

**MULTINOMIAL LOGISTIC MODELLING TO STUDY SOCIO-ECONOMIC  
FACTORS INFLUENCING SPENDING BEHAVIOR OF UNIVERSITY STUDENTS IN  
KENYA (CASE STUDY: UNIVERSITY OF EMBU)**

**ABSTRACT**

This study aims to determine the use of Multinomial Logistic Regression (MLR) model which is one of the important methods for categorical data analysis. This model particularly deals with one nominal or ordinal response variable that has more than two categories. Despite the fact that many researchers have applied this model in data analysis in many areas, for instance behavioral, social, health, and educational, a study on spending habits of University students have never been done. To identify the model by practical way, we conducted a survey research among students from University of Embu. Segment of the population of students in undergraduate level, a sample of 376 was selected. We employed the use stratified random sampling and simple random sampling without replacement in each stratum. The response variable consisted of five categories. Four of explanatory variables were used for building the primary (MLR) model. The model was tested through a set of statistical tests to ensure its appropriateness for the data. From the results, the study reveals that year of study, family financial level, gender and school are significant factors in explaining spending habits of students. Despite the fact that gender is one of the deterministic factors of financial behavior of student, this model identified family level of income as a major deterministic factor. Conclusively, using MLR model accurately defines the relationship between the group of explanatory variables and the response variable. It also identifies the effect of each of the variables, and we can predict the classification of any individual case. The researchers recommend that, the Universities peer counselling department, should hold trainings on the basis of major determinant of financial spending behavior i.e. family financial level.

**Key words**

Multinomial logistic regression model, categorical data, Undergraduate University students, spending behavior.

## 31 **Introduction**

32 University or college students are in a distinct period of their lives where they start to manage  
33 their money independently without their parent's supervision(Gutter, M. S., Garrison, S., &  
34 Capur, Z., 2010). Most of them start to deal with monetary challenges such as paying bills,  
35 keeping a budget, or having bank account bearing their own names for the first time. Thus due to  
36 this reason many students find themselves unable to manage their finances well hence ending up  
37 being so much broke that they are unable to meet their financial obligations towards the end of  
38 the semester as compared to the start of the semester, where they spend their finances  
39 extravagantly. This is a problem which most of the students are facing throughout their campus  
40 life. Very little studies have been done among Kenyan Universities and none in University of  
41 Embu to explain the above observed behavior. Therefore, there is a need of drawing a  
42 satisfactory statistical model of personal finances among university students to explain the  
43 observed behavior of financial hiccups. Consequently, providing solution to issues that may arise  
44 thus identifying the difference in spending habits of students of different gender, years of study,  
45 family financial background and school which this study will address

46 With a specific end goal to analyze the trend of the relationship between the impact of  
47 socialfactors and average amount spend by students, historical perspectives were  
48 explored.(Lyons, 2004),investigatedCredit Practices and Financial Education Needs of Midwest  
49 CollegeStudents. The researcher used simple random sampling to obtain a sample of 835  
50 collegestudents. The study found that gender, ethnicity, financial independence, total amount of  
51 debtand credit card acquisition prior to the college were significant predictors of risky  
52 financialbehaviors. Some of these factors are among what I consider studying. With the below  
53 studiesit is apparent that none of them was conducted in Kenya, also very little has been done  
54 inAfrica. Therefore, it was worth to establish the social-economic factors influencing  
55 thespending habits in Kenyan universities. The findings of this study can help students to know  
56 the factors which affect their habits of spending and take correct measures. For instance, to learn  
57 how they should spend their finance based on the findings of this study, so that, towards the end  
58 of semester they will still have some amount to cover for their needs. These findings can be used  
59 to create awareness among parents so that they could understand the rate at which they will be  
60 providing financial support to their children It can also help the university counseling department  
61 to point out the key factors to consider when solving cases where students find themselves

62 straining to meet their basic needs as a result of poor finance management at the beginning of the  
63 semester. Furthermore, the department can also utilize these findings to organize training on  
64 financial awareness.

### 65 **Gender against spending habits**

66 Adrian conducted a study on the saving and spending habits of young people(Furnham, 1999).  
67 This was among British adolescents in London.It is important to note the findings of such a  
68 study, as not many researchers have attempted to investigate the financial habits of children.  
69 Insights on reasons as to why college students spend or save the way they do may be provided by  
70 focusing on a younger age bracket.(Furnham, 1999), is able to suggest why an individual may be  
71 more susceptible to spending, as early exposure to certain attitudes and parental treatment can  
72 largely factor into the development of spending habits. The study on British children asks  
73 participants to complete a questionnaire which asks about sources of income, how much money  
74 is generally put into savings, where it is stored and the purpose it is intended for(Furnham,  
75 1999). The main demographics (Furnham, 1999) focuses on are gender, age and class, with the  
76 first two proving to be highly significant. This research conclude that age is the most powerful  
77 predictor of saving(Furnham, 1999). The older a child is, the more money he or she will receive  
78 and save. However, this could be due to differences in socialization, as it is found that at a  
79 younger age, boys are receiving more pocket money and are allowed to take on part-time jobs  
80 before girls(Furnham, 1999). This finding by (Furnham, 1999) may explain what gender  
81 differences cause on financial attitudes that appear within multiple studies. The socialization and  
82 upbringing of boys in comparison to girls builds a separate framework for handling money  
83 issues. Finally, social class differences appear to be a difficult demographic to measure. It  
84 isforeseen that higher socioeconomic status implies huge savings. However, the sample turned  
85 out to be a homogenous population of children from middle class backgrounds(Furnham, 1999).  
86 The challenges faced during the study did not give room for full investigation of the range of  
87 demographics that were initially intended for study. According to most of the studies, gender has  
88 been identified as a deterministic factor of spending habits. For instance, if we consider a  
89 research on Attitudes toward Credit and Finances among College Students in Brazil and the  
90 United States. In this study participants were recruited from several departments and classes all  
91 over the campuses, comprising of core courses. In this study, the researcher employed the use of  
92 simple regression analysis. The study reveals that women have a more frequent participative

93 budget than men. (Norvitis, 2006). According to the research conducted by (Roberts, J.A. &  
94 Jones, 2000) on Consuming in a Consumer Culture: College Students, Materialism, Status Consumption  
95 and Compulsive Buying is a contradiction to (Norvitis, 2006).(Roberts, J.A. & Jones, 2000)  
96 Found that women have been brought up and enculturated to obtain satisfaction from shopping.  
97 Therefore, there is a manifestation of spending behaviors among them, particularly compulsive  
98 buying compared to men.

99 (Villanueva, 2017), had interest on factors affecting spending and saving habits of college  
100 students. In the study the gender tests for differences in spending that may arise was treated  
101 depending on if either the participant was male or female. The study spliced data for gender into  
102 25 male participants and 30 female participants. The numbers for the gender variable were thus  
103 aggregated across all class years and ethnicities. Between males and females, data supports the  
104 idea that males are more likely to spend more in a given month than females. More precisely,  
105 results reveal that females are 4.1% less likely to spend than the average male student, a finding  
106 that was expected. Again, the sample population, consisting of 54.5% female and 45.5% male, is  
107 representative of the more populous female demographic of Skidmore College(Villanueva,  
108 2017). From this we can see that none of them fitted a multinomial regression model to assess  
109 whether gender is significant instead they just give descriptive on the effect of gender on  
110 spending habit and did not give the extend in which gender affect spending habit.

111

### 112 **Family financial background against spending habits**

113 To validate the fact that the financial behaviors and attitudes of college students are an  
114 international focus. (Sabri, M. F., & MacDonald, M., 2010), analyzes the relationship of savings  
115 behavior and financial issues among college students in Malaysia. From their results, financial  
116 experience prior to college often fosters poor habits. Majority of students first experience  
117 financial self-reliance at the university level, there is overall low financial literacy among young  
118 people. The sample consists of both private school and public school students, which later proves  
119 to be a significant factor in the study (Sabri, M. F., & MacDonald, M., 2010) Participants that  
120 come from private schools are more likely to come from wealthier backgrounds, which can  
121 account for the high volume of spending among these students (Sabri, M. F., & MacDonald, M.,  
122 2010). Moreover, (Sabri, M. F., & MacDonald, M., 2010) were also able to identify that those of  
123 Chinese descent are a specifically wealthy 18 populations in Malaysia, and much of the spending

124 is linked to this group of students. Overall, respondents in this sample are more prone to  
125 spending than saving; more than half of the respondents choose to spend money that is received  
126 for scholarships or education loans(Sabri, M. F., & MacDonald, M., 2010). Often, this money is  
127 spent on personal shopping, most of which is consumed before the end of one semester (Sabri,  
128 M. F., & MacDonald, M., 2010). This highlight that the students who are from richer background  
129 tend to spend more than the other students since they have enough money to use unlike the other  
130 students from lower class background who try to spend carefully their resources thus it is  
131 believed that the financial status of a student have on how influence he/she spend their money.

