

THE RELATIONSHIP BETWEEN EDUCATION INPUTS AND THE QUALITY OF THE GRADUATES: A CASE STUDY IN VIETNAM

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ABSTRACT: *The purpose of this exploratory and analytical study is to answer the question about the relationships between education inputs in the educational process and the quality of graduates. For this question, exploratory factor analysis (EFA) and Structural equation modeling (SEM) are the two major statistical approaches used for scale purification and data analysis. The population for this study is composed of 460 graduate students and 195 faculties from 7 main tertiary institutions across Vietnam and 153 employers in Ho Chi Minh City. The findings from the study indicate that there is a relationship between faculty, curriculum and entrant students to the graduate quality. The research has implications for universities, faculty, and employers in Vietnam. Several recommendations are suggested for further research in Vietnam or other developing countries.*

Keywords: *education inputs, quality of graduates, Vietnam*

1. INTRODUCTION

Higher education plays an important role in supporting the country's economic objectives as well as in diffusing and applying new knowledge and developing qualified indigenous labor force. The pace of change in national and international economies requires higher education to encourage the development of people who can act effectively in turbulent circumstances (Yorke, 1999). The objective of higher education is to produce the outputs that meet the requirements of a society. It is, therefore, important to identify what the labor market demands from higher education.

As the Vietnamese economy has become more open to the world, the Vietnamese education system has also changed accordingly. As it is stipulated in the current Constitution, "Education is the first priority of

the national policy" (1992), the government has thus made ample investments in the development of education. Vietnamese education reforms have been recently undertaken in order to improve the quality of education, thereby producing education outputs that meet the demand of employers. More significantly, many Vietnamese educational organizations have paid more attention to the development of suitable curricula. All these things have contributed to improving the educational quality and the education system in the country. Some international educational organizations have provided higher education services in Vietnam. Vietnamese universities have to improve their education quality to meet the demands of employers and to compete with foreign rivals, as Feigenbaum (1994) put it, the

“quality of education is the key factor in “visible” competition between countries”.

However, these changes have not been actively adopted by many universities. There are concerns for higher education in Vietnam, especially when Vietnamese economy is in the transformation process from the centrally planned economy to the market-oriented one. Many universities still use traditional teaching methods (chalk-and-board methods) which are not appropriate for the training of high quality labor forces. The most popular teaching method is still the one way approach. The teacher transfers his/her knowledge and students received it passively (Hoa, 2004). In the similar vein, Long and Chi (2004) assessed that teaching methodology in tertiary institutions in Vietnam is too traditional (e.g. teacher – centered). The curricula have tended to emphasize theory rather than practical application, and about two-thirds of the content in business education programs is out of date (Phu, 2000). Students at these universities have had few chances to develop and practice the necessary knowledge and skills. Many employers complain that graduates lack skills and practical experience and thereby, fail to meet their requirements. Employers expected the graduates to be equipped with such core skills as communication skills, IT skills, and English proficiency in order to adapt themselves in a rapidly changing and competitive environment.

As many educators, administrators and employers complained about some weaknesses

of the higher education system, we try to search for a better system by looking at important inputs that influence the graduate quality. So far, there hasn't been any empirical research that relates all the inputs mentioned in Vietnamese case, a special case for the transition process. Moreover, the relations between those inputs and output may look different. Therefore, it makes sense to do research in two directions (1) How far can such relations be supported for Vietnamese case and (2) How far can we draw conclusions regarding which areas we should emphasise in order to improve the quality of higher education system. The research problem can be stated as follows:

To examine the relationships between key education inputs such as the quality of entrant students, the quality of faculty, the teaching methodology, and the curriculum in the education process and the quality of graduates in Vietnam.

