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**MAASAI MARA UNIVERSITY**  
***SCHOOL OF SCIENCE***  
**DEPARTMENT OF MATHEMATICS**

**ONLINE BUYING BEHAVIOR AMONG MAASAI MARA UNIVERSITY  
STUDENTS USING LOGISTIC REGRESSION MODEL**

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**SB03/1462/2010**

**A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF MATHEMATICS  
IN THE SCHOOL OF SCIENCE IN THE FULFILMENT OF THE REQUIREMENT  
FOR THE AWARD OF BACHELOR DEGREE OF SCIENCE IN APPLIED  
STATISTICS WITH COMPUTING OF MAASAI MARA UNIVERSITY.**

**DECLARATION**

This written research project is my original work and has never been presented by any other person for examination in any other university.

Signature.....Date.....  
.....

Chacha Maroa Julius  
  
(SBO3/1462/2010)

**Supervisor**

Mr. Njuguna

Signature.....Date.....  
.....

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I would also wish to thank the entire university management for granting me the chance to undertake my degree course in this institution

## ABBREVIATIONS AND ACRONYMS

SPSS Statistical Package for Social Scientists

ANOVA Analysis of variance

MMU Maasai Mara University

## ABSTRACT

Primarily, the project has focused on finding out the Online Buying trends and behavior of Maasai Mara university consumers with an age range of 18- 25 years. The proposed primary objective of the study was further divided into secondary objectives with an aiming of finding detailed information on the research topic. Precisely, information regarding buyer's buying frequency, average spending, and famous product purchase was gathered. Since the objectives were quantifiable, a quantitative explanatory research approach was implemented. The research targeted 120 respondents that fall in different buying categories. Data was collected using questionnaires and focused group interviews, then coded for analysis. The questionnaire was constructed with well-structured questions that answer the set objectives. Convenient data collection and random sampling was used to identify respondents. Ever purchased was set as the dependent variable, and that was explained using the other independent variables. Further, data analysis was conducted using the SPSS software and STATA, where basic descriptive statistics, frequency tabulations, and cross tabulations performed to identify relationships. Additionally, ANAOVA and Logistic regression calculations were adopted in the analysis process. Further, respondents were categorized into three distinct categories namely Unsure Surfer, Mail Shopper, and Confident Online purchaser for easy discussion.

# CHAPTER ONE

## INTRODUCTION

Technological growth has various advantages, but online business is one unique milestone about it. Besides marketing, several organizations and firms are embracing social media and the technology platform to conduct their daily activities. Together with the introduction of convenient services such as electronic cards, the buying behavior of individuals has significantly changed in the past two decades. On one hand, consumers enjoy convenience and variety of service; while on the other producers can reach a bigger market without much cost. In light of this, the research aims to establish the type of trend in this new online market. Particular, it seeks to determine the factors that might keep or cost a venture its online market niche. However, it will not offer any research on which types of goods to invest on, but it only discusses why individuals prefer certain products over others.

Today, internet acts as a channel through which millions of people communicate, perform research, find entertainment and most recently buy and sell products and services. In fact, online shopping is one of the most popular activities that take place on internet. Here are some statistics to validate the above statement. In Kenya 20 million have access to the internet. Number of users accessing the web through mobile devices has almost doubled every year since 2009. There are various reasons of shifting the customers buying patterns towards online retail shops. The facility of comparing your product with competitive products on the basis of price, color, size and quality is one of the biggest benefits of online shopping. Moreover the product remains at its place even you purchase it. It looks hilarious but this is also one of the most significant reasons reported by the online shoppers. The other popular names for online shopping are virtual store, e-shop, web shop, internet shop, web-store and online storefront etc. These days Mobile commerce or m-commerce is also one of the popular means of shopping.

## **CHAPTER TWO**

### **Literature Review**

Online marketing has become a crucial platform of the electronic transaction in the globe, and it has changed how customers buy services and products. According to research done by Seng (2014), online shoppers benefit from this venture by having available services on a 24-hour basis, avoid queues at major stores, and enjoy time efficiency. However, a study by Shu-Hung et al., (2012), suggests that young online buyers prefer market sellers that mix the online platform and physical business approach. In this case, consumers tend to have little trust on online goods as they can be defective or substandard. On the same, the importance of offering consumers variety based on their demographic characteristic was discussed by Wen (2013). On the other hand Bhagat et al. (2105), argue that majority of producers have little concern for the purchasing power of customers. Whereas most consumers like to compare attributes such as quantity and quality before deciding on which good and service to buy, online platforms offer biased prices. Sometimes the prices favor a certain group and at times it might be too small to be trusted by the potential purchasers. Several researchers have been done concerning consumer behavior in the online market, but little attention has been put to establish the shopping dynamics sounding the youth, who spent a lot of time online. In this regard, a research gap exists between the general public consumer trend and youthful consumers, especially college students. Usha (2014) in his study points out that this research gap limits the generalization of findings from the public contexts to the college students' contexts.

