messages;
- the members of project team have an ethic code regarding the implication, efficiency, positive attitude, communication and evaluation process.

Entering precise rules for developing project there are ensured the conditions for implementing efficiency oriented management. The efficiency o each member of team in regard to the precise tasks leads to establishment of efficiency aggregate level. In the case of master program it is necessary to develop the positive communication modalities, to establish an analyze regarding the messages among levels. It is obvious that the messages without author haven't to be considered. Also the team's members of project must have unique identification address and any kind of message that hasn't the identification code of author won't be considered in system.

3. The management oriented to quality

A master course has to be estimated through three level of quality: inadequate, good and very good. Using the same quality level it is enforced the evaluation of the objective, professors, students, master graduates and the projects from practical stage. The quality is reveal establishing objectives that have the evaluation using logical vales – YES if the objective was accomplished or NO if wasn't – or using indicators that reveal in a proper way the accomplishment of objective. It is important that the members of the team which are involved in a project to know this principles, accepted and especially to apply them in a correct manner.

There are many methods for tackling the evaluation problem but is important that the method accepted to be applied in all cases of evaluation for ensure the comparative characteristics. It is also important that the acceptance of method using in evaluating process principle to be attended by the principle of result respecting.

There are situations where team's members have a certain behavior before the evaluation process and after the evaluation another behavior in order to maximize the advantages. For example, in case of a finance planning for projects have to be answered at the question: Are all projects financed that have an evaluation indicator 90 from 100? OR Are financed all projects in descending order until the financing roof is touched? The answer is different depending the moment when is asked. After displaying the descending order of projects from the point of view of projects, it is preferred obvious the answer that put in advantage the first project. Before the evaluation process, the tenderers prefer that in acceptance for financing list to be as large is possible.

Quality oriented management supposes identify from beginning of the elements which could be analyzed and calculus indicator. The most indicators are in the next form:

$$I = \frac{A}{B} \text{ or } J = \frac{\sum_{i=1}^n m_i}{n}$$

where: I = the aggregate quality indicator; B = the number of defined criterions; A = the number of achieved criterions; n = number of criterions; m_i = the mark obtained at i criterion; J = the aggregate indicator of achieving objectives.

It is important to be identified and be accepted a homogeneous system of indicators used in evaluating process. In the case that this issue is impossible to be achieved, it is enforced to design transformations which ensure the compatibility between the indicators. The quality oriented management supposes the building of a new context, where the first elements are the quality level, the methods used in touching the level and the procedures where through it is compared the planned level with the accomplished level.

In educational processes, unreeling a master course program are applied the same principles that empower the quality management system from high level educational system.

To achieve a quality oriented management for the Master Economic Informatics master program, it is required to make a quality book that include the defining of the objectives and the policy regarding from the point of view of the management of course program.

The quality book also includes the description of the basic elements, processes, participants and partners. The quality book contains a presentation of master program and the elements that defining the program in order to relive resources' capacity for this step. For the course Business Informatics, in the quality book has to be presented the university, the foundation and the components involved in program. It is described the organizational structure, the responsibilities and the capacities in decisional level. For the quality oriented management there are identified the responsibilities regarding the quality planning, decisional capacity, internal communication system, the person and the responsibilities of this person who is in charge with the project management, the information's flows in management system.

For example in the Business Informatics BRIE quality book is presented a separated chapter where there are presented the resources of program. There are enumerating the human, equipment, places and financial resources. There is defined the utilization concept for high-level quality of this resources. Also the book includes the description of process that is running in Business Informatics master program. It is analyzed separated the educational processes, resources allocation and scientific research. A special role is attributed to defining the educational plan and establishment of the professor staff. Also a important issue is the stability of analytical programs and the developing of activities during the university years.

The quality is shown using evaluation procedure. The quality oriented management supposes the measurement and the evaluation of the results from the system. Through audit it is obtained very useful information regarding the good parts and the critical parts from the system where is implemented the quality oriented management. The evaluation system is essential and its stability is the engine of evolution for any master course, if it is wanted positive activities in the system.

The quality oriented management brings a safety and dynamic way to accomplish the tasks that have to be done in the system. The rigorous defining of the conceptual framework and the trend to quality and education are in charge for take out the individual and collective performance.

4. The project management

The project management represents a new concept in developing complex activities. The management project is a new approach where is put it face to face the planned activities with accomplished activities during the period of project consulting any time the consumption level of allocated resources, amount from financial support.

