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USING TQM AND ISO 9000 PRINCIPLES IN ASSURING EDUCATION SERVICE QUALITY

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ABSTRACT

This paper describes Riga Aviation University's movement from a strongly regulated and controlled professional education program to a system of contract relations with students as Education Service customers. This period demanded, first, a study of students' demands, requirements and issues, and the development of interrelation methods based on Total Quality Management, and, second, the building of a University Quality Assurance System according to ISO 9000 standards.[1, 2]

INTRODUCTION

Today two main factors determine the quality of aviation graduates in Riga Aviation University (RAU): governmental accreditation of academic study programs (B.Sc., M.Sc.), and individual certification of the aviation graduates by the Latvian Civil Aviation Administration. Competition in the Education Service (ES) market is one of the new objectives for the University in the modern market economy. To address this challenge, RAU is developing an internal University quality management system based on Total Quality Management (TQM) principles and ISO 9000 standards. There are two main stages of this process: a

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study of ES customers' requirements and the development of an ES Quality Assurance System.

STUDY OF ES CUSTOMERS' DEMANDS, REQUIREMENTS AND ISSUES

Research Purposes

The present research was oriented on the following purposes:

Develop a list of the characteristics of ES customers,
Develop a list of the specialties and accreditation needs of ES customers,
Define a set of ES quality guarantees acceptable to the ES customers, and
Establish quality guarantees to address the concerns of ES customers.

At first a model of Education Services at RAU was designed. The model had two levels: service preparation and service supply. The first level consisted of the following activities:

Establish new specialty offerings—including creating specialty status and qualification criteria,
Estimate demands and resources,
Develop study programs and quality plan,
Prepare staff,
Advertise,
Prepare methodological base, and
Prepare library and laboratory.

The second level consisted of the following activities:

Implement application process and conduct entrance examinations,
Register students and distribute information about RAU regulations,
Assign schedules,
Conduct classes, laboratories and practices,
Assure security,
Complete the reporting, consultation, and testing processes,
Perform a qualifications check, and
Award diplomas.

Problem Investigation Method

The data for the present research was obtained through student surveys, individual interviews with applications, and meetings and discussions with students and secondary school graduates. The data were categorized by topic and grouped into whether related to ES customer demands or concerns. The data

Journal of Air Transportation World Wide Vol 3 No 2 1998 Page

were then summarized and used to develop the RAU Quality Assurance System.

Findings

The needs of the ES customers fall into four categories.

Opportunity to get a job— includes diploma recognition by employers (in Latvia and abroad).
Period of study—includes a desire for short-term programs of study.
Information about specialty—includes attractiveness of profession based on the job market and expected salaries. Currently, accounting and computer specialties are considered attractive and science, rare and new specialties are not. Overall, those pursuing aviation specialties have low prospects considering the lack of development in the Latvian aviation industry.
Degree of subject complexity—includes the desire for simple programs of study.

The concerns of ES customers fall into four categories:

Insufficient and untrustworthy information about the specialty,
Insufficient information about university accreditation,
Unreliability in continuation of specialty offerings, and
Lack of guarantees of employment opportunities. Unfortunately, most of these concerns are related to the current difficult social-economic conditions of Latvia.

Implications of Research Findings

The summarized data lead to the following conclusions:

It is necessary to establish a permanent university marketing research plan. The research must include information on the current and prospective employment trends in Latvia. The results of this market research must be disseminated and incorporated into ES customer recruitment materials.
Guarantees must be formulated as a RAU Quality Policy approved by the Rector and incorporated into the agreements between the University and ES customers. These guarantees must include (1) confirmation of accreditation of the university, the specialty and the diploma, (2) assurance that accurate information has been provided to the ES customer, and (3) the conditions of University liability.
Documentation of the Quality Assurance System must be developed to assure consistent and complete implementation and to prevent ES cus-

Journal of Air Transportation World Wide Vol 3 No 2 1998 Page

tomer claims. This documentation system should have four levels:

RAU Policy regarding ES Quality Assurance,
Quality Assurance Manual (i.e. instructions on ES quality controls),
Quality Assurance Handbooks for teaching and support personnel, including standard contracts and work instructions, and
Incorporation of ES Quality Assurance policy into curriculums, study plans and programs, educational standards, qualification's criteria, quality plans, reviews, remarks, etc.

