



Students' Attitude Towards the Quality of Information Technology Degrees: Empirical Evidence From Private Sector Universities in Sri Lanka

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Abstract

Information Technology has almost penetrated to people's lives as the usage of computer applications has increased dramatically over the past few years. Thus, the education of Information Technology became important field over the years. Currently the offering of Information Technology degree education in Sri Lanka, lies on a great phase due to the continuously increasing competition. Education institutes concentrate on meeting students' expectations while achieving the quality they perceive to attract more students to their Information Technology degree programmes. The expected quality and actual quality creates a gap in selecting an Information Technology degree. In this research, authors examine the demographic factors that influence on quality of an Information Technology degree, the expected quality factors and actual quality factors of Information Technology degree and information flow to the student in existence of the program. The results suggested narrowing down the quality gap between expected quality and actual quality of Information Technology degrees.

Keywords: *actual quality, expected quality, information technology education, quality gap*

1. Introduction

Recently people have identified the importance and applicability of Information Technology (IT) for their daily routine activities. Almost every area of human life has covered by the Information Technology such as economics, education, communication, and travel. (Library Philosophy and Practice, 2008). Due to this huge usage of IT, people persuade to pay a massive concentration for learning Information Technology. The terminology of IT which was earlier pronounced as computer science, now has become the Information and Communication Technology (ICT) combining computer science, the computer and human interaction as a whole (SLICTA, 2007). In fact, Information Technology not only relates to computer science but also with subject areas of management, marketing, engineering, science and many more. Sri Lanka also possesses a potential market in relation with the software industry which is able to gain a larger foreign exchange to the government sector (Munasinghe & Jayawardana, 2003). In Sri Lanka, National Institute of Education has introduced the Information Technology curriculums to improve primary and secondary education. Meanwhile, teacher trainings programs are also being conducted under the Ministry of Education. There were some successful training programs like, Computer –assisted Learning, International Computer Driving License and International Pedagogical ICT Licence (Gamage et al., 2008). Government schools are conducting Information and Communication Technology for General Certificate of Ordinary Level and General Information Technology for General Certificate of Advanced Level (NIE, 2013). The Tertiary Education also has evolved with the requirement and Information Technology and Information Technology related degrees has introduced for the tertiary education. The state universities are conducting Information Technology and In-

formation Technology related degrees; Bachelor of Science in IT, BSc in Computer Science, BSc in Software Development and BSc in Information Systems (UGC Sri Lanka, 2013).

The demand for Information Technology and Information Technology related jobs are very higher than the supply. It is witnessed that the requirement of graduates for Information Technology profession cannot be fulfilled by the state universities (ICTA, 2007). This has opened the doors for the private sector. Most of these private sector institutions started as projects implemented under the Board of Investments of Sri Lanka (Yatapahana, 2006). The student expected quality and actual quality most of the time not in one line and leads to create quality gap. This gap is a main reason for set the attitudes of private sector undergraduate IT student.

This research attempts,

- To examine the demographic factors which influence significantly in IT education: demographic factors like age, gender, civil status and income level influence on IT education.
- To examine the flow of information to the student in existence of the program: The way that the student got to know about the Information Technology degree program; that can be a recommendation of a friend or the recommendation by the school colleague or from any other source.
- To examine the quality factors in IT sector education: The quality measurements are set, content, staff, applicability, administration, employability and skill development.
- To examine ways to narrow down the gap between expected and the actual quality them experiencing: actual quality is set by literature with past researches and the expected quality is set by the students with their dimensions of quality for an IT degree

Considering the objectives of the study, following research questions were formulated.

- What types of students attempt to follow IT degree? The age, gender, civil status, occupation, household income, nationality, English knowledge and pervious knowledge in IT will be taking in to account and by doing this the students can be categorize in to various categories like male/female, married /unmarried, fluent in English average and poor in English ,etc.
- What type of information students are looking at in selecting IT degree program? The recommendation, advertising method, government recognition, industry recognition, social recognition, course fee, duration of the course and skills can gain by the program are some factors the students looking for when they selecting an IT degree program.
- What are the quality requirements expected by a student from an IT degree? Better equipment, job placement, on time completion, industrial training, field trips and extra activities were considered under expected quality factors.
- What factors make the gap between expected quality and actual quality? The additional payments for the course, the duration is extending, dramatically rotates lecturers, poor infrastructure facilities, academically bad practices, discriminations, regular policy changing and poor transparency.