### 132 **Year of study against spending habits**

133 In the study by about financial literacy(Haiyang Chen, 2008), the findings shows that younger  
134 people do not know how to handle their finances well and moreover, there is a learning curve  
135 that exists when making the transition from being completely financially dependent to slowly  
136 becoming financially independent where students from their first years were considered as  
137 financially dependent and fourth years were considered almost financially independent (Haiyang  
138 Chen, 2008).(Haiyang Chen, 2008), also believed that people with less work experience which  
139 comprise of young people are more likely to have less knowledge on managing their finances.  
140 (Villanueva, 2017), in her study where she took class year as one her factors influencing  
141 spending habits of students. The regression results of class year from her study found that  
142 freshman and senior students exhibit higher spending behaviors while sophomores and juniors  
143 exhibit less spending. However, their findings indicate that fourth years also tends to spend more  
144 on average. Thus arguing that transition from college to post graduation may also probe more  
145 spending in preparation and anticipation of a higher income (Villanueva, 2017). Also in their  
146 findings show the signs of the coefficients were as expected, where freshman students were  
147 positively correlated and sophomore and juniors were negatively correlated with average  
148 spending (Villanueva, 2017). From this literature we can see that since most of them was done  
149 outside our continent there is need to study for us to research on this and determine whether the  
150 findings will be the same.

### 151 **Research gap**

152 After analyzing most of the researchers done in this field most of them have been conducted  
153 outside the country and few in our continent. Many of these studies did descriptive statistics only  
154 which end up only drawing conclusions from them and none used multinomial logistic

155 regression. Effect of social economic factors on spending habits of university students has not  
156 been done in Kenyan universities and particularly University of Embu. So there was a need to  
157 undertake this research (case study). Is there a difference in the pattern of spending habits of  
158 University students with reference to different times in a semester? Further, this study sought to  
159 demonstrate the application of multinomial logistic model to examine the factors associated with  
160 the spending behavior of University students in high income families, low and middle income  
161 families. Finally, determine the significance of the explanatory variable.

## 162 **RESEARCH METHODOLOGY**

### 163 **Definition of variables**

164 There are two categories of variables in the study. First is the dependent variable which analyzes  
165 the average spending habit of an individual per month which was measured through a multi-  
166 choice question that asked students to estimate their average spending and will categorized into  
167 five categories? The second category was independent variables which include; year of study  
168 which is quantitative i.e. it take values 1, 2, 3 & 4, gender which had two categories, family  
169 financial status which was also categorized into three categories depending on income of the  
170 parents and school of the respondent which was also categorize depending on each one's school  
171 where we had five categories representing each school.

### 172 **Target population**

173 The target population was University of Embu undergraduate students. This was because the  
174 study was about the spending habit of undergraduate students in Kenya.

### 175 **Scope of the study**

176 The study area was University of Embu which was partitioned into five strata which were the  
177 schools of study of respective students. These included: School of Pure and Applied Sciences  
178 (SPAS), School of agriculture (SOA), School of Education and Social Sciences (SESS), School  
179 of Nursing (SON) and School of Business (SOB). It's a public university which is fully chartered  
180 with an approximate population of 6200 students ((University of Embu, 2018)).

### 181 **Sample size and sampling technique**

182 **Sampling size**

183 The researcher obtained representative sample for the population as follows; (Xiangqin Cui,  
184 Gary A Churchill, 2003), states that a sample size needs to be adequately and accurately selected  
185 so as to make sure the sample is indeed a representative of the whole population under study in  
186 order to provide reliable and accurate information needed.

187 The target population is all the undergraduate students in University of Embu taking various  
188 courses. The sample will be arrived at Yamane's formula

$$n = \frac{N}{1 + Ne^2} = \frac{6200}{1 + 6200(0.05)^2} = 375.75 \approx 376$$

189 See (Yamane, 1967)

190 Where **n**=the sample size, **N**=is the size of the population and **e** is the error of 5% points.

191 Proportional allocation was then used to distribute the sample among the five strata which were  
192 the five schools and the sample per school was as follows

- 193 ➤ School of pure and applied sciences
- 194 ➤ School of Agriculture
- 195 ➤ School of Nursing
- 196 ➤ School of Education and Social Sciences
- 197 ➤ School of Business

198 **Sampling technique**

199 I used stratified sampling technique. The entire population was classified into five strata in which  
200 each stratum represented each school in University of Embu. The strata were of unequal sizes  
201 and therefore the researcher employed the use of proportional allocation to eliminate sampling  
202 error (lack or representativeness of the exact population).And therefore, the sample was large to  
203 represent the whole population. Simple random sampling without replacement technique was  
204 employed within each stratum to obtain stratum sample. This was because each element of the  
205 population had equal probability of participating in the study.(Mark Saunders, Philip Lewis,  
206 Adrian Thornhill, 2003), argues that this technique involves one selecting the sample at random  
207 from the sample frame. This methodology was considered to be very good for the study. The  
208 following are the results from proportional allocation.

Strata	No. of students
<b>School of pure and applied sciences</b>	125
<b>School of Agriculture</b>	62
<b>School of Nursing</b>	34
<b>School of Education and Social Sciences</b>	73
<b>School of Business</b>	86

209

210 **Data sources and instruments**

211 In order to acquire accurate information, the study relied mainly on primary sources of data. This  
 212 type of data was collected using structured questionnaires which was formulated by the  
 213 researcher on the basis of research objectives. The questionnaire was structured with both closed  
 214 ended and open ended type of questions. (McNabb, 2008), claims that a questionnaire is  
 215 considered to be the best tool for collecting data in a descriptive design. The questionnaire was  
 216 divided into two main section, the first section made up of questions seeking background  
 217 information of the respondent. The second part of the questionnaire had questions regarding to  
 218 the above objectives.

219 **Reliability**

220 It was concerned with the extent to which instruments yield the same results on repeated trials.  
 221 Even though unreliability was unavoidable to a certain extent, there exist a good deal of  
 222 consistency in the results from a quality instrument gathered at different times. The tendency  
 223 toward consistency found in repeated measurements is referred to as reliability (Edward G.  
 224 Carmines, Richard A. Zeller). This makes it very important that the researcher in social sciences  
 225 and humanities determine the reliability of data gathering instrument to be used(Allan S.  
 226 Willmott, Desmond L. Nuttal, 1975). The reliability of the instrument was tested using SPSS, by  
 227 computing Cronbach’s alpha coefficients. I had desired a higher values of alpha and this showed  
 228 that items had relatively high internal consistency (measure how well the items on the same test  
 229 measure the same idea). A score of 0.75 will be deemed sufficient for the study. The manual  
 230 formula is as follows;

$$\alpha = (n/(n - 1))(1 - (\sum var(xi))/var(test))$$



231 Where

$$\alpha = \text{reliability}$$

$n$

= number of questionnaires (total number of the sampling elements i.e. sample size)

$$\text{var}(x_i) = \text{variance associated with each item}$$

232  $\text{Var}(\text{test}) = \text{variance associated with test scores.}$

233 After performing the analysis using Cronbach's in SPSS we generated the output below which  
234 shows that the questionnaire was reliable and questions had high internal consistency  $\alpha=0.86$ .

### 235 **Validity**

236 Validity of a measuring tool is the degree to which a test measure what is supposed to measure.  
237 To check validity of the instrument used I content validity method as suggested by(Emanuel J.  
238 Mason, William J. Bramble, 1989) where I subjected questionnaires to three experts including  
239 my supervisor.

### 240 **Data analysis**

#### 241 **Model specification**

242 Suppose we obtained a sample of  $n$  independent observations of the pair  $(X_i, Y_i)$   $i =$   
243  $1, 2, \dots, n$  where  $Y_i$  denotes the value of a dichotomous outcome variable with  $j$  categories  
244  $j = 1, 2, 3, 4, 5$  and  $X_i$  is the value of a single independent variable for the  $i^{\text{th}}$  subject.  
245 Furthermore, assume that the outcome variable has been coded as shown below.

246 Define;  $\pi_{ij} = \Pr(Y_i = j)$ , the probability of the  $i$ -th average amount spend whose outcome falls  
247 in the  $j$ -th category. To model the probabilities  $\pi_{ij}$  ( $i = 1 \dots n$  and  $j = 1 \dots J$ ) we allow these  
248 probabilities to depend on a vector  $x_i = (x_{i1}, x_{i2}, \dots, x_{ip})$  of the covariate associated with the  $i^{\text{th}}$   
249 average amount spend.

#### 250 **Multinomial logistic model**

251 The analysis adopted was multinomial logistic regression since my response variable was  
252 measured in terms of five categories which each category was compared to an arbitrary

253 providing j-1 logistic regression models which were fitted. The following were the categories  
254 used.

