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Determinants of Students' Interest in Learning Quantitative Techniques among Undergraduates in Sri Lanka

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Abstract

This study explored the factors affecting the interest of students in learning quantitative technique subjects among the faculty of business studies third and fourth-year students in Vavuniya Campus, Vavuniya, Sri Lanka. A sample of 150 students was selected from two batches which were studied quantitative techniques subjects namely business mathematics, business statistics, computer applications in management and management science applications in their course. The student interests in learning of these subjects are associated with three explanatory variables such as contributions of learning to the major subjects, completing a research work and participating internship programs and the data related to these aspects were collected during the academic year 2016/2017. A structured questionnaire was used to collect the data on students' interests in learning quantitative subjects and the specific factors which influence it in the campus. The collected data were analyzed using Pearson correlation statistic and multiple regression analysis, and the correlation results showed that all three explanatory variables have positively correlated with the students' interest in learning and it is statistically significant at 1% of level. Results of multiple regression model revealed that all the above explanatory variables have positively affect on students' interest in learning the quantitative techniques subjects and out of them, contributions to complete their research work has more significant in determining the interest on the subjects. This finding may help to the academic staffs who teach these subjects to prepare their session plan with various structural strategies which they can use to teach the students effectively to enhance their interest of learning these subjects in the study area.

Keywords: Quantitative Techniques, Learning Interest of Students, Internship Programs, Pearson Correlation, Business Mathematics.

Introduction

The majority of students who are following business-related courses in the universities having the quantitative techniques subjects including business mathematics, business statistics, computer applications in management and management science applications are as the most important subjects in their curriculum. Quantitative techniques subjects are a science of magnitude, and that is a very useful virtually in all subject areas. Because knowledge earns from these subjects, help in many ways for the undergraduate students especially for the contributions of learning about other the major subjects, contributions to complete their project and research works and participating internship programs. The Vavuniya campus has the faculty of business studies which providing Degree in the bachelor of business management for five specializations in Business economics,

Accounting and finance, Marketing management and Human resource management and all these areas have the quantitative techniques subjects in their syllabus.

Basic quantitative skills are useful in solving business problems and in economic analysis and in addition to that those skills guide the students to complete their degree successfully. Also, these skills are essential for proceeding to further studies in the increasingly quantitatively-oriented subfields of accounting, management, and administration and based on these reasons, and it can be assumed that quantitative subjects can contribute to do a research work too. Thus, contributions given by the quantitative subjects to study about other major subjects, contributions to complete their project and research works and participating internship programs enhance their interest and awareness on learning the quantitative techniques subjects. In this background, this study aims to identify the correlation between students' interest in learning quantitative techniques subjects and its explanatory variables and examine the major factors that determine the learning interest of undergraduates for quantitative techniques subjects among them in Vavuniya campus, Sri Lanka.

Research questions

This study has the following research questions.

- Does the student's interest in learning quantitative techniques subjects have correlates with the independent variables significantly?
- What factors influence the interests of quantitative techniques subjects among undergraduate students in the field of business studies?

Review of literature

There are several researches done by many researchers on the students' interest and their attitudes towards mathematics and other quantitative related subjects over the world. However, these kinds of studies are very rare in Sri Lanka particularly in Vavuniya campus which is located in the Northern region of Sri Lanka.

Mele F. Latu (1994) has analyzed Factors affecting the learning of English as a second language macro skill among Tongan secondary students in the Kingdom of Tonga. His findings reveal that, age of the students and their perceived ability in English, frequency of use of English with non-Tongan speakers, use of English to read for enjoyment, use of English for communication at home, integrative motivation and career aspirations were significant correlations with the students' learning of English macro skills at secondary school in the country.

Noraidah Sahari Ashaari, et al (2010), has examined the Student's Attitude towards Statistics Course in Malaysia and according to that, Majority of students find the subjects difficult due to non-cognitive factors like attitude, perception, interest, expectation, and motivation. Cognitive factors also play significant roles in contributing to the capability of the students excelling the subject. Both factors could interrupt the learning process involved and hinder the students from using statistics daily in the country.

Factors influencing academic achievement in quantitative courses among business students of private higher education institutions have analyzed by Elvis Munyaradzi Ganyaupfu (2013). He has found that lecturer competence, teaching methods and quality of learning materials have a significant positive influence on undergraduate students' academic achievements in quantitative business courses, while mathematics aptitude and minimum admission criteria have no significant influence. Adeyemi D. et al (2014) evaluated the business management students' attitude and performance in statistics learning in Nigeria Metropolitan College of technology. Their results revealed that lecturer competence, teaching methods and quality of learning materials are the primary factors that significantly influence students' achievements in quantitative subjects.

