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AN OVERVIEW OF QUALITY OF SERVICE APPROACH IN E-LEARNING ENVIRONMENTS

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***Abstract**: Virtually the higher education organizations are looking to improve continuously their educational process and the effectiveness of the same. Specific quality standards for ensuring a proper approach to education quality have been developed in the past decade in order to better fit the clients and end users requirements. In such context, this article is presenting a brief overview of the quality management/assurance aspects as well as the applicability of generic quality management/assurance models to E-learning educational processes within higher education organizations activities. Also, the author is proposing a generic quality management/assurance model having applicability to the higher education organizations which are deploying exclusively E-learning programs (online universities).*

***Keywords:** E-learning, quality of educational service, ISO/IEC, generic quality management/assurance model*

I. INTRODUCTION

As shown in some studies [3] the precise meaning of education quality and the path to improvement of quality are often left unexplained. Higher education has a very important role in ensuring that professional people are handed to end users (industrial and non-industrial entities) with immediate and positive effect to their business. In this context the exponential growth of the educational systems, tremendously supported by the information and communication technologies development, requires a better approach of the quality of service provided by the higher education organizations. E-learning environments offer all necessary conditions to develop students' knowledge and build proper skills. However, has to be taken into consideration the fact that a full agreement between the parties involved, from macro level (higher education organizations) and micro level (teachers, support specialists, students, parents etc.), from the viewpoint of which ingredients should be used to achieve the highest quality of services and how to identify, purchase/design-develop and deploy effective tools, techniques & technologies it is a very difficult task.

The author of this article believes that the macro level should be extended outside the higher organizations borders and looks in deep to the market needs & requirements an aspect which in fact means to look to the *end users* needs & requirements. Part of the students, once they graduate, they will choose to go straight for a job and firstly they will look for a job according to their skills earned during higher school education cycle. Part of the students will choose to continue their studies to extend their knowledge and skills to a level which will increase significantly the chances to get a job when graduated. Regardless the choice of the students, this mass of work force has to be incorporated by someone, and this someone is the work force market. The pillars of this market are the companies and on the line of this article purpose the author will call these companies the end users.

Higher education organizations should look to involve the end users at least from the viewpoint of continual improving of the quality of educational service as well as the end users should

look to involve themselves within educational process improvement. Such collaboration, once agreed, will have a direct impact on resources, infrastructure, educational process efficiency and also, will provide a better chance at least for the best students to build a carrier in the domain they chose.

II. E- LEARNING AND QUALITY APPROACHES

According to specialists [2], [5], [8], [9], in the past three decades various reforms have been carried out by the higher education organizations around the word, with the final scope to improve quality. One very important feature of this final scope was, is and will always be driven by the need and requirement to produce systematic evidence of efficiency and effectiveness [2], [5], [8], [9]. Therefore, more and more higher education organizations have designed, developed, and implemented more systematic and formalized quality assurance processes, considering this approach a key to achieve greater efficiency and effectiveness within their organizations [1], [2].

The managers of the higher education organizations are looking to "sell bundle services" (i.e., a wide range of faculties with several specialisations for each faculty, master programs, PhD programs etc.) to their potential Customers, the students. Such approach makes possible and utile in same time for an effective management, to implement & maintain an overall quality management/assurance system, applicable to all activities and to the entire group of faculties. The author of this article considers that this approach can't be contested at this time and maybe this is the best possible approach while there is no consistent support from the end users side in terms of a more direct and larger involvement for achieving the educational programs required effectiveness and efficiency. Students can help, is true, and also, the latest development of the quality management/assurance system started to move from having in the centre not anymore the organization but the Customer (the student), but their support will be limited from all viewpoints.

In this very complicated context, E-learning has been integrated into higher education organizations educational programs. This integration has required a change of the quality management/assurance systems approach. New expectations were raised, a new view in the alignment of the teaching tasks with learning activities was necessary to be implemented, the assessment process has changed as well being not anymore sufficient to have a final assessment of the student and some feedback at the end of the semester or at the end of each course. Consequently, E-learning has shown the necessity of new quality models. Standards and guidelines have been developed by countries around the world but also at global levels organizations like ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) have put together a great effort and issued a series of standards, guidelines and directives dedicated to quality within educational systems. As an example the author refers to the international standard ISO/IEC 19796-1 "Information technology – Learning, education and training – Quality management, assurance and metrics – Part 1: General approach", first edition, published in 2005 [11].