***Less than 2500 category j = 1***

***2501 – 3750 category j = 2***

***3751 – 4500 category j = 3***

***4501 – 5500 category j = 4***

***Above 5500 category j = 5***

255 This model was used to test the effects of the independent variable on the average amount spent  
256 per month in a semester. The model was as follows;

257 Let probabilities associated with the response category for the i-th average amount spend  
258 will be  $\pi_{i1}, \pi_{i2}, \pi_{i3}, \dots, \pi_{ij}$ . The probabilities of the response  $Y_i = 1, 2, \dots, J$  were  
259 expressed probability of a response of  $j^{\text{th}}$  category. The probabilities are given as;

$$P(Y_i = j) = \pi_{i1} + \pi_{i2} + \pi_{i3} + \dots + \pi_{ij}, \quad j = 1, 2, 3, \dots, J$$

260 Where  $\pi(X_i) = \frac{e^{\beta_0 + \sum \beta_i X_i}}{1 + e^{\beta_0 + \sum \beta_i X_i}}, \forall i = 1, 2, 3, 4$

$$\text{Logit}(\pi(X_i)) = \beta_0 + \sum \beta_i X_i + \varepsilon$$

261 See (P. Bartlett and S. Mendelson,, 2002)

262 Where

- 263 ➤ x1 represent gender as a factor
- 264 ➤ x2 represent year of study
- 265 ➤ x3 represent the family financial status
- 266 ➤ x4 represent the school
- 267 ➤  $\varepsilon$  is the error component
- 268 ➤  $\pi(x_i)$  is the probability of an event belong to an  $j^{\text{th}}$  category

269 Also, independent variables correspond to each specific factor being tested in relation to the  
270 individual spending mechanism.

271 **Model diagnostic and building**

272 Goal of model building was to develop a model with the best set of independent variables. The  
273 models were compared using AIC (Akaike Information Criterion), which measures the goodness  
274 of fit and the complexity of the model. The preferred model has the minimum AIC value,  
275 where  $AIC = -2\ln(L) + 2k$ , where;

276 L- Maximum likelihood value

277 k- Number of free parameters in the model

278 2k- Represents the penalty of increasing function of the number of  
279 estimated parameters in the model

280 I used Wald to test the significance of individual coefficients comparing the chi-square p-value  
281 with our level of significance.

282 **Model assumptions**

283 The distribution of response variable  $Y_i$  was multinomial  $(n_i, \pi_i)$

284 Errors are independent but not normally distributed

285 I preferred using maximum likelihood estimation (MLE) rather than ordinary least squares  
286 (OLS) to estimate parameters of the model. This was because of my large sample size.

287 **Linearity**

288 The explanatory variables have a linear relationship with the logit of the outcome of the variable

289 **There is no multi-collinearity**

290 The reciprocal of the tolerance is known as the Variance Inflation Factor (VIF). The VIF shows  
291 us how much the variance of the coefficient estimate is being inflated by multicollinearity.  
292 Normally, multi-collinearity occurs under cases where the independent variables are highly  
293 correlated with each other. Thus checked this by running VIFs where values higher than 10  
294 indicates that multi-collinearity was a problem otherwise it was not. As from the table below,  
295 there was no multicollinearity. On the other hand, a tolerance close to 1 means there is little  
296 multicollinearity, whereas a value close to 0 suggests that multicollinearity may be a threat.  
297 (Williams, 2015)

298 **Estimation and interpretation of coefficients**

299 OR (exponentiation of  $\beta_i$ 's) represented the odds increased (or decreased) for category j  
300 compared to reference category for each unit increased in X that is;

301 If  $\beta_i > 0$ :  $e^{\beta_i}$  then odds and probabilities of being in the  $j^{\text{th}}$  category increased as  $X_i$  increased  
302 reference to the baseline category

303 If  $\beta_i < 0$   $e^{\beta_i}$  then the odds and probabilities of being in the  $j^{\text{th}}$  category decreased as  $X_i$  increased  
304 reference to the baseline category

305 If  $\beta_i = 0$  :  $e^{\beta_i}$  then the odds and probabilities of being in the  $j^{\text{th}}$  category remained constant as  $X_i$   
306 increased reference to the baseline category.

307 **Data analysis and presentation**

308 Data was coded and cleaned in Excel sheet then exported to SPSS for correlations and cross  
309 tabulation and finally to STATA to generate the MLR model. It was presented using tables,  
310 charts, bar graphs and any other appropriate presentation method as well as data collected. This  
311 formed a suitable basis for arriving at important findings and conclusion

312 **RESULTS AND DISCUSSION**

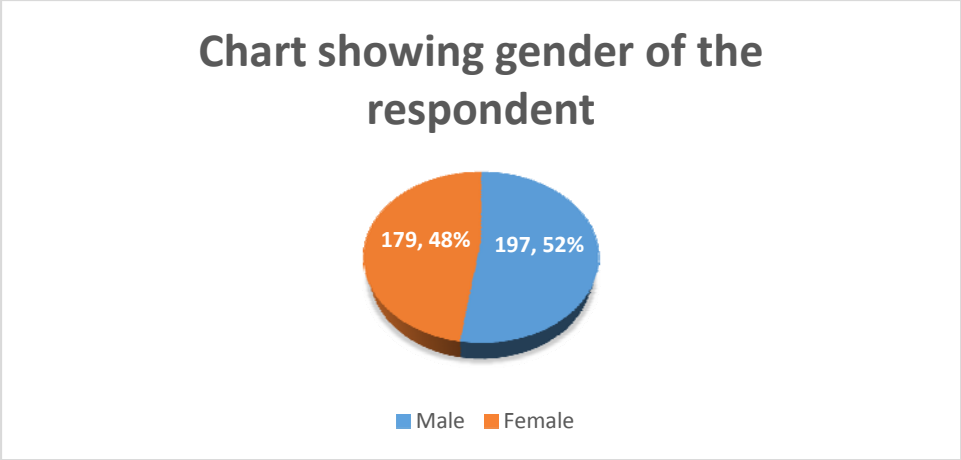
313 **Introduction**

314 This chapter describes the output that was generated from both the STATA and SPSS and  
315 interpretation of results.

316 **Demographic summary of the respondent**

317 **Gender of the respondent**

318 According to this study, the valid respondents were students from University of Embu  
319 undergraduate level. From the study, majority of the respondents were male (52%) which  
320 represented 197 male students of the total sample. On the other hand, 179 female students  
321 participated in the study which was (48%) of the students. See (Figure 1).

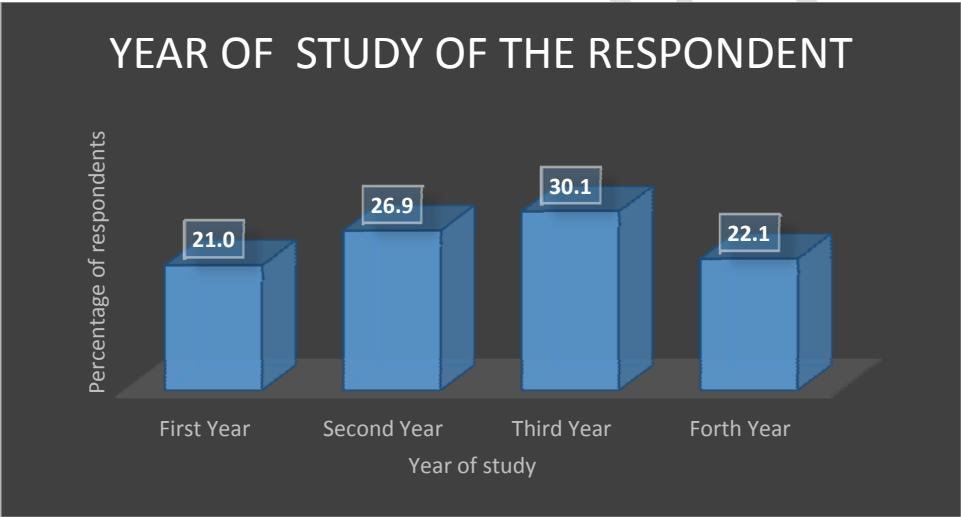


322

323 *Figure 1*

324 **Year of study of the respondent**

325 From this study, most of the respondents were third years (30%), followed by second years  
 326 (27%), then fourth years (22%) and finally first years (21%). See (Figure 2).

