

COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCE

DEPARTMENT OF STATISTICS

ATTITUDE OF STUDENTS TOWARDS THEIR FOREIGN INSTRUCTOR IN WOLKITE UNIVERSITY IN CASE OF COLLEGE OF INFORMATICS AND COMPUTING AND ENGINEERING AND TECHNOLOGY

A SENIOR RESERCH SUBMITTED TO DEPARTMENT OF STATISTICS FOR THE REQUIRMENT OF FULLFLMENT OF BSc DEGREE IN STATISTICS

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ACRONOMY:

SRS: SIMPLE RANDOM SAMPLING

EFL: ENGLISH FOREIGN LANGUAGE

OR: ODD RATIO

ABSTRACT

Attitudes are an expression of inner feelings and beliefs that reflect whether a person is favorably or unfavorably pre-disposed to some phenomenon. Attitudes are positive or negative feelings that an individual holds about objects, persons or ideas. The main objective of the study was to assess the attitude of students towards their foreign instructors. The study would be conduct by using primary data with closed-ended questions by face to face interview and distributing to them while data collection time. The study would be conducted using simple random sampling method and the sample size consists of 210 students randomly selected from the total of 5110 students in Wolkite University. The chi-square test showed that College of student, Feeling on class communication, Course taken by foreign instructor, evaluation method and attending class of students has a significant relationship with attitude of student about foreign instructor at 0.05 levels of significance.

In This study researcher recommended that the more smooth relationship between students and their instructors the more interactions are interested in their work and the more students gain clear concept of the topics given by their instructors to success student's course of knowledge the foreign instructors more understand their teaching style.

Keywords: - Attitude, primary data, Binary logistic regression model.

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CHAPTER ONE

INTRODUCTION

1.1Background of the Study

Attitude is a learned behavior and as such is highly susceptible to change. Attitude is an important concept to understand human behavior. It is defined as a complex mental state involving beliefs and feelings. Attitude defines as a mental and neutral state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related.

The attitude and expectation of society in general the family of the learner in particular affect how learning is viewed and how teaching is organized These attitudes and expectations vary from society to society and attempting to copy learning and teaching strategy from one society into another, without trying to adapt into the local conditions may not be successful (Derebssa 2006).

Attitude has cognitive, affective and cognitive components; it involves beliefs, emotional reactions and behavioral tendencies related to the object of the attitudes. It refers to an individual's inclinations, prejudices, ideas, fears and convictions concerning any topic. It has an evaluative aspect, a disposition and tendency to react positively or negatively to something. It is, in short, the way someone thinks or behaves (McGroarty, 2002).

According to (Brophy, 2004), general attitudes stem from the teacher's personality and definition of his role as a teacher. Many attitudes are the results of deliberately planned education and religious training and influences and propaganda. Person-oriented teachers are likely to enjoy their contacts with students and to hold generally favorable attitudes towards them. In contrast, introvert and withdrawn teachers may prefer to minimize social contacts with students and more likely to develop neutral or relatively negative attitudes towards them. Teachers' attitudes can affect teacher-student interaction. That is, once a teacher forms a particular attitude toward an individual student, the teacher is likely to begin to treat this student in individualized way. Thus, attitudes have the potential for affecting students and for functioning as self-fulfilling prophecies.

The cognitive component identifies where the organization formation of attitudes. The affective component defines the emotion of attitudes which are the like and dislike.The co native (behavioral) components explain the direct behavior that is attached to the internal attitude (Skinnier, Sherrill and Janknowski, 2000).

Changing student's negative attitudes towards learning is a process that involves determining the Forecast driving the attitude and using this information to bring about change. The instructor's role in any learning environment is critical to the success of the course. It is important to note that instructors in many academic areas are reluctant to move to use of technology in the class room without research to support the effectiveness of the technology and without support for integration into the curriculum (McGroarty, 2004)

1.2 Statement of the Problem

This study would be mainly focused on investigating the attitude of students towards to their foreign instructor. Lack of relationship between instructors and students, lake of motivation to learn and lack of respecting of students for instructors are negative attitude. Negative attitudes are associated with avoidance and rejection, while positive attitudes usually are associated with broader acceptance and comparatively more favorable reactions. To making positive awareness in gender difference toward their foreign instructor

In order to achieve the objectives of the study include the following questions.

- Which major factor is the effect of attitudes of students towards their foreign instructor?
- Is the gender differenceseffect in student attitudes towards their foreign instructor?
- Which lecturing method of the instructors has positive or negative effect on attitude of students?

1.3 Objective of the Study

1.3.1 General Objective

The main objective of the study would be assessing the attitude of students towards their foreign instructors.

1.3.2 Specific Objectives

- To assess the attitude of students based up on gender towards their foreign instructors.
- To know the attitude of students on teaching method of the foreign instructors.
- To know association between effect of attitude of students and the lecturing methodology of their foreign instructors.