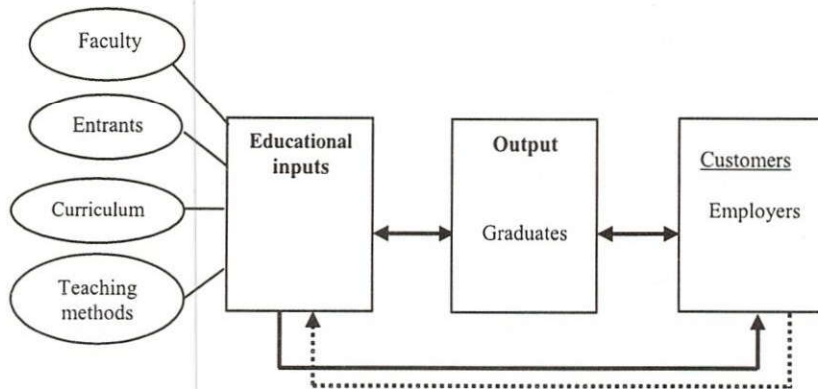
2. LITERATURE REVIEW

2.1 Theoretical framework

A theoretical framework is proposed as illustrated in Figure 1. The theoretical framework shows the network of three groups of independent components which include the educational institution (educational inputs), educational output (graduates) and customers (employers). Basic educational inputs such as teaching methods, curriculum, practitioners, students and faculty are used by the educational institution to produce the outputs. Hence, controlling these inputs would greatly influence the quality of finished goods e.g. graduate

quality. The quality of graduates is determined by the quality of the inputs. The quality of graduates, however, is mainly perceived by employers. Therefore, the educational institution needs to employ good quality inputs that allow it to produce the output which meets the employers' expectations. The employers

provide feedbacks of the quality of graduates. These feedbacks help to improve educational inputs, such as faculty, curriculum, teaching methods and practitioners, which in turn produce the outputs that meet employers' expectation.



The following hypotheses are developed to demonstrate the relationships between the basic educational inputs and the quality of graduates (table 1)

The table 1. Relationships between inputs and quality of graduates

INPUTS	HYPOTHESESE
Curriculum	1. A positive relationship exists between the quality quality of the curriculum and the quality ofofality of graduates.
Faculty	2. A positive relationship exists between the quality quality of faculty and the quality of graduates.
Teaching methodology	3. A positive relationship exists between the use of new teaching methods and quality of graduates.
Entrant students	4..A positive relationship exists between ten the quality of entrant students and he the quality of graduates.

3. RESEARCH METHODOLOGY

3.1 Research design

The research design of this study is comprised of two stages – an exploratory study conducted via in-depth interviews and a quantitative study conducted using mail survey methods.

3.3 Sample design

3.3.1 Sampling

Samples used in this study were drawn from three different groups: employers, faculty and graduates:

As for graduates: 800 questionnaires were sent to students who are completing their final semester for their master degree and have at least 3 years of working experience and master students who graduated within the last 5 years

at 7 institutions situated in different areas of Vietnam. The 460 questionnaires received represent a 57 percent return rate. In HCM City (southern part of VN), samples are to be drawn from some master programs from 3 institutions, i.e. University of Technology; Faculty of Economics/ Vietnam National University – Hochiminh City, and HCM City University of Economics. In the North, samples are drawn from 3 institutions: Hanoi University of National Economics, Hanoi University of Technology and Vietnam National University - Hanoi. In the central area, samples are from Danang University. Most of these institutions are public institutions well-known in providing graduate business programs for the community. These institutions are accessible for obtaining information needed.

As for faculty: Out of 220 questionnaires sent to the lecturers who give lectures in business graduate programs from 7 tertiary institutions mentioned above, 195 were received.

As for employers: More than 600 questionnaires were sent to employers and 153 were received, which accounts for 25.5 per cent of the return rate. Since there are many types of organisations such as public administrative departments (hospitals, banks, etc.), we focus mainly on the business types which are relevant to our research field. To be more specific, the companies surveyed are those who employ graduates or have experience in recruiting graduates.

3.3.2 Sample size

Samples, if properly drawn, are generally good representative of the population and sufficiently accurate (Zikmund, 1997). Based on large – sample distribution theory, structural equation modeling (SEM) requires a large sample size to obtain reliable estimates (Joreskog and Sorbom, 1996). However, the issue of how large a sample should be has not been successfully resolved. It is accepted that larger sample size provides more accurate research (Zikmund, 1997). Hair et al. (1998) suggests that the sample size should be large enough compared to the number of estimated parameters. An empirical ratio of at least five observations per each parameter is also proposed by Hair et al (1998). Particularly, Kline (1998) suggests that sample size less than 100 could be considered small, between 100 and 200 is a medium sample and more than 200 could be considered large.