2. Literature Review

Thus, it was found that there are issues in proper standardization and quality monitoring systems to measure the functionality of these private sector institutes. The private sector institutes offer certificate level to doctoral level programs in IT related programs. International Organization for Standardization and Sri Lanka Standards Institution maintains standards for the programs. Some programs are offered with affiliations of foreign universities and professional bodies. These universities do have their own quality maintaining procedures like Quality Assurance Agency for Higher Education in United Kingdom. The curriculum is developed by foreign partner institutes and sometimes the curriculum is customized according to the requirements of the respecting institutes. Because of the high demand and competitiveness among these institutes, institutes are concentrated on marketing other than maintaining the actual quality of Information Technology degrees. The actual quality is perceived by institutes by different angles. Some institutes believe that it has to be in line

with the industry recognition, while some believes that it is with the quality of staff. Besides, the students' perceptions of quality go more beyond the equipment that they use, extra activities that the institutes organize, etc. In this context, it has attempted to study students' attitudes regarding the quality of Information Technology degrees offered in Sri Lankan private sector. The quality of an Information Technology degree depends on various factors; some of leading factors are course content, staff, and applicability, administration, employability and skill developments (OECD, 2013).

The attitude can be defined as predisposition or a tendency to respond positively or negatively towards a certain idea, object, person, or situation (Fernando & Ekanayake, 2009). Attitude influences an individual's choice of action, and responses to challenges, incentives, and rewards (together called stimuli). The attitudes are influenced by the age, gender, education background and many other factors. The quality has to be defined clearly with its parameters. The quality is a dimension that a person feels, and to set up a framework is almost impossible unless all the stakeholders come to an acceptable compromise (Gibbs, 2010). The students also have their own dimensions for quality. In depth interviews with ten students who have decided to enrol for degree program at International College of Business and Technology campus revealed that they are concentrated on better equipment, job placement, on time completion, industrial training, field trips and extra activities. As it reveals, there is a high competency among IT training providers, every institute is trying their level best to market their program. Apart from the advertising, information flow to the students in existence of the program depends on some other factors. The recommendation, government recognition, industry recognition, social recognition, course fee, duration of the course and skills can gain by the program can identified as the information flow factors. The industry requirement should be identified by the IT graduated professionals. As the research question arise as what is the students' attitude of the quality of Information Technology degree?

3. Methodology

The literature review verifies the idea that actual quality of Information Technology degree is influenced by number of quality factors. The previous literature further clarifies there are number of factor components that make impact on actual quality of information technology degree. However, many scholars did not attempt to study the impact of demographic factors, Information flow and expected quality on actual quality of Information Technology degree.

The present study expects to explore the impact of following demographic factors, information flow and expected quality of an Information Technology degree. It has identified demographic factors, information flow and expected quality of Information Technology degree as independent variables and actual quality of an Information Technology degree is deliberated as the dependent variable. The relationship between the independent variables and dependent variable for the study is conceptualized in figure 1.

According to European Association for Quality Assurance in Higher Education (2005), quality standards of an IT degree can be seen as bellow.

- Policy and procedures for quality assurance:-institutions should have a policy and associated procedures for the assurance of the quality and standards of their programs and awards. The organization should also commit them explicitly to the development of a culture which recognizes the importance of quality and quality assurance in their work. To achieve these institutions must develop and implement a strategy for the continuous enhancement of quality. Those strategies, policy and procedures what are the implementing must have a formal status and be publicly available. The institution should also include a role for students and other stakeholders.
- Approval, monitoring and periodic review of programs and awards- Institutions should have formal mechanisms for the approval, periodic review and monitoring of their programs and awards.
- Assessment of students & Quality assurance of teaching staff-Students should be assessed using published criteria, regulations and procedures which are applied consistently. For quality assurance of teaching staff, institutions should have ways of satisfying them that staffs involved with

the teaching of students are qualified and competent to do so. They should be available to those undertaking external reviews, and commented upon in reports.