1.4 significance of the study

This study can serve as preliminary frame work and an additional reference for other research in depth study in the area of information regarding the attitude of students towards their foreign instructors. This study aims to determine the attitude of students towards their foreign instructor. The research would be helpful of attitude student toward their foreign instructor at university level to better understanding the learning process.

1.5 Scope of the Study

This study would be conducting for attitude of students toward their foreign instructor in WolkiteUniversity.

1.6 Limitation of the study

There were many limitations which the researcher faced. From the beginning of the service analysis to the end, the researcher faced so many problems; from these problems:-

- No sufficient document related to the research.
- Respondent's carelessness and involuntary manner to give accurate information to researchers.
- Lack of finance to buy necessary materials for research work time constraints.
- Unavailability of enough literature review.

CHAPTER TWO

REVIEW OF THE LITRATURE

In social sciences, the attitude has been defined as assessment of an attitudinal entity, which ranges from exceptionally negative to exceptionally positive (van, 2004).From psychological point of view, attitude is viewed as a mental condition that exists in a person, shaped through experience and will influence a person's reaction towards an object or related phenomenon. Attitude is processed through learning and implicit in nature (TayMeng Guan, 2003)

Nunan (2000) described that Student's attitudes, abilities and learning methodologies highly impact their failures and successes in the examination. It is well known that all the three features (behavioral, cognitive and emotional) of the attitude towards learning something new are highly interconnected. A behavioral feature of the attitude is concerned with the actions and reaction of the learner in a particular situation *(Abidin et al, 2012).*

Learning is thought to be an emotional process (Akgünetal, 2007*).* Actions have emotional impact on attitude when learners infer their behavior by their own understandings of something in some particular circumstances (Gardner, 2002). Varied emotional features which create changes in one's learning are referred to Emotional feature of the attitude.

A great deal of research literature provides evidence that attitude is an important motivator of behavior and positively affects the achievement of students (Husain, 2006).

Several studies of student attitudes showed that openness to diversity and challenge has the greatest impact on changes in student attitudes, beliefs, and actions in the direction of greater tolerance to individual differences (Whitt et al., 2001; Pascrell et al., 1996).

Attitude as a concept is concerned with an individual's way of thinking, acting and behaving. It has very serious implications for the learner, the teacher, the immediate social group with which the individual learner relates, and the entire school system.

Attitudes are formed as a result of some kind of learning experiences students go through. This is mimicry, which also has a part to play in the teaching and learning situation.

In this respect, the learner draws from his teachers' disposition to form his own attitude, which may likely affect is learning outcomes (Yara,2009). Attitude influences an Individual's choice of action, and responses to challenges, incentives, and rewards (Business Dictionary).

(Zelley et al,2005) postulate that attitudes are generally positive or negative views about a person, place, thing or event which are often referred to as the attitude object. Research has shown that formation of attitude is experiential. People form attitudes through their experiences in life.

Social psychology explains how attitudes are formed using three major learning theories which are classical conditioning, operant conditioning and observational learning. Propounded by Ivan Pavlov, classical conditioning is a procedure for modifying behavior in which repeated pairing of conditioned stimulus with an unconditioned stimulus leads to the development of a conditioned response (Ntim, 2010, Linero& Hinojosa,2012).

B.F. Skinner's Operant Conditioning theory is a form of learning in which a response is made in anticipation of a stimulus. In operant conditioning, reinforcement increases the likelihood that behavior will be repeated (Ntim, 2010). Behaviors that are followed by positive consequences are reinforced and are more likely to be repeated than are behaviors and attitudes that are followed by negative consequences (Moris, andMaisto2001).

According to Chapman and McKnight (2002), "Attitude is your general disposition – your mental "starting point "for viewing life and the people and events in it. From your viewpoint, attitude is the way you look at things mentally and it all starts inside your head. For others, your attitude is the overall mood they interpret from what they see you say and do."

The affective component defines the emotions of attitudes, which are the likes and dislikes. The behavioral component explains the direct behavior that is attached to the internal attitude. The cognitive component identifies where the organization and formation of attitudes are stored (Jankowski et al, 2000). Although this is the operational definition used in this study, there has been no universally accepted definition of attitudes in the literature.

Research undertaken in the area of attitude and attitude formation shows that attitudes and beliefs are linked, and attitudes and behaviors are linked; moreover, attitudes are essentially divided into likes and dislikes (Siragusa, & Dixon, 2008).

Attitudes are psychological orientations developed as a result of one's experiences which influences a person's

view of situations, objects people and how to respond to them either positively or negatively or favorably or unfavorably (Mensah et al, 2013). Attitude is an organization of beliefs feelings and behavioral tendencies towards an object (Vaughan& Hogg, 2005).Attitudes are positive or negative views about a person, object, idea or situation which influences individual choice of action and responses to challenges (Marianne & Elaine, 2005). Attitudes have three interrelated qualities or components which vary in direction and degree or strength. This include the; Emotional components – how we feel; A cognitive component –thoughts and beliefs; A behavioral components – action, experiences (Maio& Haddock, 2010).

