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Evaluating Service Quality in Higher Education Using Quality Function Deployment (QFD)

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Outline

- Introduction
- Purpose of the Study
- Methodology
- Case Study
 - Data Collection
 - Results
- Discussion
- Conclusion
- Limitation and Further Research

Introduction

- Higher education in Turkey
 - 95 state and 51 private (foundation) universities
 - Dream of obtaining higher education
- Concern to maintain quality and recruit students
- Challenge in engineering programs
 - Recruit best students
 - MÜDEK accreditation
 - Understand students' expectation and perceptions
- QFD to identify the quality requirements of students

Purpose of the Study

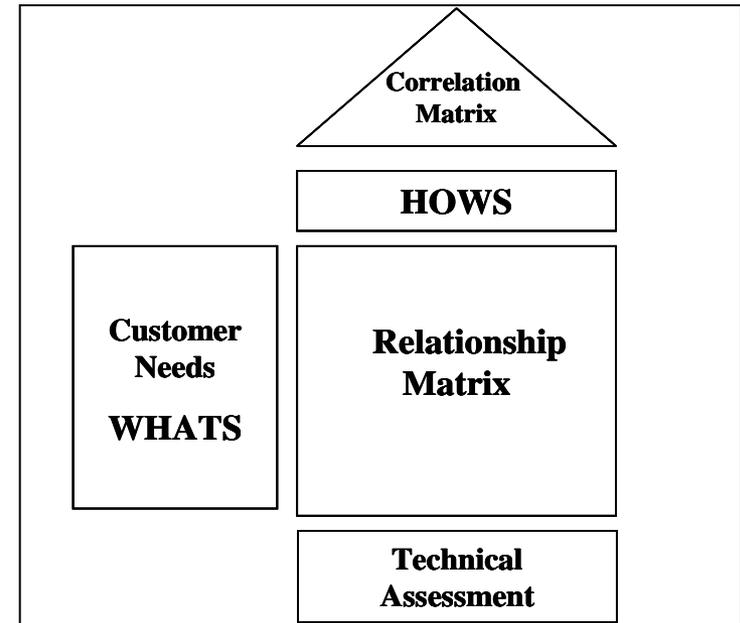
- To determine discrepancies between quality characteristics desired by students and the service elements provided by the university
- To describe the quality requirements of undergraduate system engineering education in relation to the important service elements
- To understand the most important and the least important service elements from the perspective of the students.

Methodology

- Quality Function Deployment (QFD)
 - structured approach for defining customer needs or requirements and translating them into specific technical requirements (service elements) to produce products/services to meet those needs
 - Uses matrix format ‘house of quality’ (HOQ)
 - conceptual map that provides the means for inter-functional planning and communications

Methodology

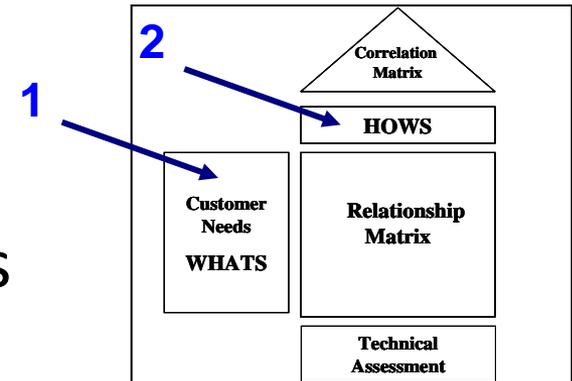
- House of Quality (HOQ)
 - On the left ‘Whats’
 - ‘Hows’ across top
 - Roof: ‘Hows vs. Hows’
 - Body: ‘Whats vs. Hows’ => relationship of items (weak, moderate, strong)
 - Bottom: Technical assessment scores to determine directions needed to fulfil the customer requirements



Case Study

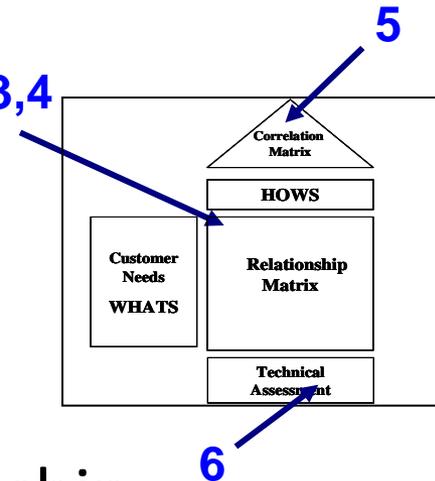
Data Collection

- Focus group of 25 students
1. Identify student quality requirements (Whats)
 - Student course evaluations
 - MÜDEK program requirements
 2. Translating quality requirements into technical service items (Hows)
 - Class discussions , Group projects
 - Teaching methods, Written exams
 - Mendatory industrial practice



Case Study

- Rate the importance of student quality requirements
 - 1 to 5
- Evaluate the strenght of relationship (weight) between items (Whats vs. Hows)
 - 1 => weak , 3=> moderate, 9=> strong, 3,4
 - blank => no relationship
- Generate correlation matrix
- Calculate technical assessment scores
 - Importance rating x strenght of relationship
 - Sum of values for each service element