Another study was done by Safiyeh Khayati, Ali Payan (2014) on effective factors increasing the students' interest in Mathematics in the opinion of Mathematics Teachers of Zahedan. Their results proved that, doing

activity in math class activity of students while teaching and previous math teachers' behaviours have had much impact on encouraging the students towards mathematics in the country.

Analysis of factors affecting the interest of students of accounting sciences in the area of accounting sciences in the area of accounting management examined by Edvalda Araújo Leal (2014) and his study found that, factors that motivate students' interest in the area of management accounting demonstrate five different characterizations such as expertise on managerial accounting, interest in a career in this field, personal interest in the area of management accounting, quality of teachers form students view of point and theory vs. practice relevance are the important in determining the interest of students in the country. Another study done by Leonard Chinaedum Anigbo (2016) examined the factors affecting students' interest in mathematics in secondary schools in Enugu State and his results revealed that teacher factor, student factor, instructional strategy, mathematics anxiety, and infrastructural problem were effective in predicting secondary school students' interest to learn mathematics in the State.

Another study was done by Zaiton Mustafa Hishamuddin Salim (2016) to identify the factors affecting students' interest in learning Islamic education in Malaysia and their study proved that, the Islamic education teacher is the key factor in affecting students' interest towards the subject in the country. Shamila Dewi Davadas, Yoon Fah Lay (2017), examined the factors affecting students' attitude toward Mathematics: A Structural Equation Modeling Approach and they found that teacher effective support and classroom instruction predict attitude towards mathematics more than parental influences in the country. Derek Cheung (2018) has examined the key factors affecting students' individual interest in school science lessons, and his results suggest that teachers should pay special attention to the association between academic self-concept and interest if they want to motivate students to learn science at a school in the study area.

Method of data collection

To examine the factors on the students' interest in learning the quantitative techniques subjects, the relevant data collection was conducted using questionnaire which was structured in two parts and the first relates to the interest of the respondents in the quantitative techniques subjects and the second part consists of questions that indicate the three independent variables such as contributes to learn more in other major subjects, guides to complete their project study and research works and help to participate to the internship programs. All these questions were measured by an ordinal five-point Likert scales, where 1 represents 'Strongly Disagree' and 5 represents 'Strongly agree' and each of them has 6 questions in the study. Students of both genders in the faculty of business studies constitute the population, and the sample of the study was 150 students were selected conveniently from third and fourth-year students in the campus.

Analytical framework

This section describes the methods analytical tools such as correlation analysis and multiple regression using ordinary least square method which were used in the study. Before to do the statistical analysis, the accuracy of the questionnaires was tested using a reliability test using Cronbach's Alpha method.

Reliability test

After completing the process of transcribing and coding the data, it is essential to ensure the reliability of the coded questionnaires. At this stage, the researcher applied reliability test to check the accuracy of each questionnaire using Cronbach's Alpha and its value is more than 0.7 represents that those questionnaires are reliable. Cronbach's Alpha method was adopted in determining the reliability coefficient for each questionnaire, and finally, all of them categorized into dependent and independent variables in the study.

Multiple Regression

To examine the relationship among the interest of students in learning quantitative techniques subjects and its determinants, Pearson correlation was used, and the determinants of students' learning interest on those subjects were identified using multiple regression model. Thus, statistical techniques such as Pearson correlation and multiple regression analysis were used as a methodology in the study. The factors that are influence the students' interest in learning quantitative techniques subjects among them who are following Bachelor degree in the campus, was identified by the following regression model:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where,

Y = Students' interest in quantitative techniques subjects

X₁ = Contribution to learn other major subjects

X₂ = Contribution to do the research work

X₃ = Contribution to do the internship successfully

ε = Error term

β₀ = Constant

β₀, β₁, β₂, and β₃ are the coefficients of each explanatory variable respectively

Results and discussion

The reliability coefficients results of the variables were summarized in table 01 as below:

Table 01: Results of Reliability test

Variable	Cronbach's Alpha	Items
Students' interest in learning quantitative techniques subjects.	0.69	6
Contributions of learning to other major subjects.	0.68	6
Contributions to complete their project and research works.	0.75	6
Contribution to do internship successfully	0.70	6

Source: Estimated by authors, 2018.

Internal consistency of the questionnaire items was examined using the Cronbach's alpha and their results shown in table 01. According to that, all the variables have reliable, and out of four variables, a contribution to complete their project and research works has nearly 75% of accuracy than others. Thus, the above results prove that there no internal inconsistency among the questionnaires used in the study.