3.5 Data analysis

This study is to identify the relationship between certain educational inputs and the quality of graduates. Therefore, an exploratory research and quantitative method is applied for this study. Data input was carried out using SPSS 11.5 software package. Exploratory factor analysis (EFA) and Structural equation modeling (SEM) are the two major statistical approaches used for scale purification and data analysis. Specifically, these techniques were done by using SPSS 11.5 and AMOS 5.0 software to identify the relationship between

the quality of graduates and the educational input factors.

4. RESULTS OF DATA ANALYSIS

4.1 Sample Description

The questionnaires to be collected are 460 from graduates, 195 from faculty and 153 from employers. In fact, the total number of questionnaires sent was 2,000, providing a 40.04% of the return rate. There were 23 invalid responses due to lack of information provided. The result is that 808 responses are valid enough for research data.

4.2 Measuring scale and Exploratory factor analysis

As mentioned on Research Methodology, the measuring scale for inputs consists of 4 factors: (1) *Faculty* measured by 10 observed variables indicated as from FACUL_1 to FACUL_10, (2) *Entrants* measured by one variables indicated as ENTRANT, (3) *Curriculum* measured by 17 variables indicated as from CURR_0 to CURR_16, and (4) *Teaching methods* measured by 15 variables indicated as from TEAC_0 to TEAC_14. The measurement scale for output quality is measured by 28 variables (from GRAD_0 to GRAD_27).

The measuring scales have been evaluated through two main tools: Reliability index index - Cronbach alpha ($>0,4$) and Exploratory factor analysis – EFA ($KMO \geq 0,5$) (Hai et al., 1998)

The result obtained by Cronbach alpha analysis of the components as following: The faculty component has a considerably high Cronbach alpha (.91). The item total

correlations range from .57 to .73 which is higher than the threshold value of .4. The curriculum component has a relatively high Cronbach alpha (.92). The item total correlations range from .41 to .71 which are higher than the threshold value of .4. The teaching method component has a fairly high Cronbach alpha (.92), The item total correlations range from .50 to .72 which are higher than the threshold value of .4. The graduate quality component has a high value of 0.92. The item total correlation of the variables range from .45 to .74 which are higher than the threshold of .4.

A factor analysis using principal axis factoring in conjunction with promax rotation (Conway and Huffcutt, 2003) was applied on variable 1 to 70 in order to reduce the data for meaningful analysis. The final result is presented in the table 2 with 7 factors extracted. It can be seen that each of 42 variables loads significantly (greater than .50) on its design factor. The factor loadings range from .513 to .878. The seven factors extracted explain 63.02 % of the total variance of the whole sample data.

4.3 Confirmatory factor analysis- CFA

CFA would be used after the preliminary assessment by EFA because CFA is a more rigorous and precise test as compared to EFA (Anderson and Gerbing, 1988; Steenkamp and Van Trijp, 1991). This confirmative approach use a more advanced technique called Structural Equation Modeling –SEM.

AMOS 5 program (Arbuckle and Wothke, 2002) has been applied to measure the fit of each construct and overall model fit of the model, the final results show that the model achieves a satisfactory level of fit (table 3).

Table 2. Result of joint factor analysis for 4 constructs

	Factor loading						
	1	2	3	4	5	6	7
CURR_6	.878						
CURR_5	.816						
CURR_9	.750						
CURR_7	.742						
CURR_2	.713						
CURR_4	.684						
CURR_8	.651						
CURR_1	.592						
CURR_0	.592						
CURR_11	.544						
GRAD_10		.820					
GRAD_11		.774					
GRAD_9		.758					
GRAD_15		.745					
GRAD_18		.738					
GRAD_16		.641					
GRAD_17		.580					
FACUL_5			.824				
FACUL_6			.801				
FACUL_8			.758				
FACUL_7			.758				
FACUL_10			.753				
FACUL_4			.698				
FACUL_9			.604				
TEAC_3				.849			
TEAC_2				.812			
TEAC_4				.785			