According to specialists [4], [7], [13], the organizations involved in education, and consequently we have to count here the higher education organizations as well, have some issues in finding that quality concept which suit properly their specificity and can fully meet their requirements. The studies available [7], [13], showed that, generally speaking, in the case of E-learning, there are two directions accepted by the most of the specialists and these are:

- *Generic approaches* - are those approaches which are not limited to a single domain only and which are adapted to the specific requirements of the domain [7], [13];
- *Specific approaches* - are those approaches which are dealing with some aspects of the educational process specific to E-learning [7], [13];

Despite all difficulties and despite the fact that the international standards published to date are not accepted by all higher organizations, especially in Europe [6], [13], it has to be highlighted that there are sufficient examples of successful implementation of quality management systems within educational processes [15]. In figure 1 is presented a model in seven phases as it was included in the European Committee for Standardization in CEN Workshop Agreement no. 15533:2006, page 9. This model is covering the process of quality for E-learning as an educational process. The space available doesn't allow the author of this article to develop more the referenced model, but it has to be

highlighted the fact that each phase of this model is a flexible one which is not requiring that a phase has to begin only when the previous one has been ended but each phase can influence any phase before her and can lead to changes in those phases. This model is just an example considered by the author of this article being sufficiently eloquent for the specificity of the E-learning environments and the applicable quality systems. If any higher organization is looking to have in place a quality management/assurance system with applicability to E-learning than the classic rigid quality management systems using as approach the E-learning as a product and not as a bundle of services has to be disregard. The author of this article sees only a single direction in fully meeting the E-learning requirements and this is the flexible quality management/assurance systems, still cyclic in their organization/structure as well as from the viewpoint of the phases deployment but also able to provide the tools to intervene on those points where immediate improvement needed.

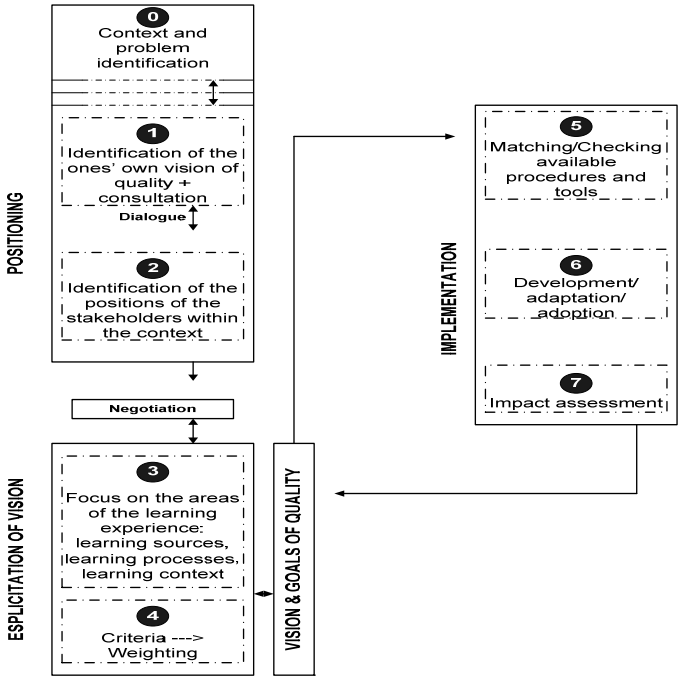

Figure 1. 7-steps model for quality in E-learning, as presented by European Committee for Standardization in CEN Workshop Agreement 15533 [7]

III. A GENERIC QUALITY MANAGEMENT/ASSURANCE MODEL

3.1. E-learning, product or service?

As stated in previously chapter by the author of this article, E-learning perception from the viewpoint of the quality approach differs, from a product to a service. Even here is not sufficient space for a debate, the author of this article would like to express own opinion and insist on the fact that E-learning should not be perceived as a "product". The "product" of the educational process within a higher education organization is "the student knowledge" and not the educational process or the organization itself. The higher education organizations final aim should be the delivery to the end users of students having high level of knowledge and skills, build/achieved based on teacher performances, using specific methods, various tools and technologies etc. Regardless the type of instructional process used, E-learning or classic instructional processes, generally, we are tracing the qualitative and quantitative indicators, these indicators being centred on the students rather than the number of online courses designed and deployed over a year (an example only). In other words and same like specialists highlighted in their studies and papers [14], when we are talking about the quality within higher organization we are talking about the quality of service and not about the quality of a product. And what else is E-learning process than a bundle of services starting from context and problem identification up to impact assessment as shown in figure 1 [7].