- Learning resources and student support-Institutions should ensure that the resources available for the support of student learning are adequate and appropriate for each program offered.
- Information systems-Institutions should ensure that they collect, analyse and use relevant information for the effective management of their programs of study and other activities.
- Public information-Institutions should regularly publish up to date, impartial and objective information, both quantitative and qualitative, about the programs and awards they are offering.
- Use of internal quality assurance procedures-External quality assurance procedures should take into account the effectiveness of the internal quality assurance processes.
- Follow up procedures & periodic review-Quality assurance processes which contain recommendations for action or which require a subsequent action plan, should have a predetermined follow up procedure which is implemented consistently. For periodic reviews, external quality assurance of institutions and/or programs should be undertaken on a cyclical basis. The length of the cycle and the review procedures to be used should be clearly defined and published in advance.

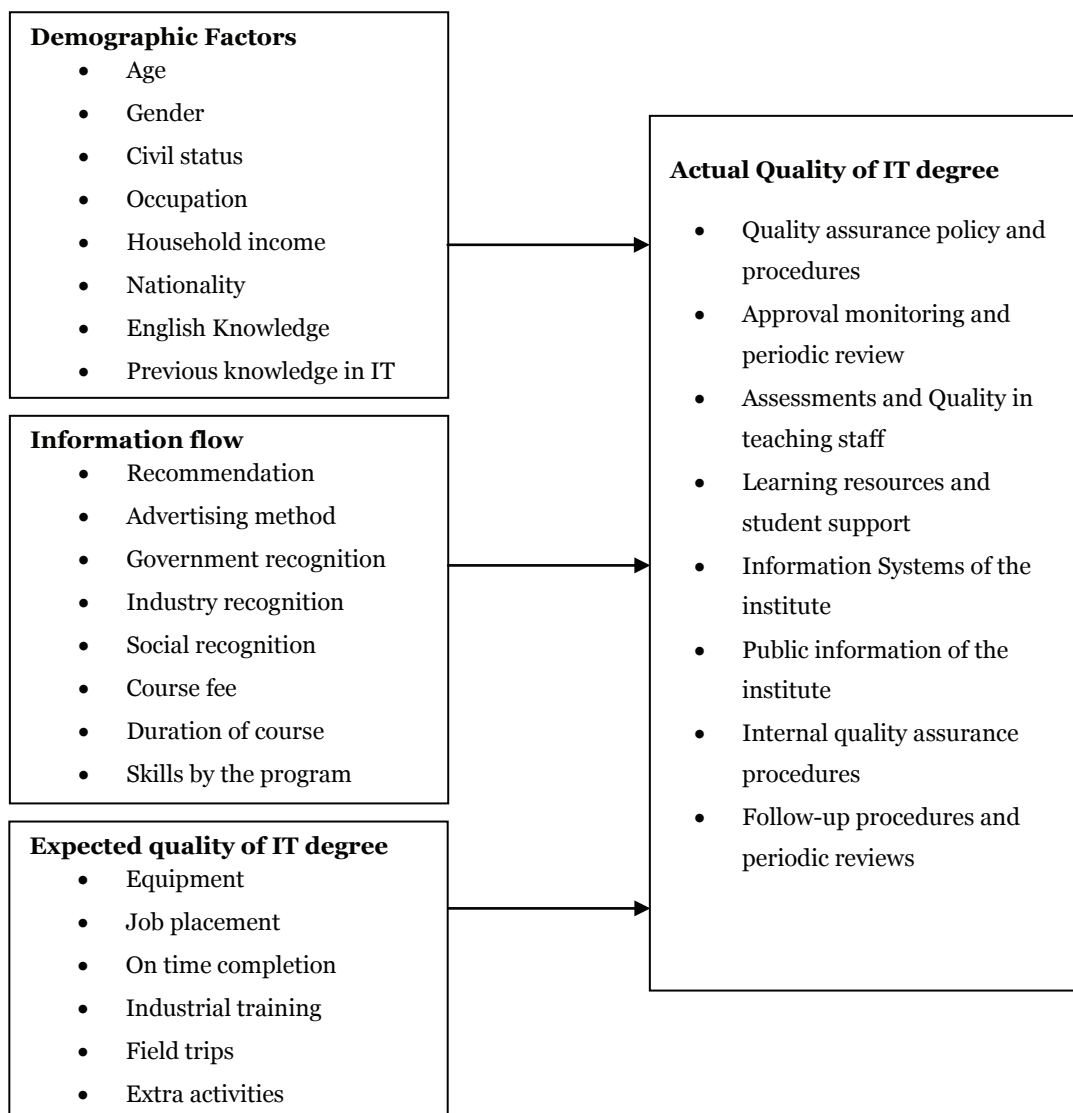


Figure 1: Conceptual framework of the study

Table 1: Sample Composition

Campus/Institute	Local Students		Foreign Students	
	Male	Female	Male	Female
ICBT	20	20	5	5
SLIIT	25	25		
NIBM	25	25		
APPIT	25	25		
Total	95	95	5	5

Above quality standards were customized considering the domain with expertise direction. The theoretical population is for the research is around 1356 in 2007-2008 as the institutional survey of 12 colleges revealed that to-date, a total of 44,787 students had obtained their foreign first degrees in Sri Lanka and a further 3,568 are currently reading for the degree and that most private degree awarding institutions in Sri Lanka are concentrating on providing higher education on Information technology (38%), followed by Business administration (14%), and Accounting, Finance, and Banking (14%) (Stephen, 2007). Simple random sampling was used with the sample size of 200. The sample composition is illustrated in table 1.

Primary data were gathered by using a structured questionnaire consisting of 56 questions. The questionnaire was organized in to four main sections. Section one consisted of 8 questions regarding the demographic factors of respondents such as age, gender, civil status , occupation, household income, nationality, English knowledge and previous knowledge in Information Technology. Section two was designed to test information flow, Recommendation, advertising method, government recognition, industry recognition, social recognition, course fee, duration of course