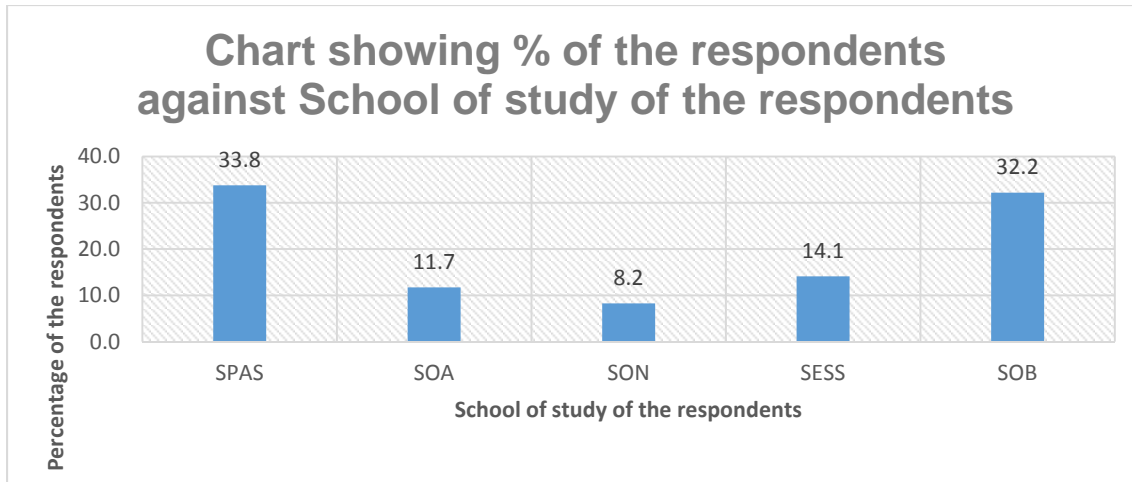


327

328 *Figure 2*

329 **4.2.3 School of study of the respondent**

330 According to the anticipation of the researcher before this study was conducted, as compared to  
 331 the weighted means calculations of the sample in the methodology section of this project. It is  
 332 clear that majority of the respondents (34%) were in the school of pure and applied sciences  
 333 (SPAS). Only (8%) of the respondents are in the school of nursing (SON). See (Figure 3)



334

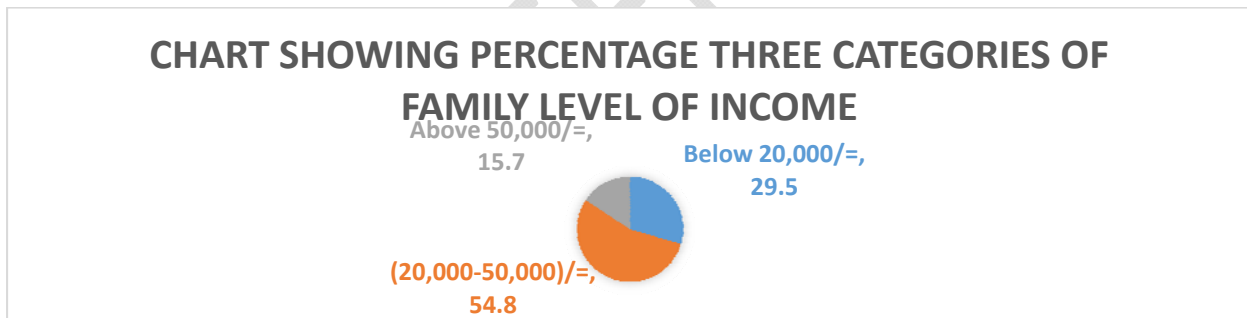
335 *Figure 3*

336 **Family Level of income**

337 From this study, it is believed that different students have different family level of income.

338 Majority of the respondents has claimed to have between Sh. (20,000-50,000) which was (55%)

339 of the respondents. See (Figure 4)

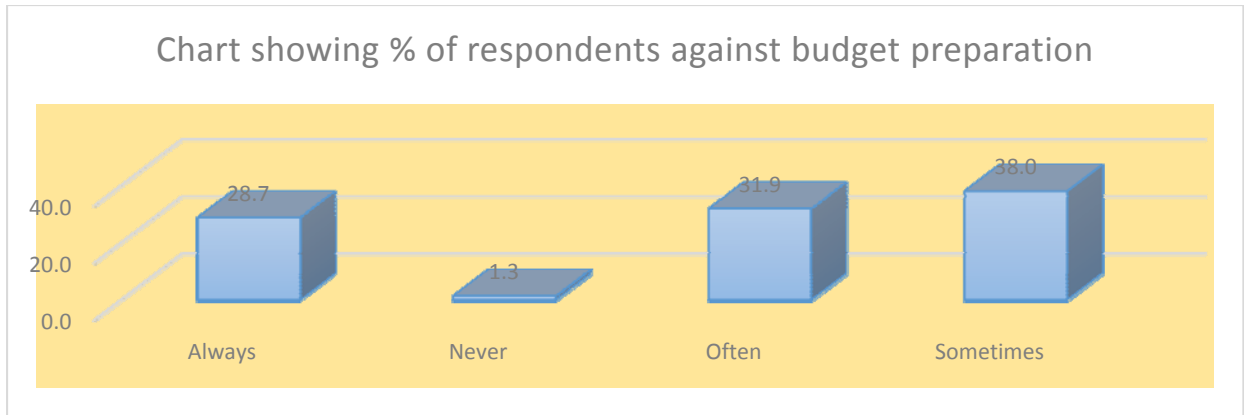


340

341 *Figure 4*

342 **Financial management**

343 Majority of the students sometimes do budgeting. See (Figure 5).

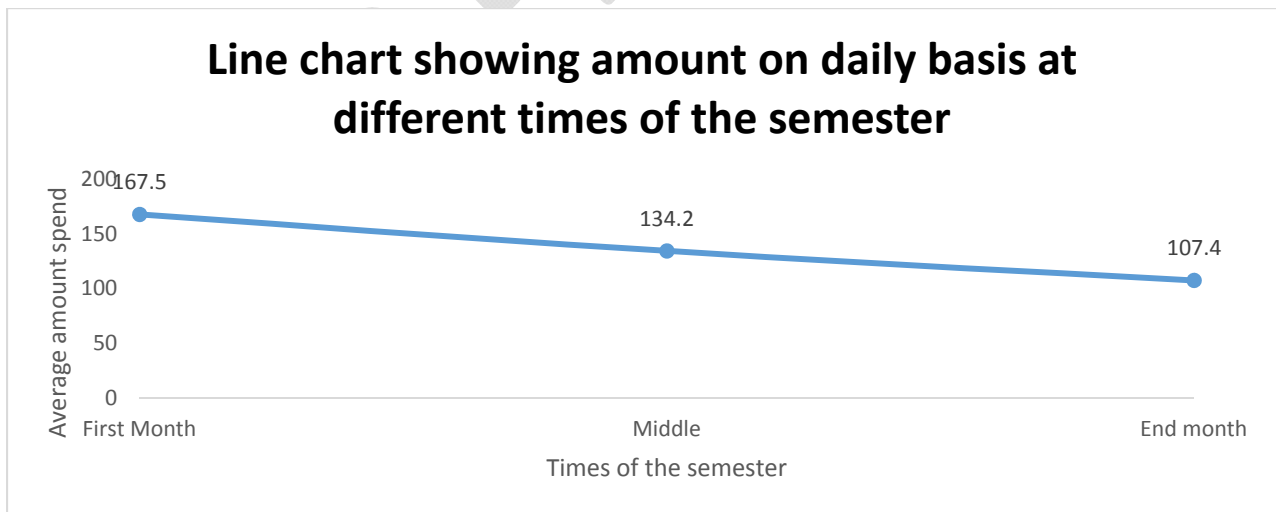


344

345 *Figure 5*

346 **Average daily spending**

347 The average amount spent throughout the semester is decreasing as the semester ends. This  
 348 indicate that during the start of the semester students tend to have a lot of cash to spend and they  
 349 spend them extravagantly without planning for them as evident in the financial preference  
 350 awareness. Towards the end they are remaining with only small amount of cash in their hands so  
 351 they are forced to adjust to this amount hence ending up spending less in order to succumb to  
 352 them. This scenario happens because of failing to plan their finances well as they start the  
 353 semester hence there is a need to create awareness on good financial practices. See (Figure 6)



354

355 *Figure 6*

356 **Testing Overall Relationship**

357 Before conducting any analysis as far as Multinomial Logistic Regression model is  
 358 concerned, the first thing any analyst must put into consideration is to test the overall  
 359 relationship between dependent variable and independent variables(Madhu B, Ashok N  
 360 C and S Balasubramanian, 2014). It is evident that there is a relationship between  
 361 dependent variable and combination of independent variables on the basis of statistical  
 362 significance on the chi-square model which is our model fitting information. According  
 363 to this analysis, the below model fitting information reveals that the probability of  
 364 likelihood ratio test chi-square (680.927) was (0.000) which less than level of  
 365 significance 0.05 i.e. ( $p < 0.05$ ). See (Table 1)