TEAC_1				.582			
TEAC_7				.563			
TEAC_5				.549			
TEAC_10				.520			
TEAC_13					.852		
TEAC_14					.743		
TEAC_11					.624		
TEAC_12					.580		
CURR_13						.834	
CURR_14						.788	
CURR_15						.607	
CURR_16						.582	
GRAD_27							.740
GRAD_23							.640
GRAD_19							.513

Table 3: Fit indexes for theoretical model

Fit indexes	Estimates	Critical Value
Chi-square χ^2	1252.75	
Df	519	
p	.000	> .05
χ^2 / Df	2.414	< 5
GFI	.898	Higher values indicate better fit
CFI	.937	$\geq .90$
RMSEA	.046	$\leq .08$
HOETLER	265	≥ 200

4.4 Hypothesis testing

The model and path coefficients between hypothesized constructs are shown in the figure

1. The detail explanation and test of each of the four hypotheses are as follows:

The first hypothesis posits the relationship between curriculum and graduate quality as follows - H1: "A positive relationship exists between the quality of the curriculum and the quality of graduates".

The results of SEM show that standardized coefficient of the structural path between curriculum (CURRICUL) and graduate quality (GRADUATE) is significantly different from zero ($\beta = .33$, $p = .045$), indicating that hypothesis H1 is supported by the empirical data. That is, a good curriculum plays an important role on the quality of graduate. The good curriculum would enhance creative learning and develop interpersonal skills and focus on the needs of industrial and business life; therefore the better curriculum we have, the better graduates they are. In this research, this antecedent has primary influence on the quality of the graduate. Moreover, the finding also shows that the quality of curriculum has a great impact on the teaching methodology ($\beta = .79$, $p = .005$). Cat (2004) mentioned curriculum is the most important factor which decides the training quality. A good designed curriculum with specific objectives will facilitate the teaching procedure as it enables teacher to apply appropriate teaching approaches. By conforming to the step-by-step guidelines on implementing the subjects introduced into the school curriculum, teachers will have a clear idea of what and how to teach. Basing on the subject areas, the objectives, and

the time allocation prescribed in the curriculum, teachers could find appropriate teaching approaches. Therefore, it is concluded that H1 is supported by the empirical data.

The relationship between faculty and the quality of graduate is proposed in the second hypothesis as follows – H2: "A positive relationship exists between the quality of the faculty and the quality of graduates".

The results of SEM shows that the standardized coefficient of the structural path between faculty (FACULTY) and graduate quality (GRADUATE) is significantly different from zero ($\beta = .30$, $p = .004$), demonstrating that hypothesis H2 is supported by the empirical data. The findings verify that faculty is one of the most important inputs to improve the quality of graduate and have influence on other input constructs. The empirical results also show that FACULTY has a significantly positive influence on CURRICUL ($\beta = .50$, $p = .002$), and on TEACHMET ($\beta = .20$, $p = .002$). As faculty participate in designing and revising the curriculum, they play a critical role in making curriculum adaptations according to the everchanging business environment. Likewise, as they are the one that apply teaching methodology, they are considered the main and direct actors to transfer knowledge to students. Therefore, this finding is also consistent with the real context in Vietnam.

The relationship between teaching methodology (TEACHMET) and the quality of graduate (GRADUATE) is proposed in the third hypothesis as follows – H3: "A positive

relationship exists between the quality of the teaching methodology and the quality of graduates”.

The results show that standardized coefficient of the structural path between TEACHMET and GRADUATE is not significantly different from zero ($\beta = .28$, $p = .149$). The data analysis indicates that the hypothesis H3 is not supported. This means that there is a non – significant relationship between teaching methodology and the quality of graduate. This might explain that, as in this study, the students of the graduate programs are mature. That is, they think that they know how to study by themselves, therefore they may perceive that teaching methodology does not influence on the quality of graduate. This explanation is supported by the theory of adult learning and the findings of researchers such as Gibb, 1960; Brundage and Mackeracher, 1980; Smith, 1982; Brookfield, 1986; Conti, 1985; Merriam and Caffarella, 1991. They found that self-directed goals are set and pursued by the adult learners, and the learners has responsibility for what and how of learning.