As per figure 2, most of the respondents had a recommendation to follow a degree course by someone other, which is 71.1% amounting to 138. 28.9% of respondents were come in to follow a degree course without any recommendation it is 56 in numbers. The mean value for recommendation to the course by others is 0.29. As far as method of knowing the course is concerned, 36.7% of the respondents amounting to 73 were aware about the course by refereeing a paper advertisement while 9.0% amounting to 18 were aware about the course by refereeing a banner.13.6% amounting to 27 were aware about the course by referring a leaflet. By referring the web 12.6% amounting to 25 respondents were aware about the course. 9.5% of the respondents amounting to 19 were aware about the course by refereeing a blog while 2.5% amounting to 5 were aware about the course by refereeing an Email. 4.0% amounting to 8 were aware about the course by referring an E flyer. By referring the other sources 12.1% amounting to 24 respondents were aware about the course. The mean value for method of knowing the course is 3.33 while the mode is 1. Thus according to the figure 2, it can be assumed that majority of the respondents did aware about the course by refereeing a paper advertisement. Regression analyses was conducted with quality assurance policy and procedures as the dependent variable and four dimensions of expected quality of IT degree factors of an Information Technology Degree as the independent variables. The adjusted R square value is 0.502 that reveals 50.2% of total variance in quality assurance policy and procedures is explained by four dimensions of expected quality of IT degree factors of an Information Technology Degree.

Regression analysis was conducted with approval monitoring and periodic review as the dependent variable and two dimensions of expected quality of IT degree factors of an Information Technology Degree as the independent variables. The adjusted R square value is 0.461 that reveals 46.1% of total variance in approval monitoring and periodic review is explained by two dimensions of expected quality of IT degree factors of an Information Technology Degree. Another Regression analysis was conducted with learning resource and student support as the dependent variable and three dimensions of expected quality of IT degree factors of an Information Technology Degree as the independent variables. The adjusted R square value is 0.582 that reveals 58.2% of total variance in learning resource and student support is explained by three dimensions of expected quality of IT degree factors of an Information Technology Degree. Regression analysis was con-

ducted with Information Systems of the institute as the dependent variable and three dimensions of expected quality factors of an Information Technology Degree as the independent variables. The adjusted R square value is 0.067 that reveals 6.7% of total variance in Information Systems of the institute is explained by three dimensions of expected quality factors of an Information Technology Degree. Regression analysis was conducted with Public information of the systems as the dependent variable and three dimensions of expected quality factors of an Information Technology Degree as the independent variables.