366 *Table 1*

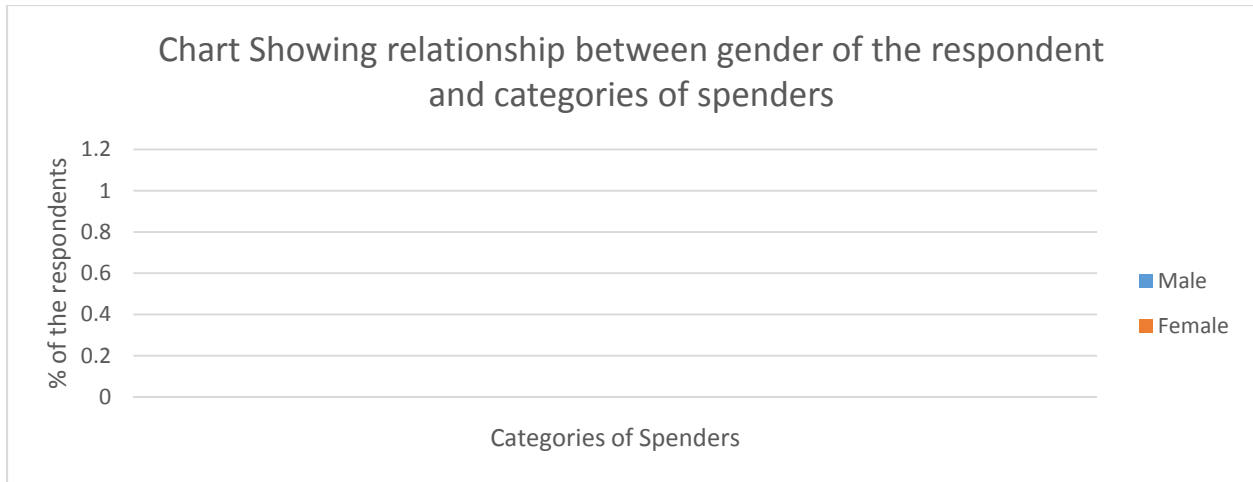
Model Fitting Information				
Model	Model Criteria	Fitting Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	1152.907			
Final	471.981	680.927	88	0

367

### 368 **Cross tabulation**

369 As per the objective of this study, various categories of spenders were correlated by use of Chi-  
 370 square tests. This test was carried out to check if there was significant relationship between the  
 371 independent variable and dependent variables. From the study, majority of students who spend  
 372 very less amount (less than 2,500) are male (68%). This is a similar case in the second and third  
 373 categories with (88.4 %), (75%) respectively. This a total contradiction in category of Sh. (4501-  
 374 5000) and (Above KSh.5000) where female tends to spend more than male (77%) and (83%).  
 375 See (Figure 7). According to the analysis, this relationship was considered statistically significant  
 376 ( $p$ -value=0.00) which was less than our default value.

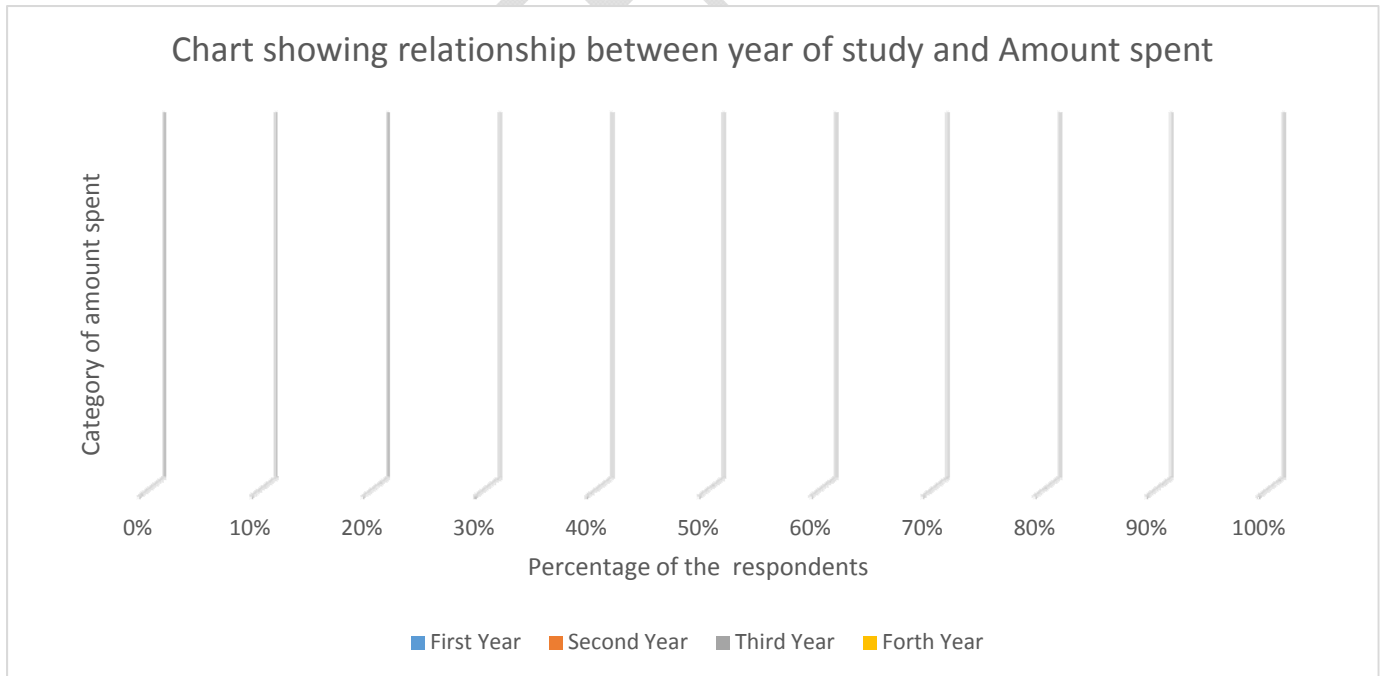




377

378 *Figure 7*

379 The study confirms that there was statistically significant relationship between amount spent by  
 380 students and year of study (P-value= .001). Second years and third years take lead in spending  
 381 above KSh.5000 monthly (40%) and (33.3%). Very few fourth years spend cash that is above  
 382 KSh.5000 (3.3%). From the table below, Majority of the students who spend less than KSh. 2500  
 383 are fourth years (34.7%) See (Figure 7).