According to ISO 9000:2005, 3.4.2 (page 11) the "product" definition includes also services [10]. This standard [10] does not draw a line between service and products and, in fact, is considering the services one of the four categories of generic products. However, ISO 9000 family is a family of generic international standards with a wide range of applicability from shoes factories to transport services. In conclusion, processes like educational one were not fitting very well in this family of standards and the necessity having a dedicated international standard has arise. In 2005 this aspect has been covered by ISO & IEC the result being the ISO/IEC 19796-1 standard [11]. According to page 4 of ISO/IEC 19796-1 standard, 2.25 define the service as well ("*intangible product that is the result of at least one activity performed at the interface between the supplier and customer. Example: Knowledge is an intangible product to be delivered*" [11]). Even the word product is still part of the definition the ISO/IEC 19796-1 standard is giving more freedom to specialists from the viewpoint of the adoption of this standard within the quality assurance/management models they want to propose.

3.2. A generic quality assurance/management model for E-learning

National, international or even local standards have been developed and deployed. In the future for sure these will be revised or new ones will be issued. The most important thing is to adopt the right standard and adapt to the specificity of a higher organization. The specialists into domain have developed various models adapted to different standards [4], [13]. Also, various national and international organizations have developed generic models [3], [6], [7], [14]. But, despite of all these achievements the author of this article considers that always is room for improvement. Therefore, the author has concentrated on developing a generic pyramidal quality assurance/management model for E-learning as shown in figure 2, considering E-learning educational process as a bundle of services.

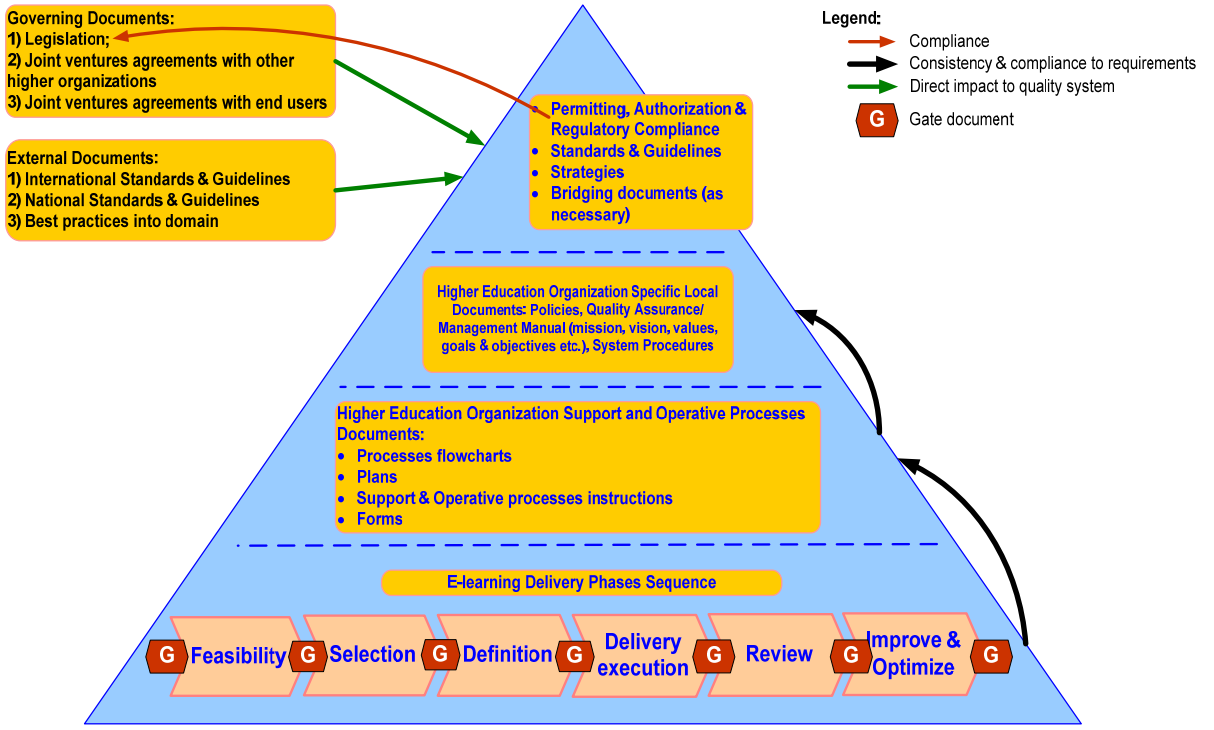

Figure 2. Generic pyramidal quality assurance/management model applicable to E-learning educational process

Generic approaches have been used by different higher education organizations. These were based either on ISO 9000 family standards, either on ISO/IEC 19796 family standards. Nevertheless, national and local standards were also used as bases for developing quality assurance/management models but these attempts could be considered as personalized models (applicable to that higher education organization which has considered the implementation of such model). The author of this article considers that the international standard ISO/IEC 19796-3 [12] is a good start for any higher

education organization offering to their customers E-learning programs whenever is decided to develop and implement a quality assurance/management model.