Table 2: Demographic factor frequency distribution

Demographic Factor	Components	Frequency	Present (%)
Gender	Male	98	49.2
	Female	101	50.8
	Total	199	100
Age	16-35	165	82.5
	35-45	26	13
	45<	9	4.5
	Total	200	100
Civil status	Married	23	11.5
	Unmarried	177	88.5
	Total	200	100
Occupation	Gov. executive	1	0.5
	Gov. non-executive	25	12.6
	Pvt. executive	4	2
	Pvt. Non-executive	4	2
	Business owner	1	0.5
	Student	162	81.4
	Retired	1	0.5
	Other	1	0.5
	Total	199	100
Household Income	<45000	98	54.1
	45000-100000	47	26
	100000<	36	19.9
	Total	181	100
Nationality	Sri Lankan	176	88.4
	Foreign National	23	11.6
	Total	199	100
English knowledge	Very Bad	1	0.5
	Bad	12	6
	Average	163	81.9
	Good	20	10.1
	Very good	3	1.5
	Total	199	100
Previous IT knowledge	Yes	130	65
	No	70	35
	Total	200	100

The Regression analysis was conducted with approval monitoring and periodic review as the dependent variable and two dimensions of expected quality of IT degree factors of an Information Technology De-

gree as the independent variables. The adjusted R square value is 0.461 that reveals 46.1% of total variance in approval monitoring and periodic review is explained by two dimensions of expected quality of IT degree factors of an Information Technology Degree. Another Regression analysis was conducted with learning resource and student support as the dependent variable and three dimensions of expected quality of IT degree factors of an Information Technology Degree as the independent variables. The adjusted R square value is 0.582 that reveals 58.2% of total variance in learning resource and student support is explained by three dimensions of expected quality of IT degree factors of an Information Technology Degree. Regression analysis was conducted with Information Systems of the institute as the dependent variable and three dimensions of expected quality factors of an Information Technology Degree as the independent variables. The adjusted R square value is 0.067 that reveals 6.7% of total variance in Information Systems of the institute is explained by three dimensions of expected quality factors of an Information Technology Degree. Regression analysis was conducted with Public information of the systems as the dependent variable and three dimensions of expected quality factors of an Information Technology Degree as the independent variables. The adjusted R square value is 0.501 that reveals 50.1% of total variance in Public information of the systems is explained by three dimensions of expected quality factors of an Information Technology Degree.

Table 3: Results of Pearson Correlations

	Quality assurance policy and procedures	Approval monitoring and periodic review	Assessments and quality in teaching staff	Learning resource and student support	Information systems of the institute	Public information of the systems	Internal quality assurance procedures	Follow-up procedures and periodic reviews
Government recognition	.679**	.837**	0.708	.601**	-0.059	0.085	.561**	.201**
Industry recognition	.241**	.218**	.764*	.149*	.307**	.343**	.329**	.311**
Social recognition	.281**	.277**	0.71	.234**	.296**	.561**	.505**	.370**
Course fee	-.595**	-.546**	-.867*	-.883**	0.031	-0.11	-.239**	-.312**
Duration of course	.279**	.240**	0.73	.203**	.265**	.357**	.342**	.333**
Skills by the program	.576**	.762**	.801*	.629**	0.118	.272**	.411**	.687**
Equipment	.623**	.633**	0.484	.504**	-0.084	0.079	.344**	.296**
Job placement	.327**	.265**	.801*	.243**	.254**	.349**	.334**	.314**
On time completion	.393**	.422**	.867*	.685**	0.049	.205**	.324**	.199**
Industrial training	0.092	0.141	0	0.128	.530**	.703**	.383**	.351**
Field trips	.164*	.205**	0.75	.156*	.315**	.369**	.338**	.436**
Extra activities	.279**	.240**	0.73	.203**	.265**	.357**	.342**	.333**