The relationship between quality of entrant students (ENTRANT) and the quality of graduate (GRADUATE) is proposed in the fourth hypothesis as follows – H4: “A positive relationship exists between the quality of the entrant students and the quality of graduates”.

The results of SEM show that standardized coefficient of the structural path between entrant students (ENTRANT) and graduate quality (GRADUATE) is significantly different from zero ($\beta = .12$, $p = .007$), demonstrating that hypothesis H4 is supported by the empirical data. It indicates that the better entrant students are, the better the quality of the graduate. In order to evaluate the quality of entrant GPA and other indicators such as social economic status, willingness to study, professional orientation, etc must be measured. However, because of time constraints, this research only measured the entrant quality by GPA. That is why the relationship between the construct of entrant quality and of graduate quality is not so strong ($\beta = .12$).

In summary, 3 hypotheses have been found empirically supported. Their extent of linear relationships which are represented by standardized path regression coefficients have been shown to be statically significant with $p = .000$, except for TEACHMET and GRADUATE, where $p = .149$.

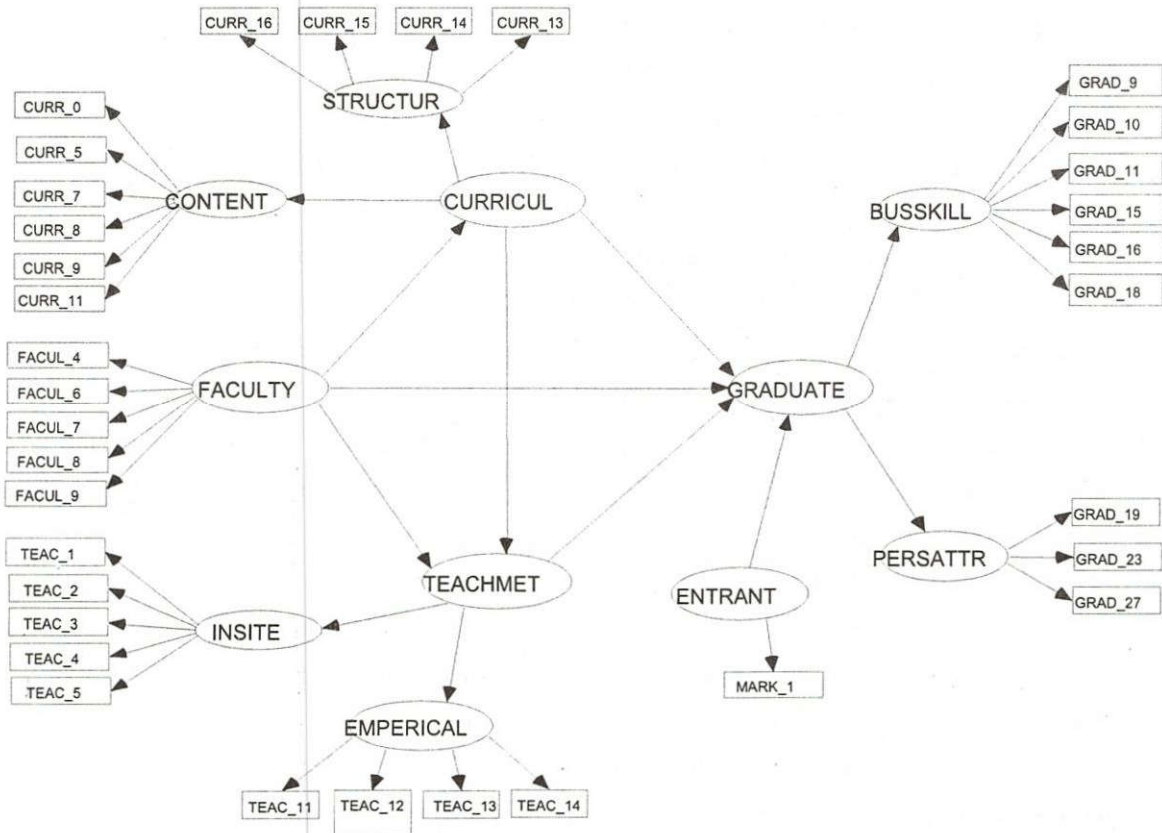


Figure 1. CFA results of the theoretical model

5. CONCLUSIONS

After being refined by exploratory factor analysis - EFA and Cronbach alpha, forty three variables used to measure the theoretical constructs used in this study received satisfactory levels of reliability and validity, confirmed by confirmatory factor analysis - CFA. Structural path analysis was performed on five constructs with quality of graduate as the dependent variable in order to test the hypothesized set of relationships.