Last three decades have seen a phenomenal growth of World Wide Web. A wide acceptance of internet technology in the field of business has changed the traditional retail format to the new form popularly known as internet shopping or online shopping. The internet is a platform that provides the customer with purchase characteristics as no other medium. There are certain characteristics which make internet a more convenient & attractive place to shop for consumers as compared to the traditional way of shopping, such as the facility to view and purchase products any time, visualize their needs with products, compare between different brands of products, discuss products with other consumers, option to pay on delivery etc.

Online-shopping is the process consumers go through when they decide to shop on the internet. The internet has developed into a new distribution channel (Hollensen, 2004) and the evolution of this channel, e-commerce, has been identified by Smith and Rupp (2003) to be the most significant contribution of the information revolution. Today, internet has developed into a highly competitive market and in



order to have an impact on customers and to retain them, it is the first step to identify certain influencing aspects when purchasing online, these can be regarded as factors. The proposed research will be focused on identifying & analyzing these factors. And Kotler, 2003; Wu, 2003). Personal characteristics are divided into Age and Life-Cycle Stage, Occupation, Economic Situation, Lifestyle, Personality and Self-concept (Armstrong and Kotler, 2003; Adcock et al, 1995; Hawkins, Best and Coney, 1995; Wu, 2003). Last but not the least psychological characteristics can be defined by Motivation, Perception, Learning, and Beliefs and Attitudes (Armstrong and Kotler, 2003; Wu, 2003).

These customer characteristics were studied specifically for the online customers. The characteristics were studied to segment the online consumer by analyzing:

1. The customer's demographics
2. Life patterns concerning Online Behavior, such as how much the consumer uses the Internet, & for what purposes.

Prior experiences have also been identified to be relevant for what Beliefs and Attitudes the customer has towards online shopping and are therefore also important for the research.

These are the customer characteristics that are relevant for this research and need to be identified in order to find out who the online customer is and what affects him when shopping online.

## **Purpose of the Study**

Although the Online Shopping behavior has become a significant part of the human behavior, little research has been done to identify the tailor made desires of particular age groups. Therefore, a substantial understanding of the varying needs can help online marketers and sellers customize their goods and services based on the potential purchaser's age group.

## **Objective of the Research**

With the rapid growth of the online market, the buying behavior and preference of different age groups is changing. Remarkably, online shopping is becoming an integral part of society, especially the youths. In this respect, the proposed research to be conducted on college students will try to find out the behavioral factors that influence online purchasing trends among college students.

## **General Objectives**

To determine the online buying behavior among MMU students

To determine the primary products and services categories preferred by consumers based on their demographic profile.

To establish the psychographic characteristics of online purchasers

To find out the average spending of online purchaser

## **Specific Objective**

To determine the online buying behavior among Maasai Mara university students.

## **Limitations of the study**

Most of the people are online buying illiterate

The whole idea will be expensive

## **Research Question**

Is there a significant online purchasing pattern among Maasai Mara university going students?

## **Hypothesis Formulation**

The study has focused on understanding the factors that influence online purchasing trends of university students. Thus, the aim was to determine whether the reasons are specific or non-specific and if correlated or uncorrelated.

The null hypothesis is defined as:

$H_0$ : The reasons that influence the online purchasing behavior of college students are uncorrelated and non-specific

On the other hand

the alternative hypothesis ( $H_1$ ) is defined as:

$H_1$ : The reasons that influence the online purchasing behavior of college students are correlated and specific

## **CHAPTER THREE**

### **Research Methodology**

The research proposes to adopt an explanatory and quantitative research design in the data collection procedure. Concisely, this is suitable for the research as it seeks to explain an individual phenomenon and offer a numeric explanation on the purchasing trends of college students. Secondary data from books and online sources will only be used to formulate the structured research questionnaire. Otherwise, primary data will be utilized in the analysis to make inferences and formulate the report. A pilot study will be done to establish possible challenges at the field and re-organize research instruments to fit the nature of the study sample.