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Case Study

Required Quality Items	Importance	Service Elements											
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
The course content is practical	5	9	9	9	3	9			3		9		9
The course content inspires students to think independently	3	9		3			3				9	9	1
The faculty is knowledgeable	5	9		3	1	3					9		1
The faculty has industry experience	5	9		3		1		1		3			3
The faculty is committed to teaching	5	9	1	1	1	1		1	3	3			
There are proper facilities to supplement teaching	3	9	3	3		3		1	3				9
Multimedia equipment is used in teaching	2	3	9		3	1			3				
There is appropriate linkage among courses in the program	3	9			1	1				3			9
Contemporary teaching methods are used	4	9	9			1			3	3			3
Pleasant interactions exist between faculty and students	5	3								3			3
Faculty evaluation of students is fair and objective	5						3				3	3	3
There is a designated textbook and supplemental teaching materials	2	1	1	1			1	1		1			
Instructors consider students' level of understanding when teaching	3	9	1	3	3	3	3	9		3	3	9	9
The university provides adequate facilities/ equipment in classrooms	3	9	3	3		3		3	3				3
Class sizes are appropriate for the courses	3	3	3	9	3	9		1	1	3			9
The students are able to take the elective courses they want to	4	3	3										
Student involvement in research projects is encouraged	4								3	1	3		
Instructors are empathetic	4	9	1	1			1	1		3	3	3	3
Instructors give appropriate feedback to student performance	3	9	9	3			9	9		9	9	9	9
Instructors are able to bridge theoretical and practical aspects when teaching	4	9	3	3	3	3	1	1	3	3			9
Instructor's ability to generate high level of interest and interaction in the class	3	9	3	3	3	3		3	3	3			9
Instructor's use of English	3	9	3	9	1	3		1	3	9			
Instructor's preparations for the class	3	9	9	9	3	3		3		9			9
The course content provide ability to function on multidisciplinary teams	3	9	3	9		3		1		3	9		9
The course content provide ability to engage in life-long learning	4	9	3	9			9		3		9		9
The course content provide ability to design a system, component or a process to meet desired needs	4	9	3	1		3	3				9		9
The course content provide ability to use techniques,skills and modern tools necessary for engineering practice	4	9	3	3	1	3	3	3			9		9
The course content provide ability to identify, formulate and solve engineering prob	4	9	3	3	9	3	3	3			9		9
Instructors give appropriate guidance on students' career plans	5							1	3				
Instructors enable students to take responsibility for their own learning	2	3	3	3			3	1		1	9	9	9
Technical Assesment		752	299	330	125	217	148	144	138	287	336	107	546
Technical Assesment RANKING		1	5	4	11	7	8	9	10	6	3	12	2

A1 Computer assisted lectures, A2 Lectures, A3 Case studies, A4 Problem solving sessions, A5 Laboratory sessions, A6 Homework assignments, A7 In class exercises, A8 Seminars/ Guest lecturers, A9 Class discussions, A10 Class projects, A11 Exams, A12 In field practice

Case Study

Results

- Most Important Quality Requirements
 - Practical course content , faculty knowledge,
 - Industry experience and commitment to teaching,
 - Fair and objective evaluation of students by faculty,
 - Pleasant interaction between faculty and students,
 - Guidance given by faculty on students' career plans.

Case Study

Results

- Most Important Service Elements – determined from technical assessment scores
 - 1) Computer assisted lectures (752),
 - 2) In field practice (546),
 - 3) Class projects (336)
- Least Important Service Elements
 - Exams (107)
 - Problem solving sessions (125)
 - Seminars/ guest lecturers (138)

Discussion

- The study underline the importance of faculty characteristics
 - 6 out of top 7 quality requirements are faculty (instructor)related
 - faculty knowledge, faculty industrial experience, faculty commitement to teaching, fair and objective evaluation of students by faculty, pleasant interaction between faculty and students, and guidance given by faculty on students' career plans.
 - Emphasis must be on faculty improvement

Discussion

- Another important quality requirement: ‘practical course content’
- Contemporary teaching methods preferred
 - Most valued service element: computer assisted lectures , in-field practice and class projects
 - Computer assisted lectures necessary to solve complex engineering problems (code writing)

Discussion

- Problems with field practice
 - Source of dissatisfaction by many students:
 - Unexpectedly hard working conditions
 - No contact person at the field
 - Not ready to perform the duties
 - Source of dissatisfaction by providing organizations:
 - Unsatisfactory student performance
 - A faculty member responsible for university-industry relations is not enough
 - Group of faculty members to build trusting, mutual, rewarding relationships

Conclusion

- QFD is an effective tool in determining customer needs and translating them into service elements
- Information is presented graphically for easier understanding and interpretation
- Study suggest to satisfy the requirements of system engineering students :
 - Computer assisted lectures, class projects
 - In-field practice (need to reduce negative experiences)
- Key to quality in both areas lies in faculty characteristics
 - Input from faculty members who are personally committed to their development

Limitation and Further Research

- This study is limited to system engineering students
 - Can be extended to other 9 engineering departments at the Yeditepe University
 - Additional universities from Turkey with engineering programs can be included
 - Can be extended to other faculties
- This study is only concerned with students
 - Other stakeholders in higher education (instructors, teaching/ research assistants, professional bodies, alumni) can be included for further research



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