The author of this article is proposing another generic approach in terms of quality assurance/management models but the starting point is still represented by the generic model shown on page 7 (figure 2) of the ISO/IEC 19796-3 [12]. The proposal consists in a pyramidal model having as fundament two main classes of documents, *governing documents* and *external documents*. As shown in figure 2, these two classes of documents have a direct impact on the quality assurance/management system itself. Moreover, the full compliance with legislation is absolutely mandatory otherwise there is no reason to proceed. The starting premises are blended, which means that national legislation applicable to educational process in a country is considered together with joint ventures agreed with end users as well as together with partnerships closed out with other higher education organizations. End users have an important role during this stage also because apart resources they should invest they also need to provide a direct support in defining the strategies to be adopted for students knowledge building process based on the future positions opened by the end users for graduated students. Partnerships with other higher education organizations are also possible in terms of sharing experience or collaborate in a specific domain, however, such partnerships should be based on bridging documents in order to clarify which policies, procedures, instructions, forms etc. applies to that collaboration. This bit of the model refers to the necessity to have in place several fundamental documents as follows: permits, authorizations and any other regulatory compliance document required, standards and guidelines, and bridging documents.

Once this stage completed, the higher organization has to develop their own policies (i.e., quality policy statement, HSE (health, safety and environmental) policy statement, free culture-religion policy statement etc.), the quality assurance/management manual detailing the mission, vision, values, goals & objectives as well as the system procedures (i.e., document & records control, organization & structure, roles & responsibilities, internal audit, non-conformance management, management review, measurement & analysis etc.). The number of policies and system procedures to be developed depends on the higher education organization itself (size, structure, number of faculties, number of specializations etc.).

The following stage will consist from the support and operative processes identification. Support processes are important as they have to sustain the delivery of the E-learning educational process and here could be mentioned the human resources process, financial process, administrative process, quality assurance process, HSE process, procurement process, permitting & regulatory compliance process etc. Operative processes are under each faculty/specialization delivery department and are connected to the specializations offered to customers. Support and operative processes have to be covered by specific instructions/procedures and forms. In order to have a clear description of the process flow charts of the processes should be developed. The flow charts shall start with the inputs identification and definition, followed by the identification and definition of the process steps, people roles & responsibilities, applicable instructions/procedures & forms, and have to end with the identification and definition of the outputs.

Last bit of the proposed model is concerning the E-learning delivery which is a sequence of phases. For each of the processes from the chain shown in figure 2 it must be defined: objectives, responsible team, timing, purpose, and support required (support processes involved), inputs available & outputs expected, approvals, necessary resources. The phases work in a chain and the links are the gate documents (i.e., studies, plans, programs, review reports etc.). The author of this article considers that the identification of the objectives for each phase is the fundamental step which needs to be taken and some of these objectives are proposed below:

- *Feasibility* – assess the value of the opportunities tabled by the end users and partners and the alignment with higher education organization strategies and development plans and suggest preliminary approach of E-learning delivery;
- *Selection* – generate concepts and strategies for E-learning delivery;
- *Definition* – define the final concept & strategy which will be followed and get approved; define methods, tools, responsibilities to implement the approved concept and strategy for E-learning delivery;
- *Delivery execution* – execute the delivery of the E-learning with the achievement of the customer & end user-partners satisfaction, within the allocated budget and time frame agreed and meeting the highest quality requirements within the specialization;
- *Review* – review performances after E-learning delivery execution;

- *Improve & optimize* – identify and implement the opportunities for improvement and optimization of the delivery chain; perform root cause analysis for any customer & end users-partners complaints and implement the action plans; check for lessons learnt.

IV. CONCLUSIONS

According to specialists [6], [13], [15], the quality assurance/management represents to date an issue in the field of education. Several approaches have been developed, models generic or personalized have been developed as well but still there is not reached a consensus. Even ISO/IEC 19796 family standards [11], [12], represent a live poof, as for example ISO/IEC 19796-3 presents the German, French and Chinese experiences [12].

The author of this article didn't look to find a universal solution by developing a generic quality assurance/management model the idea being to contribute in a certain manner to the development of a world wide accepted model, a model which will appear for sure during the present decade. Pyramidal models have a series of advantages, and the most important one should be considered the opportunities offered by such models in getting an ordered structure of a quality assurance/management system. Future work of the author comprises in development in detail of this model and creates generic structures and generic formalized documents giving the possibility to higher education organizations involved in E-learning to adopt and adapt such model to their needs.

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