Individual behavior decisions and perceptions determine also the extent to which one will persist in any task which results in either success or a failure of the tasks to be accomplished. Attitudes are therefore learnt experiences through observing, modeling and imitating the subjects in our environment or the behavior of others. According to Bandura some behavior changes may be mediated through modification of the model itself, through role modeling, use of reinforcement and rewards and sometimes through persuasion. In order for an individual to attempt a modeled behavior, he must value the observed outcome and perceive it as successful (schunk& Zimmerman, 2007).

The teachers teaching method have major influence on student's attitudes (Akinsola&Olowojaiye, 2008; mensah et al, 2013). And Akinsola&Olowojaiye(2008) citing Olowojaiye(2000) suggested the need to shift from the conventional method of teaching and embrace some other instructional strategies that have been found to have facilitative effect in promoting students positive attitude towards learning.

Walker, 1974, and Woodley, 1984 have analyzed student performance by age groups, most researchers have adopted a simple two-fold categorization of students as young or mature. While this may have proved useful in providing a basic framework for the investigation of differences, and in so doing helped to highlight important issues, it would seem unlikely that mature students can be categorized as a single, homogeneous group. One of the aims of this study therefore was to investigate further the possible existence of identifiable subgroup within the cohort of mature students and to examine their particular characteristics.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Description of the Study Area

WolkiteUniversity is one of the higher educational centers in Ethiopia. It is located in SNNPR, in Gurage Zone, around Wolkite city and it is located around 173km South West from the capital city of Ethiopia (Addis Ababa).

3.2 Study Population

This study of population would be all students who thought by their foreign instructors at college of informatics and computing and college of Engineering Technology.

3.3Target population

The target population for this study would be the student found in college of informatics and computing and college of Engineering Technology.

3.4 Method of Data Collection

The data use in this study would be primary data. The primary source of data, which would be full with the students which is collect from questionnaire we get the original data from the source and direct interview from students at College of informatics and computing and College of engineering technology.

3 .5 Sampling Techniques

There are many types of sampling techniques in statistical method. But in this study wewouldapply simple random sampling (SRS).Simple Random sampling is the simplest type of random sampling and it is the most basic probability sampling Techniques in which every individual's unit (numbers) of the population has an equal probability of being included in the sample. It is a method of selecting items from a population such that every possible sample of specific size has an equal chance of attitude of students toward their foreign instructor in Wolkite University in College of informatics and college of engineering and technology.

3.6 Sample Size Determination

The sample determination is one of the basic considerations in sample survey. One of the most common questions asked to a survey methodology is sample size determination. As it is known and appropriate, sample size is one of gaining higher precision. To determine the sample size, first we have to done pilot survey.

3.6.1 Pilot survey study

Since there is no previous study result, so we decide to conduct pilot survey in order to determine the actual size. The major purpose of pilot survey is to check whether the organization and

Agreements of the survey attitude of student toward their foreign instructor.The following table indicates (represent) 15 respondents are selected for pilot survey.

Table3.1 Pilot study results

What is your attitude toward your foreign instructor?	Response	Frequency
	positive	11
	negative	4
	Total	15

Total population size in this study was 5110.

Positive=11, negative=4,

p=11/15=0.73,

q=1-p =1-0.73=0.27, or q=4/11=0.27

d=0.06

$$n_o = \frac{Z^2 \alpha/2\, pq}{d^2} \quad \text{…….(Cochran, 1997)}$$

no $\frac{=(1.96)\text{^}2(0.73)(0.27)}{0.0036} = 210.3276 \sim 210$,

$\mathbf{n_o/N=210/5110}$=0.0411<5%

Since our population are very large we get the sample size by taking initial sample size;

i.e.n=n_o. Then n = 210(our sample size)

P= (proportion) that student have positive attitude towards foreign instructors

q=1-p (proportion) that student have negative attitude towards foreign instructors

d=level of precision

z=the critical value of standard normal cumulative distribution that corresponds $\frac{\alpha}{2}$

We can calculate unadjusted sample size

α =at5%level significant Assume d=6%level of precision

$no=$ is desired sample size

n = is required sample size

N=Total population

3.7 Variables Considered in the Study

3.7.1 Dependent Variable

The dependent variable is what is to be affecting by the independent variables. The dependent variable that is analyzed in this study is the attitude of the students towards their foreign instructors (positive attitude =0, negative attitude=1).

3.7.2 Independent Variables

The independent variables are a variable which affects dependent variable. In this study predictor variables is expect to determine attitudes of students towards foreign instructors:

Table3. 2: Summary of independent variables.