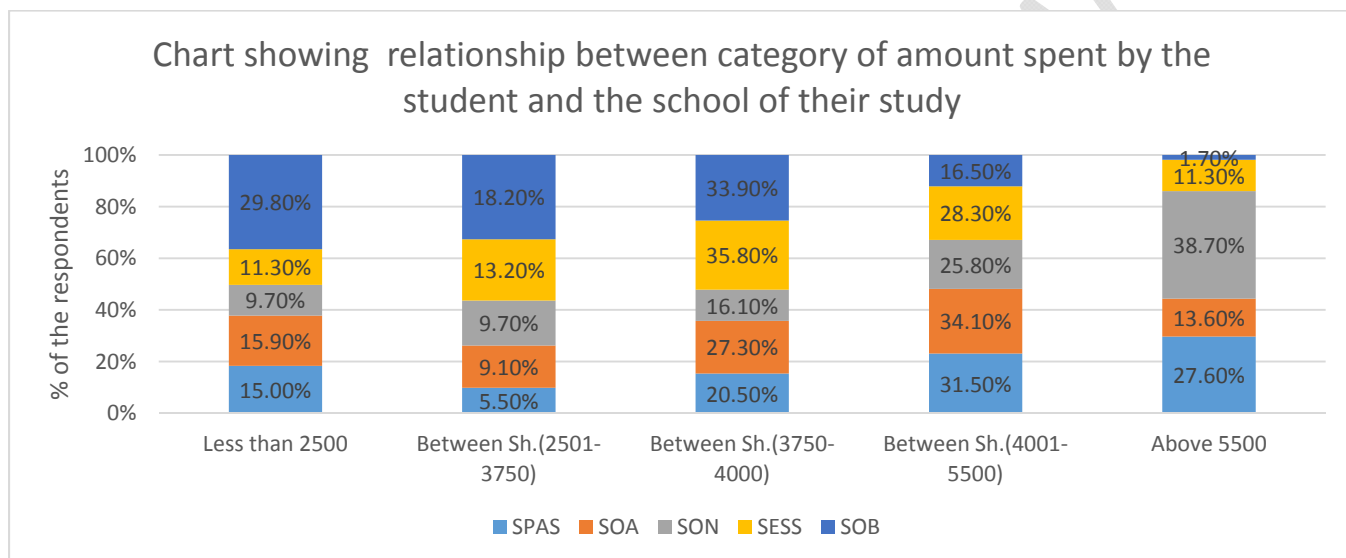


384

385 *Figure 8*

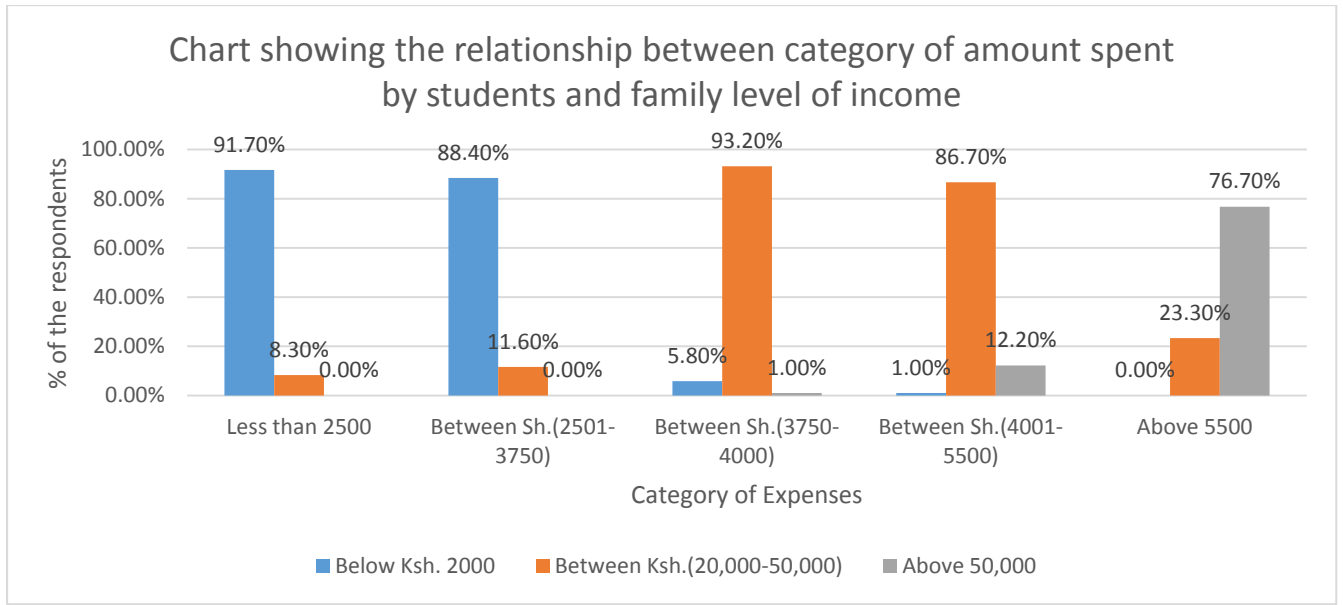
386 In figure 8, most of the students who spend less than KSh.2500 are from the school of business  
 387 (SOB) (28.80%). Majority of the business students spend amount in the category j=3 i.e.KSh.

388 (3750-4500). Similarly, School of business takes the lead in category  $j=2$ . We can as well see that  
 389 most of the students in the school of nursing (SON) spend more than KSh.5000 per month in a  
 390 semester (38.70%). Very few students in the School of business spent amount of money more  
 391 than Ksh. 5000 (1.76%). From the Chi-square test, we observed that, the researcher found out  
 392 that the amount spend by the university students is significantly related to the school of study  
 393 ( $p=0.000$ ).



394  
 395 *Figure 9*

396 There was a significant relationship between the category of amount spent and the family level  
 397 of income. This was from the Chi-Square test where the Asymptotic Significance (2-sided) of  
 398 Pearson Chi-Square ( $p=0.000$ ). This was less than the default value 0.05. Majority of students  
 399 who spend less than Ksh.2500 per month (91.70%) have their family income level below Ksh.20,  
 400 000. None of the students who spent less than Ksh. 2500 per month of the semester have their  
 401 family level of income above Ksh (50,000). We can also see that, students whose family level of  
 402 income is above Ksh.50, 000, have their spending levels increasing. Most of these students spend  
 403 more than Ksh.5500. We can also see that amount spent by students from low level of income  
 404 decreases from the left hand side. The distribution of amount spent by students from a low level  
 405 family income is skewed to the left, while the distribution of amount spent by students from high  
 406 level of family income is skewed to the right. Students from a moderate family level of income  
 407 has a normal distribution. See (Figure 9).



408

409 *Figure 10*

410 **There is no multi-collinearity**

411 Normally, multi-collinearity occurs under cases where the independent variables are highly  
 412 correlated with each other. The variance inflation factors (VIFs) indicated the degrees that  
 413 variances in the regression estimates were increased due to multi-collinearity. Thus checked this  
 414 by running VIFs where values higher than 10 indicates that multi-collinearity was a problem  
 415 otherwise it was not. As from the table 2, there was no multicollinearity.

416 *Table 2*

		Collinearity Statistics	
Model		Tolerance	VIF
1	Gender of the respondent	.941	1.062
	Year of study of the respondent	.995	1.005
	School of study of the respondent	.945	1.058

a. Dependent Variable: Category of Expenses

417

418 **The strength of multinomial logistic regression relationship**

419 In the statistical world, to measure the strength of a multinomial logistic regression (MLR), we  
 420 shall consider Pseudo  $R^2$ . According to Borooah(Borooah, 2002), Pseudo Random square is  
 421 defined as  $1 - LL_{R+F} / LL_R$  and is bounded from below by 0 and from below by 1. Here I can say

422 that  $LL_{R+F}$  is the value of log-likelihood function when the explanatory variable is a constant  
 423 term. On the other hand,  $LL_R$  is the value of the log-likelihood function when all the explanatory  
 424 variables are included. MLR normally computes the correlation measures to estimate the strength  
 425 of the relationship (Pseudo Random square). This study will make use of the three commonly  
 426 used  $R^2$  statistics. These are Cox and Snell, Nagelkerke and McFadden to measure the strength  
 427 of the relationship between the dependent variable and the concomitant variables. From the  
 428 analysis of this study, Cox and Snell, Nagelkerke and McFadden R squares, are 0.809, 0.846 and  
 429 0.529 respectively. This suggest that 80%, 84% and 52% variability is explained by the by the  
 430 variables in this model..

431 *Table 3*

Pseudo R-Square		432
Cox and Snell	0.809	433
Nagelkerke	0.846	434
McFadden	0.529	435

### 436 Evaluating the Usefulness of logistic model

437 It is of great importance to evaluate the usefulness of MLR. The model is useful if and only if,  
 438 the overall classification accuracy in the predictive table is noted. From table 4, the overall  
 439 predictive accuracy for the present model is 68.9%, suggesting that the model was useful.

440 *Table 4*

Classification						
Observed	Predicted					
	Less than 2500	Between Sh.(2501-3750)	Between Sh.(3750-4000)	Between Sh.(4001-5500)	Above 5500	Percent Correct
Less than 2500	58	7	5	2	0	80.60%
Between Sh.(2501-3750)	22	16	4	1	0	37.20%
Between Sh.(3750-4000)	1	5	72	25	0	69.90%

Between						
Sh.(4001-5500)	1	0	21	70	6	71.40%
Above 5500	0	0	3	14	43	71.70%
Overall %	21.80%	7.40%	27.90%	29.80%	13.00%	68.90%

441

442 **How does the explanatory variable relate with the independent variable?**

443 After ascertaining how much the model is useful, I further subject this study to higher analysis to  
 444 spot out the relationship of individual independent variable to my dependent variable. Much of  
 445 my interest was in two types of tests. I used the likelihood ratio test to evaluate the relationship  
 446 between individual independent variable and dependent variable that is (gender and category of  
 447 amount spent, SOS and category of amount spent, YOS and category of amount spent and  
 448 finally, family level of income and category of amount spent). For sure, likelihood ratio test  
 449 presents the contribution of each independent variable to the model. From (Table 5) we can  
 450 conclude that the independent variables like gender, School of study, year of study and family  
 451 level of income are significant independent variables related to the amount spend for students  
 452 who spent low, moderately and extravagantly high amount.

453 *Table 5*

**Likelihood Ratio Tests**

Effect	Model Fitting Criteria			Likelihood Ratio Tests			
	AIC of Reduced Model	BIC of Reduced Model	-2 Log Likelihood		Chi-Square	df	Sig.
			of	Reduced			
Intercept	351.380	524.282	263.380 <sup>a</sup>		.000	0	.
GENDER	411.751	568.935	331.751		68.372	4	.032
SOS	366.424	476.453	310.424		47.045	16	.000
YOS	378.149	503.895	314.149		50.769	12	.010
FAMILYLEVELOFINCOME	741.674	883.140	669.674		406.295	8	.002

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

454 Secondly, I further employed the use of Wald test to evaluate whether the independent variable is  
 455 statistically related to differentiate between categories in each embedded binary logistic  
 456 comparison. From the table 5, the (Ksh. 2500) represents category j=1. It describes the risk

457 factors associated with the spending behavior of students. Female university students had an  
458 Odd Ratio (OR) =19.785(95%CI 3.213to 121.846), p=.001. SPAS had an (OR) =0.052(95%CI  
459 0.004 to0.695), p=0.025. SOA had an (OR) =0.007(95%CI 0to0.216), p=0.005. SON had an  
460 (OR) =0.003(95%CI 8.38E-0.5 to0.089), p=0.001. See (Table 7 from the Appendices)

#### 461 **Model building**

462 In order to obtain final model fit for the data, I decided to adopt forward elimination method  
463 where it begins by entering all terms specified on the stepwise list into the model. At each step,  
464 the least significant stepwise term is removed from the model until all of the remaining stepwise  
465 terms have a statistically significant contribution to the model. In this study all factors were  
466 significant thus the final model was generated having all the variables.