ES QUALITY ASSURANCE SYSTEM DEVELOPMENT

Development Goals

There are two development goals of the ES Quality Assurance System: ES customers and University executives will be confident that (1) educational services are implemented according to stated requirements, and (2) educational services will be accredited by the appropriate governmental and international agencies according to stated requirements.

Development Tasks

The tasks necessary to meet the development goals include the following activities:

Develop and regulate ES specification, service supplement processes specifications and ES Quality Assurance control methods specifications,
Build ES process structure including ES design and supplement (see Research Purposes section),
Adapt Quality Assurance System according to ISO 9001 (see Table 1),
Define University Quality Assurance System scales and structure—quality assurance systems must cover all life circles of ES and include teaching and support services activities (e.g. administrative support, library services, etc.),
Develop ES inspection plans for different stages including testing properties, methods, testing tools, responsible personnel, data registration forms, etc.,
Develop methodological instructions for Quality Assurance System regulation procedures and use to create RAU Quality Assurance Manual,
Develop job descriptions for personnel responsible for Quality Assurance System,
Educate and train University personnel in the implementation of the ES Quality Assurance system procedures, including those of internal

audits at the faculty, specialty, department and university levels, and

Create University Quality Assurance Management Service which will organize the collection and analyses of all ES Quality Assurance related information.

RAU'S QUALITY ASSURANCE SYSTEM

Table 1 details RAU's Quality Assurance System procedures in terms of the corresponding ISO 9001 Procedures.

Table 1
RAU's Quality Assurance System Procedures, in terms of ISO 9001 Procedures

ISO 9001 Procedures	*Corresponding ES Quality Assurance System Procedures*
1. Management's Commitment	Establish Administration's responsibility to students and personnel to assure ES Quality
2. Quality System	Establish ES Quality Assurance System documentation structure and guidelines and ES Quality Assurance management planning
3. Contract Review	Estimate University's capacity to run a specific specialty and establish contingency plan with ES customers in case of changes in contract conditions
4. Design and Development	Develop specialty qualification criteria, curricula and subject programs
5. Control of Documents	Entrust Document Management Service to administration
6. Purchasing	Establish relations with subcontractors which will provide ES supplies and purchase literature, computer and laboratory equipment
7. Control of Customer Supplied Product	Maintain confidentiality of ES customer documentation and records
8. Product and Traceability Identification	Design ES customer registration and attendance documents (IDs, attendance journals, etc.) to document jobs performed, chairs' reports and ES customer reports
9. Process Control	Establish ES quality testing and controls and reporting requirements (to dean's office and chair's work organization)
10. Testing and Inspection	Establish ES Quality objectives, means and testing methods
11. Controls of Testing Equipment	Develop, test, improve and maintain documentation of ES Quality testing, including examiners' tickets, tests and programs used
12. Inspection and Test Status	Establish diploma awarding procedures and diploma status
13. Control of Noncomforming Product	Establish means of detecting activity by Executive's and mandate means of reporting by officials in the case of discrepancies between designed and supplied ES
14. Corrective and Preventive Action	Establish method to prevent appearance of predicted nonconformaties and to prevent the reappearance of previously discovered noncomformaties

15. Delivery	Not actual
16. Control of Quality Records	Establish rules of ES Quality management recording, including ES customer's books, examination records, certificates, diplomas, and commission's acts
17. Internal Quality Audits	Establish Quality Audit System and a separate procedure for Self-Assessment Activity Management
18. Personnel Training	Teach staff the skills necessary for upgrading the system
19. Technical Servicing	Not actual
20. Statistics Techniques	Establish statistical methods to be used for determining important trends in the teaching processes' quality