Variables	**Categories**	**code**
Age	<20	(0)
	21-25	(1)
	>26	(2)
Sex	Male	(1)
	Female	(0)
College	informatics and computing	(0)
	Engineering and Technology students	(1)
teaching methodology	Positive	(0)
	negative	(1)
Feeling on class communication	good	(0)
	fair	(1)
	poor	(2)
Course taken by foreign instructor	Yes	(0)
	No	(1)
Evaluation of method	Yes	(0)
	No	(1)
attending class of students	Yes	(0)
	No	(1)
Finished a course at a given Time	Yes	(0)
	No	(1)

3.8Methods of Data Analysis

After gathering (having gathered) all necessary information, the intended tools data processing and analysis properly implemented. Depending on data, the data analysiswould be descriptive and inferential statistics

3.8.1 Descriptive Statistics

Descriptive statistics are used to describe basic features of the data in a study. They provide simple summaries about the sample and the measures. Together with simple graphics analysis, they form the basis of virtually every quantitative analysis of data.

3.8.2 Inferential Statistics

With inferential statistics, try to reach conclusions that extend beyond the immediate data alone. For instance, use inferential statistics to try to inform from the sample data what the population might think. Or we use inferential statistics to

Make judgments of the probability that an observed difference between groups is a dependable one that might have happened in this study.

3.8.3 Chi-Square Test of Independence

A Chi-square distribution is a function of its degree of freedom. This distribution is skewed to the right and the random variable can never take a negative value. Chi-square test of independency used to test the relationship between two categories exists or not.

The chi-square analysis shows the association between the outcome variable and other predictor variables, obtained by cross tabulation of the response variable the overall attitude of students toward the foreign instructors to the other predictor variables independently.

One of our main objectives in the study case is to know whether relation exist between the overall attitude of the foreign instructors and independent variables of the respondent or not. For this investigation the appropriate test statistics we apply chi-square test, to make computation easy first, made cross tabulation between the tested variables, the overall attitude of students(positive and negative) and the respondents different variables contains like(yes and no).

Assumption of chi- square

- The sum of observed value must be equal the expected value.
- The individual observation independent of each other.

- It is positively skewed.
- The variable should be categorical.
- The chi-square value increase with increase degree of freedom.

The chi- square test statistics is given by;

Step1. State the null and alternative hypothesis.

H_0: The two attributes are independent or there is no association between two attributes.

$H_{1:}$ The two variables are dependent or not Ho

Step2. Determine α- level of significance

Step 3. Test statistics $\chi^2=\sum_{i=1}^{n}\sum_{j=1}^{m}\frac{(oij-eij)2}{eij}\sim\chi^2_{\alpha,\ (r-1)(c-1)}$

Where O_{ij}= observed frequency

E_{ij}= expected frequency = $\frac{(i^{th}rowtotal)*(j^{th}columntotal)}{Grandtotal}$

The test statistic is approximately described as chi-square with (r-1) (c-1) degree of freedom (df). **Note** that r and c are the number of rows and the number of columns, respectively. The decision rule: null hypothesis (Ho) is rejected, if the calculated value is greater than tabulated value (the significance level α) otherwise fails to reject Ho.

Step4. Compare the of valuex^2calculatedandx^2tabulatedatα, (r-1) (c-1) degrees of freedom.

Step5: Decision rule

If x^2cal $\geq x^2$tab (d.f) or if p- value less than α, we reject Ho and concludes that the two factor variables are not independent.

Or P-values are often used in hypothesis tests. Where we can either reject or fail to reject the null hypothesis. The p-value represented the probability of making a type I error which is rejected the null hypothesis when it is true. A cut of value often used is 0.05 that is rejecting the null hypothesis when the p-value is less than 0.05.

3.8.4 Logistic Regression

Logistic regression model was a generalized linear model with dichotomous response variable that is, the response variable can take the value 1 with a probability of success π or the value 0 with probability of failure 1- π. This type of variable was called a Bernoulli variable. The explanatory or predictor variables can take any form. The relationship between the explanatory variables and the response variable is not a linear function in logistic regression, but rather a linear relationship exists between the Logit of the explanatory variables and response variable.

Given p explanatory variables denoted by the vector $X' = (X1, X2 \ldots Xp)$ the conditional probability that the outcome is present be denoted by $P(Y = 1|X) = \pi$

The model is:

$$P(Y = 1|X) = \pi(\boldsymbol{x}) = \frac{e^{\beta x1+\beta 1x2+\beta 2x3+\cdots.+\beta pxp}}{1+e^{\beta o+\beta 1x1+\beta 2x2+\cdots\ldots+\beta pxp}}$$

Where = the constant of the equation and, = the coefficient of the predictor variable.