In research, the head of project is seen like an explorer with real capabilities, with remarkable results in the field of investigation which elaborate new models, techniques and processes. This issue is seen in the same way in a high-level educational structure. It is true that through investigator, professors, there could be persons with real management aptitudes. However, between manager and executor is a distinct line of separation, and the assignments are different.

It is true that the executor has rights, but those rights arise strictly from the achievements of tasks. In a large context, the management must be included in project concept, project management, with distinctive functions for executors and managers. The style defined in a project management is adaptive to the goals of systems. In case of ambiguous mode of defining the project management through executors – Figure 4 – leads to overloading and the stopping of quality level of executors:

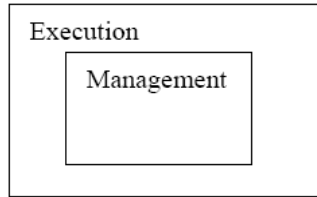


Figure 4: the management inclusion in execution level

In case of partial externalized management, shown in figure 5, it is obtained some progress elements, through establishment of proficiencies and standardization of evaluation criterions.

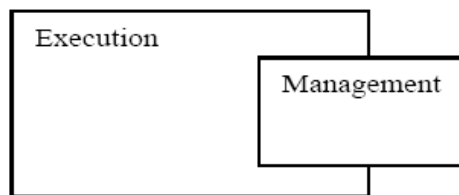


Figure 5: Partial externalization of management

If there is an experience in achievement and designing a master project program, the objectives have an high-level clarity and the resources are known, the externalization of management can be total like in figure 6:

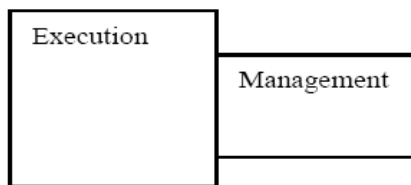


Figure 6: The total externalization of management

The financial limitations generate many reserves-limitations regarding the selection process of the educational staff and students. In case of the project have its goals complete defined and have a sufficient financial funds, in this way being attractive for the students and the professors, the management are externalizing and between management level and execution level must exist a communication interface.

In any kind of model every executor knows what he have to do, what are the inputs and the outputs of project and how to do the evaluation. If the aspects are obvious, it is defined an hierarchy of executors and them explanation is gained through efficiency quantifications. Between the evaluations process of managers and auto-evaluation haven't to be important differences. It is difficult to accept this new mode of implementation of a master program project where the manager is not professor. In all universities the head of department, the dean, the president of faculty are chosen for their reputation and their leader abilities. The old structures of organization accept also this kind of approach. The society based on knowledge take place the execution process isolation from management process. Only an effective specialization produces the efficiency increase. Although it is difficult to accept, at the level of all organizational structures must exist a manager that execute the transposition of objectives and sub-objectives using resources and obtaining products, effects and services.

The managers do the resource selection, including human resources and developing informational flows.

The project management includes the novelty elements from master course, defined by:

- the personalization of the projects;
- the development of cooperation with industry field;
- the accomplishment of research projects;
- the encouragement for publish papers;
- the achievement the tasks' objectives using interdisciplinary teams;
- the introduction of self-evaluating system;
- the encouragement for innovation and creation;
- the optimization of ration between execution and creativity.

The restatement of requirements for Economic Informatics master program leads to a better communication between the partners. For the achievement of this challenge it is necessary the acceptance of segregation principle and conflict elimination principle. The main point of project management is to develop a new strategy for educational program, with acceptance of the different specializations correlated with the efficiency level. The transparency, communication and evaluation with presentation of the results are processes which fulfill base requirements included in project management.

5. Conclusions

The programs, projects, curricula developing and implementation in this time conditions coerce new methods of approach, a new management. The restructuring from master program is necessary, as for the defining quality standards for evaluation has the role to produce the transformation that ensures the progress of this kind of educational process.

Regarding as the adjustment of context, this process is evident and must be continuous. The criteria and procedure acceptance is a new mode to percept the management with large participation in execution level. There are important the criterions wherefore can be accomplishment statistics and procedures for measuring are acceptable and don't involve modifications in order to help forming the levels.

There are quantitative elements which contribute decisively for evaluation of the persons but there are also the methods available for evaluating non-quality as complementary element of the quality. Those characteristics – clients, prices and concurrency – have the role to lead into a positive evolution to whole project.

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