The path diagram indicates that curriculum is the strongest factor that influences the quality of graduate (.33). Moreover, curriculum has a strong effect on the teaching methodology (.79). Therefore, it could be said that curriculum is the most important factor which decides the quality of graduate in VN universities. This reflects the real situation of VN business programs that their syllabus or curriculum is out of date and fails to adapt to the new changing requirements from the society.

This study points to the importance of faculty as a second input indicator for the graduate quality. Faculty has a significant effect on graduates (.30) and this is supported by Fife and Janosik (1999) when they emphasize the important role of faculty from the best graduate schools in ensuring quality of graduates. In addition, the faculty factor has a

strong effect on curriculum construct (.50) and on teaching methodology (.20). The result of this structural path analysis gives support to the decisive role of faculty in evaluating the graduate quality in VN higher education.

In literature, teaching methodology is considered as important input for the graduate. However, there is no evidence to support the relationship between teaching methodology and the quality of graduate in this study ($p = .149 > .05$).

This might be explained by the theory of adult learning and the findings of researchers such as Gibb, 1960; Brundage and Mackeracher, 1980; Smith, 1982; Brookfield, 1986; Conti, 1985; Merriam and Caffarella, 1991.

The entrant input also has influence on the quality of graduate; however it is not so strong (.12). An evaluation of the quality of entrant should include many factors such as GPA, social economic status, will of study, professional orientation, etc. However, for the purpose of the thesis, this research only focused on measuring the entrant quality by GPA. That is why the relationship between the construct of entrant quality and of graduate quality is not so strong.

MỐI LIÊN HỆ GIỮA CÁC YẾU TỐ ĐẦU VÀO VÀ CHẤT LƯỢNG CỦA SINH VIÊN
TỐT NGHIỆP: NGHIÊN CỨU CỤ THỂ TẠI VIỆT NAM

Trương Quang Được

Trường Đại học Quốc tế, ĐHQG-HCM

TÓM TẮT: Mục đích của nghiên cứu phân tích và nghiên cứu khám phá này là nhằm trả lời câu hỏi về mối liên hệ giữa các yếu tố đầu vào trong quá trình đào tạo và chất lượng của sinh viên tốt nghiệp. Hai phương pháp thống kê chính được sử dụng để xem xét các thang đo và để phân tích dữ liệu là Phân tích nhân tố khám phá (EFA) và phương trình mô hình cấu trúc (SEM). Qui mô mẫu cho nghiên cứu là gồm 460 sinh viên cao học, 195 cán bộ giảng dạy từ 7 trường đại học lớn ở Việt nam và 153 nhà tuyển dụng ở Tp. Hồ Chí Minh. Kết quả của nghiên cứu cho thấy có mối quan hệ giữa cán bộ giảng dạy, chương trình đào tạo và đầu vào của sinh viên với chất lượng sinh viên tốt nghiệp. Nghiên cứu này cũng nêu một số gợi ý cho các trường đại học, cán bộ giảng dạy và nhà tuyển dụng tại Việt nam. Nhiều đề nghị cho việc nghiên cứu tiếp theo cho Việt nam và các nước đang phát triển khác cũng được đề xuất.