An alternative form of the logistic regression equation is

$$logit[\pi(x)] = log\left[\frac{\pi(x)}{1-\pi(x)}\right] = \beta o + \beta 1X1 + \beta 2X2+\ldots.+\beta pXp$$

The coefficient can be interpreted as the change in the long odds associated with one unit change in the corresponding independent variables or the odds increase multiplicatively by $e\beta$ for one unit change increase x.Therefore in this study logistic regression can be applied.

Assumption of logistic regression

1. The error terms (the residuals) need to be binomially distributed.
2. Logistic regression requires the dependent variable to be categorical (mostly binary).
3. The logistic regression model should be fitted correctly. Neither over fitting nor under fitting should occur. That is only the meaningful variables should be included
4. The error terms need to be independent. Logistic regression requires each observation to be independent.
5. Logistic regression assumes linearity of independent variables and log odds

3.9 Odds Ratio

Odds ratio(OR)is the measure of how much the greater or(less) the odds are to subjects possessing the risk factor to experience a particular out comes.

Logistic regressions work with odds so it is necessary to define both odds and odds ratio. The odds are simply the ratio of the probabilities for the two possible outcomes. If p is the probability that the event will occur, then 1 –p is the probability that the event will not occur:

$$\mathbf{odd} = \frac{\mathbf{p}}{\mathbf{1 - p}}$$

In 2 × 2 tables, within row 1 the *odds* of success are $\text{Odds}_1 = \frac{p_1}{1-p_1}$, and within row 2 the odds of success equal $\text{Odds}_2 = \frac{p_2}{1-p_2}$.

The ratio of the odds from the two rows,

$P_i = \frac{odds_1}{oods_2} = \frac{\frac{p_1}{1-p_1}}{\frac{p_2}{1-p_2}}$ where i=1, 2

is called odds ratio. Whereas the relative risk is a ratio of two probabilities, the odds ratio $p_i$is a

Ratio of two odds

Interpretation of odds ratio are this e^{β_j} is the factor by which the odds changes when the j^{th} independent variable increase by one unit.

Note: if β_j is positive then the odds increase and if β_j is negative, the odds decrease.

Interpretation of Estimates: Odds Ratios

The odds ratio is the ratio of the odds of an event occurring in one group to the odds of its occurring in another group that means it is a ratio of the probability of an event happening to the probability that the event does not happen. The above table also shows the odds ratio of each categorical independent variable in the logistic regression model.

- Exp (β) is the odds ratio.

If Exp (β) is greater than 1 then the odds of experiencing the characteristic of interest is greater per unit increase in the predictor variable. If Exp (β) is less than one than the odds of experiencing the characteristic of interest is lower per unit increase in the predictor variable. The estimated coefficients of the explanatory variables in the logistic regression model can be interpreted as logarithms of the ratio of odds of the attitude of students towards their foreign instructors. This means that estimates of this odds ratio and corresponding confidence intervals, can easily be found from the fitted model. The interpretation of different estimates corresponding

to different variables which are found significant in the fitted model is described in the fitted model in the following ways.

3.10 Parameter Estimation

The maximum likelihood and Likelihood function are the two most computing estimation methods used in fitting logistic regression model.

Likelihood function method

Likelihood function is the probability of observed data, expressed as a function of the parameter.

Maximum likelihood estimation method

The ML method is design to maximize the likelihood of reproducing the data given the parameters i.e., the maximum likelihood estimate of a parameter is the value that maximizes the probability of the observed data. The procedure for obtaining maximum likelihood estimated is as follows. Let Y be the random binary response variable whose value is either zero or one.

The probability $P(Y=1/x_1 \ldots x_k)$ is given by $P(Y=1/x_1 \ldots x_k) = \frac{\exp(\beta\ 0 + \sum_{j=1}^{k} \beta_j X_j)}{1+\exp(\beta\ 0 + \sum_{j=1}^{k} \beta_j X_j)}$, (Douglas. Montgomery, 2006)

The parameter of the above equation cannot be estimated directly; rather we can apply the maximum likelihood estimation technique. To apply the technique, each observation can be considered as Bernoulli trial and by assumption that each Y_j is independent, the joint distribution of the observed values can be written as $p\ (Y_{1=}y_{1,}\ Y2_{=}y_{2\ldots}\ Y_{n=}y_n)$

$=p\ (Y_{1=}y_1)\ p\ (Y_{2=}y_2) \ldots p\ (Y_{n=}y_n)$

The probability of the i^{th} observation given $(x_{\ldots xn})$ is given by

$P\ (Y_{i=}y_i/x_{1i,}\ldots x_{ki}) = P_i^{y_i}\ (1\text{-}p_i)^{1\text{-}y}{}_i$, where i=1, 2,…n and n is the number of case in the data.