467 From table below, we can see that all the four factors under study are significant in explaining  
468 variation in the response variable (average amount spent). These factors are school, year of  
469 study, family financial level and gender at 5% level of significance ( $0.00 < 0.05$ ). Therefore I can  
470 conclude that gender, school, year of study and family level of income are the factors  
471 contributing to variation in average amount spent by student. See (Table 6)

472

473 *Table 6*

Multinomial logistic regression

Number of obs = 376  
 LR chi2(16) = 521.61  
 Prob > chi2 = 0.0000  
 Pseudo R2 = 0.4439

Log likelihood = -326.7064

Category of expending	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
<b>1</b>						
Gender	.736188	.5406756	1.36	0.173	-.3235167	1.795893
YOS	.8811861	.3082256	2.86	0.004	.277075	1.485297
SOS	-.3367515	.1732175	-1.94	0.052	-.6762516	.0027486
FAMILYLEVELOFINCOME	6.191551	.0002493	7.74	0.000	7.760011	4.623091
_cons	6.619915	1.434239	4.62	0.000	3.808858	9.430972
<b>2</b>						
Gender	.3908365	.553455	0.71	0.480	-.6939155	1.475588
YOS	.6468959	.3112867	2.08	0.038	.0367853	1.257007
SOS	-.1593144	.1767973	-0.90	0.368	-.5058307	.1872019
FAMILYLEVELOFINCOME	-5.393299	.7700515	-7.00	0.000	-6.902572	-3.884026
_cons	5.761189	1.461533	3.94	0.000	2.896638	8.62574
<b>3</b>						
(base outcome)						
<b>4</b>						
Gender	.3902355	.2913569	1.34	0.180	-.1808135	.9612844
YOS	-.2770881	.1487196	-1.86	0.062	-.5685732	.014397
SOS	-.3137886	.0909232	-3.45	0.001	-.4919947	-.1355825
FAMILYLEVELOFINCOME	2.522597	.7772832	3.25	0.001	.9991498	4.046044
_cons	-4.110492	1.679848	-2.45	0.014	-7.402934	-.8180499
<b>5</b>						
Gender	1.139214	.4883091	2.33	0.020	.1821461	2.096282
YOS	-.9013189	.2573913	-3.50	0.000	-1.405797	-.3968412
SOS	-.8936748	.1922993	-4.65	0.000	-1.270575	-.516775
FAMILYLEVELOFINCOME	6.165209	.9007092	6.84	0.000	4.399851	7.930566
_cons	-11.88556	2.145768	-5.54	0.000	-16.09119	-7.679931

474

475 **Model 1**

476 This model takes probability of success as spending an amount in less than Kh.2000 category  
 477 relative to spending an amount in above 3750 category;

478  $\log it(\pi) = 6.619915 + 0.8811861 Year - 6.191551 Familylevel$

479 From this model it can be seen that, having all other factors constant the odds of a student  
 480 spending an amount in less than 2500 category relative to the above 3750-4500 category  
 481 increases by 6.619915 times. The odds of a student spending an amount in less than 2500  
 482 category relative to the above 3750 category increases by 0.8811861 times for every unit change  
 483 in year of study of a student. Lastly, in terms of family level of income, the odds of a student

484 spending an amount in less than 2500 category relative to the above 3750-4500 category  
485 decreases by 6.199551 times for every unit change in family level of income of a student. Gender  
486 and School of study were excluded from this model because they are not statistically significant.  
487 See (Table 7). Family level of income has a stronger magnitude of effect on the spending  
488 behavior of students in this model.

#### 489 **Model 2**

490 This model takes probability of success as spending an amount in 2501-3750 relative to spending  
491 an amount in above 3750-4500 category;

$$492 \log it(\pi) = 5.761189 + 0.6468959 Year - 5.393299 Familylevel$$

493 From the above model 2, we can see that gender and school of study had no significant effect on  
494 the spending behavior of the students. From this model it can be seen that, having all other  
495 factors constant the odds of a student spending an amount in (2501-3750) category relative to the  
496 above 3750-4500 category increases by 5.761189 times. In terms of family level of income, the  
497 odds of a student spending an amount in (2501-3750) category relative to the above (3750-4500)  
498 category decreases by 5.393299 times for every unit change in family level of income of a  
499 student. This is a big effect to the spending behavior of the students. From the magnitude of  
500 coefficients family level of income has greatest influence on spending habit of an individual. In  
501 terms of year of study, the odds of a student spending an amount in (2501-3750) category  
502 relative to the above (3750-4500) category increases by 0.6468959 times for every change in  
503 year of study of a student. Gender and School of study was not significant in this model that's  
504 why I have excluded it in the model

#### 505 **Model 4**

506 This model takes probability of success as spending an amount in 2001-3750 category relative to  
507 spending an amount in above 3750 category;

$$508 \log it(\pi) = -4.110492 - 0.3137886 School + 2.52259 Familylevel$$

509 From this model, it can be seen that, having all other factors constant the odds of a student  
510 spending an amount in 4501-5500 category relative to the 3750-4500 category decreases by  
511 4.110492 times. The odds of a student spending an amount in 4501-5500 category relative to the



512 3750-4500 category decreases by 0.3137886 times for every unit change in School of study of a  
513 student. Lastly, in terms of family level of income, the odds of a student spending an amount in  
514 4501-5500 category relative to 3750-4500 category increases by 2.52259 times per unit change  
515 in family level of income. It also clear in this model that family level of income is the major  
516 effect to the spending behavior of university undergraduate students. Since gender of the students  
517 and the year of their study were not statistically significant, I excluded from this model.

#### 518 **Model 5**

519 This model takes probability of success as spending an amount in 2001-3750 category relative to  
520 spending an amount in above 3750 category;

$$521 \log it(\pi) = -11.88556 + 1.139214 \text{ Gender} - 0.9013189 \text{ Year} - 0.8936748 \text{ School} + 6.165209 \text{ Familylevel}$$

522 All the variable under study were statistically significant. This means that these factor had a  
523 considerable effect on the spending behavior of students. Having all other factors constant the  
524 odds of a student spending an amount in above 5500 category relative to the 3750-4500 category  
525 decreases by 11.88556 times. The odds of a student spending an amount in above 5500 category  
526 relative to the in 3750-4500 category decreases by 0.901389 times for every unit change in year  
527 of study of a student. In terms of gender, the odds of a student spending an amount in above  
528 5500 category relative to the above 3750-4500 category increase by 1.139214 times for every  
529 unit in gender. In terms of school, the odds of a student spending an amount in above 5500  
530 category relative to the above 3750-4500 category decreases by 0.8916748 times for every  
531 change in school of a student. Lastly, in terms of family level of income, the odds of a student  
532 spending an amount in above 5500 category relative to the above 3750-4500 category increases  
533 by 6.165209 times for every unit change in family level of income of a student.

#### 534 **Conclusion**

535 For sure, findings in this study are in line with the findings of other researchers in which their  
536 work have been cited. This study reveals that year of study, family financial level, gender and  
537 school are significant factors in explaining spending habits of students. These findings are in line  
538 with the previous researchers. Given that from this study students tend to spent more resources  
539 during the start of the semester and continue decreasing towards the end of the semester shown  
540 by the trend line fitted in chapter four, I agree by the (Sabri, M. F., & MacDonald, M., 2010).

541 From this study, different University students from different financial background have different  
542 spending behavior. As we can see from the generated multinomial models, family level of  
543 income has been identified to be the major determinant of students spending behavior. Even  
544 though year of study, school and gender is a contributing factor to different spending behaviors,  
545 family level of income takes the lead with largest coefficient and appearing in all the above  
546 models. Despite the fact that gender is one of the deterministic factors of financial behavior of  
547 students, this study contradicts a research conducted by Adrian(Furnham, 1999) who claims that  
548 gender is the major determinant of spending behavior. Students from higher financial  
549 background tends to spend more as compared to students from a poor background. This is  
550 because these students receive a lot of cash from their guardians or parents more than enough  
551 thus spending extravagantly. This is in agreement with my fellow researchers(Sabri, M. F., &  
552 MacDonald, M., 2010)

## 553 **CONCLUSION AND RECOMMENDATIONS**

### 554 **Conclusion**

555 The spending habits of college students help in providing insights on the mechanisms used by  
556 young adults. The results of this study show that there are clear patterns that have arose, which  
557 are in line with the findings indicated by other researchers on this subject. Conclusive evidence  
558 present of the fact that family financial background is a strong determinant of certain spending  
559 patterns. As highlighted by other researchers, (Sabri, M. F., & MacDonald, M., 2010), students  
560 who come from wealthier background tend to spend more money as compared to those from  
561 humble background. Not only is this further indicated in our study but it was also found that  
562 there is a larger difference between their spending habits.

563 In addition, in this study it was found that school of student was also a determinant of how  
564 students spend their resources. In school where financial courses are offered like school of  
565 business, tend to spent less amount than students pursuing other courses. This is an insight in  
566 which no researcher has ever established. This call for more studies to be done in this factor  
567 since this study only established its influence on spending habit. Furthermore, students in their  
568 first year of study were spending more compared to other students, followed by those in their  
569 final year. This can be due to the fact that first years have just entered stage of financial  
570 independence while fourth years have different sources of finances which can serve as a

571 supplement to the money given by their parents. The results of this study provide various  
572 inferences and policy suggestions that can contribute to the literature of the spending habit of  
573 college students.