Từ khóa: mối liên hệ, yếu tố đầu vào, quá trình đào tạo, chất lượng của sinh viên tốt nghiệp

TÀI LIỆU THAM KHẢO

- [1]. Aldridge, S. and J. Rowley, 1998. Measuring customer satisfaction in higher education. *Quality assurance in education*. 4 (6): 197-204.
- [2]. Aly, N and J. Akpovi, 2001. Total quality management in California public higher education. *Quality assurance in education*. 3 (9): 127-131.
- [3]. Barbara M. Byrne, 2001. *Structural Equation Modeling with AMOS- Basic concepts, Applications, and Programming*. Lawrence Erlbaum Associates, Publishers. London
- [4]. Baruch Y. and Leeming A., 1996. Programming the MBA program – The quest for curriculum. *Journal of Management Development*. 15 (7): 27-36.
- [5]. Bickerstaffa, G., 1996. *Which MBA ? A Critical Guide to the World's Best Programmes*. 8th ed., Addison – Wesley Longmann, Harlow.
- [6]. Candy, P.C. and Crebert, R.G., 1991. Ivory tower to concret jungle: The difficult transition from the academy to the workplace as learning environments. *Journal of Higher Education*, 62: 570-592
- [7]. Cat, D.T., 2004. Critical evaluating is important factor in developing qualified higher education. *Renovation of VN Higher Education – Integration and Challenges*: 238-246.
- [8]. Cheng, C.Y. and Tam, W.M., 1997. Multi-models of quality in education. *Quality assurance in education*. 5(1): 22-31.

- [9].Connelly, M., 1997. The academic quality audit of an Asian postgraduate university. *Quality assurance in education*. 1(5): 40-45.
- [10].Deutschman, A. . 1991. The trouble with MBAs. *Fortune*. 124(3): 67-77.
- [11].Driscoll, C. and Wicks, D., 1998. The Customer-driven approach in business education: A Positive danger ? *Journal of Education for Business*, 74: 58-61.
- [12].Fallows, S., Steven, C., 2000. Building employability skills into the higher education curriculum: a university-wide initiative. *Education + Training*. 42(2): 75-82.
- [13].Finch, J. H., M. M. Helms and L. P. Etkin, 1997. Development and assessment of effective teaching: an integrative model for implementation on schools of business administration. *Quality assurance in education*. 3 (5): 159-164.
- [14].Harman, G., 1996. *Quality assurance for higher education: Developing and managing quality assurance for higher education systems and institutions in Asia and the Pacific*, UNESCO Principal Regional Office for Asia and the Pacific, Bangkok.
- [15].Hill, Y., Lomas L. and MacGregor J., 2003. Students' perception of quality in higher education. *Quality assurance in education*. 11(1): 15-20.
- [16].Joseph, M and B. Joseph, 1997. Service quality in education: a student perspective, *Quality assurance in education*. 1(5): 15-21.
- [17].Juran, J.M. and Gryna, F.M. Jr (Eds), 1988. *Juran's Quality Control Hand Book*, 4th ed. McGraw-Hill, NewYork, NY.
- [18].Lawrence, J. J. and M. A. McCollough, 2001. A conceptual framework for guaranteeing higher education. *Quality assurance in education*. 3 (9): 139-152.
- [19].Light, R.J., 1992. *The Havard assessment Seminars, 2nd report: Explorations with students and family about teaching, learning and student life*. Cambridge, MA: Harvard University.
- [20].Louw L., Bosch J.K. and Venter D.J.L., 2001. Quality perceptions of MBA courses and required management competencies. *Quality Assurance in Education*. 9(2): 72-79.
- [21].Mason, M., 2004. *Strategies and solutions for quality higher education for global competitive ness*. International Forum on Higher Education "Higher Education Reform and International Integration", Hanoi, Vietnam: 138-144.
- [22].Murray S. and Robinson H., 2001. Graduates into sales-employer, student and university perspective. *Education + Training*. 43(3): 139-144.
- [23].Nabi, G.R. and Bagley D., 1999. Graduates' perceptions of transferable skills and future career preparation in the UK. *Education + Training*. 41(4): 184-193.

- [24].Owlia M.S. and Aspinwall E.M., 1996. A Framework for the dimensions of quality in higher education. *Quality Assurance in Education*. 4(2): 12-20.
- [25].Tootoonchi, A., Lyons P. and Hagen, A., 2002. MBA Students' perceptions of effective teaching methodologies and instructor characteristics. *International Journal of Commerce and Management*. 12(1): 79-93.