Regression analysis was conducted with approval monitoring and periodic review as the dependent variable and five dimensions of information flow factors of an Information Technology Degree as the independent variables. The adjusted R square value is 0.898 that reveals 89.8% of total variance in approval monitoring and periodic review is explained by five dimensions of information flow factors of an Information Technology Degree. Regression analysis was conducted with learning resource and student support as the dependent variable and six dimensions of information flow factors of an Information Technology Degree as the independent variables. The adjusted R square value is 0.845 that reveals 84.5% of total variance in learning resource and student support is explained by six dimensions of information flow factors of an Information Technology Degree.

4. Discussion

The population indicated that 82.5% of respondents were in the age range of 16-35 years and 50.8% of respondents were female. The population further indicated that 88.5 % of the respondents were unmarried. Majority of the respondents were do not do any job and they were students that was 81.4% from the total population. The population further indicated that 54.1% of respondents were in the income level of less than

45000 LKR per month. Most of the students had average English knowledge that was 81.9% from the total population. And most of the students had followed a previous IT course that was 65% of total population. The results indicated that 88.4% students were from Sri Lanka. It can be concluded that young adult age in between 16-35 who were unmarried and that do not had a job with the less family income level tended to follow an Information Technology degree. There were no big sex difference, means males and females similarly enroll for IT degrees. Most of the students who enrolls for IT degrees had followed an IT course previously and most of them were had average English knowledge level.

Most of the students that was 71.1% out of total population previously had a recommendation by another person before they get enrolls for the IT degree course. Paper advertisement was the most effective way of advertising that was 36.7% when considering with the other methods. When students are selecting an IT degree they are looking for Government recognition, industry recognition, social recognition and course fee. The results clearly shows that the government recognition was positively strongly related with quality assurance policy and procedures, approval monitoring and periodic review, learning resources and student support and internal quality assurance procedures. The industry recognition was strongly positively related with assessment and quality in teaching staff. The social recognition was positively strongly related with the public information of the system and internal quality assurance procedures. The course fee was highly negatively related with the quality assurance policy and procedures, assessment and quality in teaching staff and learning resource and student support. In addition to these results, the analyzed result clearly shows that there was no any strong relationship between duration and any of the dependent variable. That means the duration of the course cannot be taken as vital information that the students are looking for when selecting an IT degree.

Under the expected quality factors, equipment, job placement, on time completion, industrial training, field trips and extra activities had been considered. The results indicated that equipment was strongly positively correlates with quality assurance policy and procedures, approval monitoring and periodic review and learning resources and student support. On time completion was strongly positively correlates with assessment quality in teaching staff and learning resources and student support. Industrial training strongly positively correlates with Information systems of the institute and public information of the system. Job placement was positively strongly correlates with assessments and quality teaching staff. Field trips and extra activities were not strongly correlated with any actual quality factor indicating, the students' expected quality factors of equipment, job placement, on time completion and industrial training were related with actual quality but the field trips and extra activities were not related with the actual quality of IT degree.

Based on the data, 50.2% of total variance in quality assurance policy and procedures was explained by four dimensions of expected quality of IT degree. The results of this study revealed that equipment were positively strongly related to quality assurance policy and procedures, while job placement, on time completion, industrial training, field trips and extra activities were not strongly correlated. 46.1% of total variance in approval monitoring and periodic review was explained by two dimensions of expected quality of IT degree. The results of this study revealed that equipment were positively strongly related to approval monitoring and periodic review, while job placement, on time completion, industrial training, field trips and extra activities were not strongly correlated. Further the results of this study revealed that job placement and on time completion were positively strongly related to assessment and quality in teaching staff, while equipment, industrial training, field trips and extra activities were not strongly correlated. 58.2% of total variance in learning resource and student support was explained by three dimensions of expected quality of IT degree. The results of this study revealed that on time completion were positively strongly related to learning resource and student support, while job placement, industrial training, field trips and extra activities were not strongly correlated. 6.7% of total variance in information systems of the institute was explained by three dimensions of expected quality of IT degree. The results of this study revealed that industrial training was positively strongly related to information systems of the institute, while equipment, job placement, on time completion, field trips and extra activities were not strongly correlated. 50.1% of total variance in public information of the systems was explained by three dimensions of expected quality of IT degree. The results of this study revealed that