The likely hood function for $(\beta\ 0, \beta 1, \beta 2 \ldots \beta_k)$ given $(y_{1\ \ldots yn})$ can be expressed as

$L\ (\alpha, \beta_1 \ldots . \beta_k / y_{1\ldots\ldots,}y_n) = \prod_{i=1}^{n} P_i^{y_i}(1 - p_i)^{1-y_i}$This is equal to 1

$$=\sum_{i=1}^{n} y_i \log\left[\frac{\exp\left(\alpha\,\beta\,0+\sum_{j=1}^{k}\beta_j X_{ij}\right)}{1+\exp\left(\beta\,0+\sum_{i=1}^{k}\beta_j x_{ij}\right)}\right] + \sum_{j=1}^{n}(1-y_i)\log\left(\frac{1}{1+\exp\left(\beta\,0+\beta_j x_{ij}\right)}\right)$$

The estimates of the unknown parameters of the above equation are obtained by maximizing the equation with respect to each of the parameters. However, the equation does not have an analytical solution. The estimate can be found by maximizing the equation using iterative techniques such as newton-rapson method, Iterative techniques are programmed for model analysis in packages like SPSS

3.11 Model Building in Logistic Regression

3.11.1 Assessing the Fit of the Model for Logistic Regression

Once a model had been developed through the various steps indicated in the above section, we would like to know how effective the model is in describing the outcome of the variable, so we need to assess the goodness of fit the model (Agersti, 1996).The Hosmer and Lemeshow test to assess the goodness of fit. The HosmerLemeshow test used in testing the hypothesis that the model fits the data.

$C^n = \sum_{k=1}^{g} \frac{(Q_k - E_k)^2}{E_k}$

If $\theta_{k=E_k}$ is large, then c^n is large and there is evidence against the null hypothesis of the model is adequate fit of the data. $i \sim x^2(g\text{-}2df)$

Where g=number of group

Q_k=number of response

If $p<0.05$ it is poor fit, it is reject H_O (a large value of chi squared)

If $p>0.05$ it is good fit (adequate fit, small value of chi squared accept H_o)

3.11.2Likelihood-Ratio Test

An alternative and widely use to approach to testing the significance of a number of explanatory variables is to use the likelihood ratio test. This is appropriate for a variety of types of statistical models. The likelihood ratio test is better, if the sample size is small or the parameters are large.

The likelihood-ratio test uses the ratio of the maximized value of the likelihood function for the full model (L_1) over the maximized value of the likelihood function for the simpler model (L_0). It is compared with a $\chi 2$ distribution with 1 degree of freedom. This log transformation of the likelihood functions yields a chi-squared statistic.

The likelihood-ratio test statistic is:

$$\boldsymbol{G^2 = -2\left(\frac{L_0}{L_1}\right) = [-2\log(L_0) - \log(L_1)]}$$

3.11.3 Goodness of Fit of the Model

Assessing goodness of fit involves investigating how close value predicted by the model with that of observed values (*Be Wick and Jonathan, 2005) i.e.* to investigate whether the given data is good fitted or not. The comparison of observed predicted values using likelihood function is based on the statistics called deviance.

$$D= -2\sum_{i=1}^{8}[Y_t \ln(\frac{\widehat{p_t}}{Y_t}) + (1-y_t) \ln(\frac{1-\widehat{p_t}}{1-Y_t})]$$

For purpose of assessing the significance of an independent variable, the value of D is compared with and without the independent variables in the equation as given below:

x^2=D (model without the variable) - D (model with the variable).

The goodness of fit x^2 process evaluate predictors that are eliminated from the full model, or predictors (and their interactions) that are added a smaller model.

3.11.4 The Wald Statistic

The Wald test is a way of testing the significance of particular explanatory variables in a statistical model. For each explanatory variable in the model, there are associate parameters. for a particular explanatory variable, or group of explanatory variables, the Wald test is significant, then it will conclude that the parameters associate with these variables are not zero, so that the variables will be included in the model. If the Wald test is not significant then these explanatory variables can be omitted from the model. Wald $\chi 2$ statistics used to test the significance of individual coefficients in the model and are calculates as follows:

$$Z^2 = (\frac{\acute{\boldsymbol{\beta}}}{\boldsymbol{SE}(\acute{\boldsymbol{\beta}})})^2$$

CHAPTER FOUR

RESULT AND DISCUSSION

The descriptive, chi-square and binary logistic regression analysis are used to measure determinant of attitude of students. The descriptive part provides percentage of overall attitude of the students towards their foreign instructor. The chi-square analysis used to see the association between the outcome variable (the overall attitude of the students towards these foreign instructors) and other predictor variables. The binary logistic analysis is used to assess the determinant of attitude of students and to predict the attitude of the students towards these foreign instructors.