Significant Pearson correlations between the dependent and independent factors regarding students' learning interest are given in Table 02. In the table below shows that Students' who have an interest in learning quantitative techniques subjects are positive correlates with all other three independent variables and all of them statistically significant at 1% level. The positive correlation 0.47 was obtained for learning interest of the students on quantitative techniques subjects and its contributions to learn other major subjects reveal that, the students who earned more benefits to learning other major subjects from the specific quantitative techniques subjects, their interest on learning those subjects also will be more.

Table 02: Pearson correlations among the variables

	Items	Y	X ₁	X ₂	X ₃
Y	Pearson Correlation	1	.470**	.547**	.530**
	Sig. (2-tailed)		.000	.000	.000
	N	150	150	150	150
X ₁	Pearson Correlation	.470**	1	.533**	.546**
	Sig. (2-tailed)	.000		.000	.000
	N	150	150	150	150
X ₂	Pearson Correlation	.547**	.533**	1	.578**
	Sig. (2-tailed)	.000	.000		.000
	N	150	150	150	150
X ₃	Pearson Correlation	.530**	.546**	.578**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	150	150	150	150

Source: Estimated by authors, 2018.

Note: **. Correlation is significant at the 0.01 level (2-tailed).

Where,

Y = Students' interest in learning quantitative techniques subjects.

X₁ = Contributions of learning to other major subjects.

X₂ = Contributions to complete their project and research works.

X₃ = Contribution to do internship successfully.

Among the above variables mentioned in table 03, students' learning interest on the quantitative techniques subjects has nearly 54% of positive correlates with the contribution given by those subjects to learn other main subjects in the study area. The estimation of the impact of learning to other major subjects, contributions to complete their project and research works and participating internship programs on students' interest in learning quantitative techniques subjects were conducted by ordinary least squares. The estimated results were illustrated in the following table.

Table 03: Estimated results of a multiple regression model

Model	Un standardized coefficient		Standardized coefficient	t- statistic	Sig.
	β	Standard error	β		
Adjusted R ² = 0.37 F – value = 30.37					
Constant	7.173	1.96		3.647	0.000
X ₁	0.170	0.085	0.163	1.996	0.048
X ₂	0.288	0.078	0.308	3.671	0.000
X ₃	0.272	0.088	0.213	3.098	0.002

Dependent Variable: Students' learning interest in quantitative techniques subjects and the meaning of the above independent variables are similar as defined earlier.

Source: Estimated by authors, 2018.

Adjusted R² measures the overall goodness fit of the model which is equal to 0.372 indicated that about 37.2% variation in students' interest in learning quantitative techniques subjects was influenced by contributions to the learning to other major subjects, contributions to complete their project and research works and participating internship programs and rest of other 62.8% is explained by other factors not mentioned in the regression model

used in this study. The F-test value of the model is 30.37, and it is statistically significant at 1% level also indicated that the model is highly significant and there is significant multiple relationships exist between the independent variables and students' interest in learning the quantitative techniques subjects.

Based on the results of unstandardized coefficients, among the above independent variables, approximately 29% variation in contributions to complete their project and research works was accounted for students' interest in learning quantitative techniques subjects, and it is statistically significant at 1% level. Therefore, cannot reject the null hypothesis that contributions to complete the project and research work positively given by those subjects affect student's learning interest.

Next factor is the contributions to participate in the internship programs given by studying these subjects accounted for approximately 27% variation in student's learning interest quantitative subjects, and it is significant at 1% level. Accordingly, the null hypothesis that is a contribution to participate in the internship programs given by the quantitative subjects has a statistically significant positive influence on students' learning interest cannot be rejected. The last one is the contributions of learning to other major subjects about 17% positive influence on students' interest in learning quantitative subjects and hence participating internship programs leads to about 0.17 percent improvement in students' learning interest with 5% level of significance. Therefore, the null hypothesis contributions of learning to other major subjects have a significant positive effect on students' learning interest in quantitative subjects cannot be rejected. Concerning standardized coefficient values which represent the relative influence of the independent variables on students' quantitative techniques interest, their individual variables indicated significant results and out of three variables, complete their project and research works contributes relatively 30.8% to the students' learning interest in quantitative subjects in the faculty.

Conclusion

This research reveals that subjects related to quantitative techniques and the interest of faculty of business studies students depend on the contributions of learning to other major subjects, complete their project and research works and helps to participate their internship programs. Also, all these variables were positively impacted on the students' interest in learning the quantitative subjects, and they have statistically significant. As the students have positive attitudes on the quantitative techniques subjects related to the contributions to learning the major subjects, helps to do the research works and getting internship training programs, will enhance their interest on learning the quantitative techniques subjects among the faculty of business studies students in Vavuniya campus, Sri Lanka.

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