industrial training was positively strongly related to public information of the systems, while equipment, job placement, on time completion, field trips and extra activities were not strongly correlated. For internal quality assurance procedures and follow up procedures and periodic reviews neither of any expected quality factor strongly correlated, revealed that the quality gap created in between expected quality and actual quality.

Correlation between government recognition and quality assurance policy and procedures indicated the strongest positive relationship was 0.679. As the study revealed that the most important factor was the government recognition comparing with other factors. It can be clearly concluded University Grant Commission identification, Tertiary Vocational Qualification recognition and ministry of higher education identification heavily considered with quality assurance policy and procedures. Approval monitoring and periodic reviews includes government recognition, skills gain by the program and equipment and these factors had a strong positive relationship with approval monitoring and periodic review. Results gain form the correlation analysis indicated that all the information flow variables had a significant relationship. According the result of regression analysis adjusted R² is 0.898. This reveals that information flow variable had significantly explained 89.8% of the variance in approval monitoring and periodic review at 1% significant level. It is clearly evident that as students they believe that approval monitoring and periodic reviews have to be gone through government standards. Another important finding is that students believes that the industry recognition is weakly related with the approval monitoring and periodic review means the industry is not much concerning about the approval monitoring and periodic reviews of the institute. Students further believes that if approval monitoring and periodic reviews happens well that it will clearly effects on skills that can be gain by the program. According to the results students also thinks modern upgraded equipment has used in the academic process because of the high approval monitoring and periodic reviews happens at the program. The results of this study revealed that industry recognition; skills by the program, job placement, on time completion had positively related to assessment and quality in teaching staff. The course fee was seen as negatively related to assessment and quality in teaching staff. Correlation between on time completion and assessments and quality in teaching staff indicated the strongest positive relationship which was 0.867, Followed by job placement 0.801, skills by the program 0.801 and industry recognition 0.764. Findings of this study reveal that the most important factor was on time completion comparing with other. It can be clearly concluded students believes that if a course on time ends that means the assessment standard and quality in teaching staff standard is high. In addition to that student believes if the job placement is happening well, skills gain by the course is high and industry recognition is high that happened that is because of the assessing standards with the teaching staff qualification is high.

Learning resource and student support includes government recognition, skills gain by the program, equipment and on time completion and these factors had a strong positive relationship with learning resource and student support. Results gain form the correlation analysis indicated that all the information flow variables had a significant relationship. According the result of regression analysis adjusted R² is 0.845. This reveals that information flow variable had significantly explained 84.5% of the variance in learning resource and student support at 1% significant level. It is clearly evident that students believe that on time completion is highly related with the learning resources and student support, meaning if there is a good support to the students in academically and non-academically, the particular IT degree course can be complete on time. Other important findings are that the students believe skills gain by the program, government recognition, and equipment is also highly related with the learning resource and student support. According to the results students also thinks when the course fee goes high the learning resource and student support goes high. The results of this study revealed that industrial training positively highly related with information system of the institute 0.530, further the industrial training and social recognition were positively highly related with the public information of the systems, meaning society is much concerns about the public information. The industry also concerns about the Information provided by the institute and it will be a counting factor when the institute tries to find industrial training. Government recognition and social recognition positively highly related with the internal quality assurance procedures and the study values are 0.561 and 0.505 respectively.

It implies that when internal quality assurance procedures happen well the government recognition and social recognition also increases. The skills gain by the program was positively highly related with the follow up procedures and periodic reviews 0.687 it indicates that students believe that the skills gain by the program was high means the follow up procedures and periodic reviews happened well at the program.

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