4.1 Summaries of Descriptive Statistics

Table 4.1 cross tabulation analysis of covariates with dependent variable

Variables	Categories	Attitude about foreign instructor		Total (%)
		Positive	Negative	
Sex	Female	52(24.8%)	38(12.1%)	90(42.9%)
	Male	78(37.1%)	42(20%)	120(57.1%)
Age	<20	9(4.3%)	7(3.3%)	16(7.6%)
	21-25	109(51.9%)	58(27.6%)	167(79.5%)
	>26	12(5.7%)	15(7.1%)	27(12.9%)
college	Computing and informatics	58(27.6%)	18(8.6%)	76(36.2%)
	Engineering and technology	72(34.3%)	62(29.5%)	134(63.8%)
Course taken	Yes	112(53.3%)	18(8.6%)	130(61.9%)
	No	18(8.6%)	62(29.5%)	80(38.1%)
Feeling on class communication	Good	79(37.6%)	13(6.2%)	92(43.8%)
	Fair	40(19%)	23(11%)	63(30.0%)
	poor	11(5.2%)	44(21%)	55(26.2%)
Evaluation method	Yes	110(52.4%)	29(13.6%)	139(66.2%)
	No	20(9.5%)	51(24.5%)	71(33.8%)
Attending class	Yes	107(51%)	35(16.7%)	142(67.6%)
	No	23(11%)	45(21.4%)	68(32.4%)
Time	Yes	106(50.5%)	56(26.7%)	162(77.2%)
	No	24(11.4%)	24(11.4)	48(22.8%)

From table 4.1, sex of the respondents was with 42.9% are females and 57.1%are males, <20 year are 7.6%, 21-25 year are 79.5% and >26 year are 12.9% among variable.

College of the respondents 36.2% are college of computing and informatics and 63.8% are in college of engineering and technology.

61.9% are said yes and 38.1% are said no attitude on their happiness to take course by foreign instructors.

feeling on class communication 43.8% are feel good, 30.0% are feel fair and 26.2% are feel poor.

Out of total population 66.2%students said yes and 33.8% students said no on attitude about foreign instructors on their evaluation method.

In attending class 67.6% students said yes and 32.4% students said no and 77.2% students said yes and 22.8%students said no on attitude about they are finished course with in a given time.

4.2 Inferential Statistic

Table 4.2 Chi-square test analysis of dependent variable with each covariate

Variable	Pearson chi-square	Df	p-value
College of student	10.489	1	0.001
Feeling on class communication	63.426	2	0.000
Course taken by foreign instructor	85.088	1	0.000
Evaluation of method	51.766	1	0.000
attending class of students	33.626	1	0.000

From those independent variables College of student, Feeling on class communication , Course taken by foreign instructor, evaluation method and attending class of students have significant association on dependent variable (attitude of student towards foreign instructor) since p- value is less than 0.05 (level of significance) and age, Sex, Finished a course at a given time have no

association on dependent variable (attitude of student towards foreign instructor) since their p-values are greater than 0.05 by using cross tab individual analysis.

Table 4.4 Omnibus Tests of Model Coefficients

		Chi-square	Df	Sig.
Step	Step	133.962	10	.000
	Block	133.962	10	.000
	Model	133.962	10	.000

The omnibus tests are measures of how well the model performs .We have full evidence to reject Ho, and conclude that there is association between independent variable and attitude on step 1; SPSS enters the entire variable in the model. The coefficient here gives as a measure of how well the mode fit. The null hypothesis states that information about the independent variable does not allow us to make a better prediction of in the dependent variable. Therefore we want to be state, this Chi-squared value is (133.962) is significant because the value of p=0.000is less than value ofα=0.05 the model is good fitted in this the Chi-square is significant and we interpret as the model is good fits well. Since our omnibus test is significant we can conclude that adding the predictor to the model has significantly increased our ability to predict the attitude of students towards their foreign instructors.

Table 4.5 Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	145.140	0.472	0.641

We can test the significance of the difference between any two models, as long one model is nested within the other. The predictor model had a-2log likelihood statistic of 145.140and the cox&snell R^2 value shows the approximate value of the amount of variation in the attitude of the students towards their foreign instructors explained by all the explanatory variables considered in the model.

Therefore, the above output 64.1% of the student's attitude is explained by all the explanatory variables in the model.

Table 4.6Hosmer and Lemeshow Test

Step	Chi-square	Df	Sig.
1	4.023	8	0.813

The Hosmer and Lemeshow Test provide that is the model fits good or not. In this Hosmer and Lemeshow Test goodness of fit test has p-value greater than 0.05 that means p=0.813>0.05 implies that the null hypothesis is do not reject. There for the model fits well at 5% level of significance.