HIGHER EDUCATION QUALITY ASSURANCE REVIEW

Riga Aviation University's Quality System is based on published results of the experiences of other leading European Universities with Higher Education Quality Assurance.[4,5] For example, the University of Wolverhampton became the first university to achieve ISO 9001 registration for its Quality Management System. As a result, both academic and support staff became more sophisticated about TQM concepts such as customer orientation, internal and external client chains, and customer satisfaction. The Lancaster University's experience also showed TQM's acceptability for use in higher education institutions. They use objectives of TQM in their operations and in response to external quality assessment and audit. Publications of the university's experiences mentioned above emphasize the following Deming's principles of TQM:[3]

Maintain constancy of purposes and attention to the process,
Make the supplier a partner,
Make the employer a partner,
Vigorously institute training, education and self-improvement, and
Emphasize leadership of management and teamwork of employees.

QUALITY OF POSTGRADUATE AVIATION TRAINING

Riga Aviation University has good training facilities to provide professional postgraduate education. The teaching activity has a few special features and was historically customer oriented. Our approach is that any customer is the focal point and that he or she should critically assess whether the quality criteria agreed upon with the supplier has been met. When referring to the quality criteria or the views of the customer, several quality elements must be considered.

The most important quality criteria are the achievements of the training objectives in any programs. This must also be completed within the scheduled time frame as agreed upon (see procedure 4).

Journal of Air Transportation World Wide Vol 3 No 2 1998 Page

Once a training schedule has been established with the customer it shall not be changed (see procedure 3).

Personnel shall have a high degree of competence to assist the customer in defining the training objectives and methods used to achieve the customer's goals (see procedure 18).

The documentation delivered by the training organization to the trainees, as well as to the contractual partners, shall be error-free and up-to-date (see procedure 12).

The training facilities shall have a modern, good and clean appearance, both inside and out. Access to the latest technology, which is taught, shall also be given (see procedures 4 and 6).

The instructors shall be competent, qualified and shall apply effective methods and up-to-date media (see procedures 9 and 18).

The core business of a training center is the performance of courses. Well-qualified instructors will apply the most appropriate methods and media to transfer knowledge, skills and attitudes (see procedure 9).

Assessment and testing are done to verify that the specified training objectives are met. Different methods must be proven before being considered (see procedures 10 and 17).

This postgraduate professional education must participate in RAU's Quality Assurance System.

CONCLUSION

To strengthen its position in modern conditions the RAU must build capacity in the following TQM principles.

University administration must take a leading role in supporting quality improvement.

University management must take responsibility for ES Quality support to customers.

Personnel must cooperate with ES customers to prevent misunderstandings and assure quality improvement.

Quality improvement must be based on the requirements, specifications and demands of the ES customers.

A systems approach to quality management must include all aspects of ES design and implementation with special attention to the processes.

Personnel skills must be continually upgraded.

A quality assurance system built in accordance to ISO 9001 Standards and with personnel being responsible for ES Quality may be the base for introducing TQM principles at Riga Aviation University.

For all the processes mentioned above, flight and maintenance training organizations have to develop ideas and concepts about how an innovative qual-

Journal of Air Transportation World Wide Vol 3 No 2 1998 Page

ity management system can be developed. The focus must be on how a successful organization can be established. There are three major elements that need to be considered in order to achieve this objective.

First, establish a Management Committee. It is necessary to demonstrate to the entire staff that quality management is part of the University identity. To demonstration this commitment, the management must be aware of the entrepreneurial meaning of quality management. They should explain the term quality to the University staff and determine the quality requirements for the intangible product. Furthermore, they have to understand quality documentation requirements and the relation of the quality cost elements to each other.

Second, management has to provide guidelines for the entrepreneurial processes and conduct process analyses. The individual process owner has to know the elements of process management and how to implement the processes. All staff should be aware of the required documentation, and provisions must be available to provide for their maintenance.

Third, an independent quality manager has to establish an Audit System and apply different audit procedures to provide feedback about the training organization's ability to carry out training and examinations which meet the standards of the top management. The independent quality management has to be able to conduct system, procedural, product and service audits.

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Journal of Air Transportation World Wide Vol 3 No 2 1998 Page