#### 574 **Recommendation and Limitations**

575 Biasedness is inevitable in the study design. Participants were carefully selected via stratified  
576 sampling. However, students were asked to participate in the study based on demographic  
577 factors under study. Since demographic characteristics are at large focus in this study, it was  
578 crucial that those who participated in the survey came from a variety of combinations in school,  
579 gender, year of study and family financial level. As such, students were first asked their school  
580 prior to recruiting them to participate in the proposed study. Although simple random sampling  
581 without replacement was used within the strata (school) selection bias was inevitable. These  
582 intrinsic limitations that can be addressed in future studies.

583 This study fitted a multinomial logistic models some other models may be fitted and compare the  
584 results with the results obtain from this study. Fitting a different model might change  
585 significance of factors included in the model.

586 On the other hand, there is an issue on how the study was conducted. It cannot be completely  
587 assessed whether the explanatory variables are the factors with the confounding effects on the  
588 dependent variable. The issue, also known as reverse interconnection, indicates that there is a  
589 continual response loop to show if the explanatory variable has an impact on the response  
590 variable, or if this association exists in the contrasting direction as well. For instance, there is no  
591 way to completely determine whether the association exactly exists in the sense that average  
592 spending is affected by year of study, gender, school , family level of income, or if the opposite  
593 could happen. The study only considers the above factors there might be other factors which may  
594 be affecting average spending of students. Therefore future studies should focus on other factors  
595 believed to also influence spending habits. The scope of this study fails to take into consideration  
596 habitual spenders and how individuals of this kind may affect the results. Future studies on this  
597 subject should take into consideration types of spenders in order to compare findings and draw  
598 meaningful conclusions about financial practices these spenders exhibit. As more attention is  
599 being drawn towards studying this subject of spending habits of young adults, there is an  
600 increasing desire to understand the issue and the main reason contributing to development of

601 financial habits. It will be of great importance if the impact of formal education on spending  
602 habits of students in institution of higher learning. A little research has been done in this branch  
603 of a topic especially in African continent. Kenya is not exceptional and doing so could shed  
604 some light on methods that allow students to develop good financial habits. Most of the young  
605 people realized financial independence during their college years, therefore having no prior  
606 knowledge of experience may make them face a lot of difficulties in future. The scope and depth  
607 of studies can be extended to further analyze other variables that may have significant effects on  
608 the financial habits of college students. Demographic factors such as age, gender and family  
609 financial seem to be most commonly studied. Student spending habits should be studied before  
610 joining college in order to establish the trend in order to provide more insights since it will have  
611 be a reference for other studies on the same subject.

612

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655

656

657 **Appendices**658 *Table 7*

Parameter Estimates									
Category of Amount spent (Ksh)		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
Less than 2500	Intercept	-15.944	1.74	84.014	1	0			
	[GENDER=1(female)]	2.985	0.927	10.357	1	0.001	19.785	3.213	121.846
	[GENDER=2(male)]	0b	.	.	0	.	.	.	.
	[SOS=1(SPAS)]	-2.948	1.319	4.998	1	0.025	0.052	0.004	0.695
	[SOS=2(SOA)]	-4.998	1.769	7.982	1	0.005	0.007	0	0.216
	[SOS=3(SON)]	-5.901	1.779	11.008	1	0.001	0.003	8.38E-05	0.089
	[SOS=4(SESS)]	-4.332	1.667	6.751	1	0.009	0.013	0.001	0.345
	[SOS=5(SOB)]	0b	.	.	0	.	.	.	.
	[YOS=1]	-6.954	1.562	19.83	1	0	0.001	4.48E-05	0.02
	[YOS=2]	-8.47	1.59	28.37	1	0	0	9.29E-06	0.005
[YOS=3]	-3.717	1.302	8.154	1	0.004	0.024	0.002	0.312	
[YOS=4]	0b	.	.	0	.	.	.	.	
[FAMILYLEVELOFINCOME=1]	44.938	1719.588	0.001	1	0.979	3.28303E+19	0	.c	
[FAMILYLEVELOFINCOME=2]	21.075	0	.	1	.	1421833823	1421833823	1421833823	
[FAMILYLEVELOFINCOME=3]	0b	.	.	0	.	.	.	.	
Between Sh.(2501-3750)	Intercept	-17.252	1.826	89.244	1	0			
	[GENDER=1]	4.391	0.997	19.409	1	0	80.72	11.444	569.335
	[GENDER=2]	0b	.	.	0	.	.	.	.
	[SOS=1]	-3.456	1.323	6.829	1	0.009	0.032	0.002	0.422
	[SOS=2]	-4.811	1.752	7.543	1	0.006	0.008	0	0.252

	[SOS=3]	-5.679	1.785	10.12 3	1	0.001	0.003	0	0.113
	[SOS=4]	-3.777	1.653	5.22	1	0.022	0.023	0.001	0.585
	[SOS=5]	0b	.	.	0	.	.	.	.
	[YOS=1]	-5.952	1.559	14.56 8	1	0	0.003	0	0.055
	[YOS=2]	-7.06	1.575	20.09 6	1	0	0.001	3.92E-05	0.019
	[YOS=3]	-3	1.315	5.201	1	0.023	0.05	0.004	0.656
	[YOS=4]	0b	.	.	0	.	.	.	.
	[FAMILYLEVELOFINCOME=1 ]	43.78 5	1719.58 8	0.001	1	0.98	1.03687E+1 9	0	.c
	[FAMILYLEVELOFINCOME=2 ]	21.12 3	0	.	1	.	1491630778	149163077 8	149163077 8
	[FAMILYLEVELOFINCOME=3 ]	0b	.	.	0	.	.	.	.
Between Sh.(3750- 4000)	Intercept	0.933	1.741	0.287	1	0.592			
	[GENDER=1]	3.185	0.701	20.63 7	1	0	24.178	6.117	95.562
	[GENDER=2]	0b	.	.	0	.	.	.	.
	[SOS=1]	-4.387	1.106	15.73 8	1	0	0.012	0.001	0.109
	[SOS=2]	-3.948	1.296	9.274	1	0.002	0.019	0.002	0.245
	[SOS=3]	-3.585	1.372	6.826	1	0.009	0.028	0.002	0.408
	[SOS=4]	-1.918	1.268	2.29	1	0.13	0.147	0.012	1.762
	[SOS=5]	0b	.	.	0	.	.	.	.
	[YOS=1]	-4.651	1.196	15.11 5	1	0	0.01	0.001	0.1
	[YOS=2]	-4.846	1.203	16.21 4	1	0	0.008	0.001	0.083
	[YOS=3]	-2.642	1.12	5.566	1	0.018	0.071	0.008	0.639
	[YOS=4]	0b	.	.	0	.	.	.	.
	[FAMILYLEVELOFINCOME=1 ]	22.27	1719.58 8	0	1	0.99	4697123407	0	.c
	[FAMILYLEVELOFINCOME=2 ]	6.355	1.356	21.97 3	1	0	575.479	40.365	8204.52
	[FAMILYLEVELOFINCOME=3 ]	0b	.	.	0	.	.	.	.
Between Sh.(4001- 5500)	Intercept	3.329	1.284	6.719	1	0.01			

	[GENDER=1]	0.602	0.626	0.924	1	0.336	1.826	0.535	6.231
	[GENDER=2]	0b	.	.	0	.	.	.	.
	[SOS=1]	-3.139	1.033	9.226	1	0.002	0.043	0.006	0.328
	[SOS=2]	-2.633	1.201	4.809	1	0.028	0.072	0.007	0.756
	[SOS=3]	-1.908	1.112	2.946	1	0.086	0.148	0.017	1.311
	[SOS=4]	-1.657	1.179	1.975	1	0.16	0.191	0.019	1.923
	[SOS=5]	0b	.	.	0	.	.	.	.
	[YOS=1]	-2.983	1.073	7.726	1	0.005	0.051	0.006	0.415
	[YOS=2]	-3.759	1.102	11.63 4	1	0.001	0.023	0.003	0.202
	[YOS=3]	-2.321	1.039	4.996	1	0.025	0.098	0.013	0.751
	[YOS=4]	0b	.	.	0	.	.	.	.
	[FAMILYLEVELOFINCOME=1 ]	16.76 8	1719.58 8	0	1	0.992	19157423.9 2	0	.c
	[FAMILYLEVELOFINCOME=2 ]	3.662	0.591	38.38 2	1	0	38.954	12.228	124.093
	[FAMILYLEVELOFINCOME=3 ]	0b	.	.	0	.	.	.	.
a The reference category is: Above 5500.									
b This parameter is set to zero because it is redundant.									
c Floating point overflow occurred while computing this statistic. Its value is therefore set to system missing.									

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