Table 4.7 Parameter Estimates', Standard Error, and Odd Ratio for the Final Logistic Regression Variable

Variable	Category	B	SE	Wald	Df	Sig	Exp(B)	95%CI for Ex(B)	
								lower	upper
Happy to take course by foreign instructor	yes(ref)								
	no	-2.436	.468	27.070	1	.000	.088	.035	.219
Feeling on class communication with your instructor	Good(ref)			10.218	2	.006			
	fair	-1.968	.617	10.161	1	.001	.140	.042	.469
	poor	-1.391	.619	5.042	1	.025	.249	.074	.838
Evaluation	Yes(ref)								
	No	-1.686	.515	10.693	1	.001	.185	.067	.509
Time	Yes(ref)								
	No	1.638	.644	6.466	1	.011	5.143	1.456	18.172
constant		2.650	.818	10.490	1	.001	14.156		

Logistic regression model is given by:

Logit (pi) $=\beta_o+\beta_1x_{1i}+\beta_2x_{2i}+\beta_3x_{3i}+\beta_4x_{4i}+\beta_5x_{5i}$

Where$\beta_1,\beta_2,\beta_3,\beta_4$&$\beta_5$are parameter estimators and x_1,x_2,x_3,x_4&x_5 are independent variable.

$X_{1=}$Happy to take course on their foreigninstructor

X2=feeling fair on class communication on theirforeign instructor

X3=feeling poor on class communication on their foreign instructor

X4=comfort their evaluation method

X5=finished a course at given time

Logit (pi) = $2.650-2.436x_{1(no)}-1.968x_{2(fair)}-1.391x_{3(poor)}-1.686x_{4(no)}+1.638x_{5(no)}$

The Wald chi-square statistic, which tests the unique contribution of each predictor, in the context of the other predictors that is holding constant the other predictors and eliminating any overlap between predictors.

Interpretation of odd ratio

The odds of students happy by taking course from foreign instructor were 0.088 times less likely to have attitude toward their foreign instructor than who were not happy,keeping other variables as constant in the model. The odds of students feel fair in their class communication were 0.140times less likely to have attitude toward their foreign instructor than who feel good, keeping other variables as constant in the model and Students feel poor in their class communication were 0.249 less likely to have attitude toward their foreign instructor than who feel good, keeping other variables as constant in the model.

The odds of students who says no on comfortable evaluation method were0.185times less likely to have attitude of students towards foreign instructor than who were comfortable evaluation method and student no finish a course at a given time were5.143times more likely to have attitude towards foreign instructor than whowere finish a course at a given time, keeping other variables as constant in the model.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

The main objective of this study is to determine students' attitude towards their foreign instructor at Wolkite University in case of college Computing and informatics and Engineering and Technology students, to identify and characterize core problem of students' attitude towards their foreign instructor and to know the association between dependent and independent variables.

The descriptive part of the analysis shows that there are more students with positive attitude towards their foreign instructor than with negative attitude in Wolkite University in case of Computing and informatics and Engineering and technology.

The chi-square test independent show that college, happy to talk course by foreign instructor ,feeling on communication with your instructor, evaluation and time of student were significantly associated with student attitude towards foreign instructor and the remaining variables were not have a significant association with student attitude towards foreign instructor.

The binary logistic regression analysis shows that happy to talk course by foreign instructor, feeling on communication with your instructor and evaluation of students are major factor that affects the student's attitude towards foreign instructor in the University. Meaning that significantly related with students attitude towards their foreign instructor. The other variables were not significantly related with students' attitude towards their foreign instructors.

5.2 Recommendation

The students and the instructors should have smooth relationship between them must be improved..Students should have positive attitude towards their instructors make students beneficiary from the lectures given by those instructors. The students should have good feeling on class communication with your instructor. The more interactions are interested in their work and the more students gain clear concept of the topics given by their instructors to success student's course of knowledge the foreign instructors more understand their teaching style.

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APPENDIX

W0LKITE UNIVERSITY

COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCE

DEPARTMENT OF STATISTICS

Dear respondents: The aim of this questionnaire is to collect the data that helps to assess attitude of students towards their foreign instructor. Hence, your genuine responses are very helpful in undertaking the possible determinant impacts of attitude on foreign instructor, so please provided genuine information for the set of questions to reach a valid conclusion. Your response is highly secured and confidential.

Direction: - Please mark circle on your answers in the provided alternatives.

1. Sex A. Male B. Female
2. Age A. <20 B. 21-25 C. >26
3. College A. Informatics and computing B. Engineering and technology
4. Do you happy to take course by foreign instructors? A. Yes B. No
5. What is your attitude on their teaching methodology? A. Positive B. Negative
6. What is your feeling on class communication with your instructor?
   A. Good B. Fair C. Poor
7. Do you always attend class? A. Yes B. No
8. If your answer in question "7" is no. What is your reason?
   A. Course teaching method is not attractive
   B. My understanding is not good on their class
   C. I am not satisfied with learn by them
   D. I understand the course by my self
9. Is there your evaluation method comfortable? A. Yes B. No
10. Are you finished a course within a given time? A. Yes B. No

THANK YOU FOR YOUR COOPERATION!!!