The questionnaire will be divided into three main parts; the respondent's demographics, general purchasing trends and overarching perceptions when conducting online purchasing. Fundamentally, this will facilitate quick and efficient data analysis. The questionnaire shall have open, and close ended questions, and Likert Scale to ensure a comprehensive and unbiased response is achieved from the respondents. Besides the questionnaires, focused interviews will be adopted to get a more specific response from the respondents.

### **Sampling**

The sampling frame shall be all college students that will be divided into online and non-online shoppers. Since the interest is on online shoppers, the others will be ignored in the study, and then the respondents to be interviewed will be identified using simple random. The sampling frame will be resourced from the college administration, and then clustered with an aim of getting fifty respondents. Inclusivity will be achieved by applying a cluster sampling technique that will divide the shoppers into different shopping class namely Unsure Surfer, Mail Shopper, and Confident Online purchaser. More important, online students that have purchased ten or more goods and services online will be the only one included in the study.

### **Data Analysis and Expected Findings**

A quantitative data analysis will be used in answering the research question. In this case, the Average Amount spent is set as the dependent variable while the

purchasing frequency and the popularly purchased product are the independent variables. The questionnaire shall be coded and data input into SPSS data software. The coded data will be defined in the data view variable for convenient generation of findings and report writing. First, the primary analysis to be done include a general descriptive statistics to illustrate gender and age distribution in the data.

Secondly, a regression analysis will be done to compare the relationship between the independent and dependent variable. Further, to substantiate the underlying relationship between variables, cross-tabulations using the Chi-Square distribution will be conducted. Thirdly, ANOVA test shall be done to compare the means of the purchasing frequency and the popularly purchased goods.

### **SAMPLE SIZE ESTIMATION**

Sample size will be determined using *Yamane (1967,)* Sample size calculation formulae;

$$n = \frac{N}{1 + Ne^2}$$

Where;

n = Sample size

N=Population size

e= Level of significance at 95% confidence interval (5%)

$$\text{Therefore, } n = \frac{311}{1 + 311(0.05)^2} = 175$$

The design effect was estimated at 2.0 to compensate for the fact that a cluster sampling method was adopted and to adjust for within cluster variability.

Allowing for 10% non-response the sample size will be adjusted upwards to 193

Total number of the target population (Sampling frame) is 311. This is a finite population since the sampling frame is < 10, 000. Thus applying a finite correction factor  $(1 / (1+n/N))$  the calculated sample size changes as follows;

$$\begin{aligned}n_{fcf} &= n / (1+n/N) \\ &= 193 / (1+193/311) \\ &= 120\end{aligned}$$

Thus, the minimum number of participants required for the study was 120.

## **FITTING THE LOGISTIC REGRESSION MODEL**

This model is used to model binary outcome. The outcome variable in this study is have you ever purchased a product online.

The outcome variables will be coded as 1 or 0. For the case of ever purchased, yes will be coded 1 and 0 otherwise.

Since we have Y as the response variable and X as the predictor variables we have the below logistic regression model as:

;

$$Y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3$$

Y is the ever purchased variable

$\beta_i$  ;  $i= 1,2,3$  regression parameters

$x_1$  = site

$x_2$  = quality of good

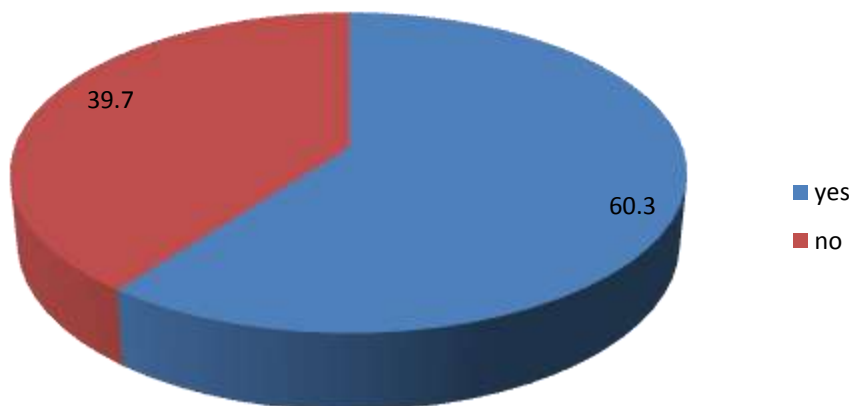
$x_3$  = source of money

## CHAPTER FOUR DATA ANALYSIS AND DISCUSSION OF FINDINGS

### Introduction

In this chapter I present the analysis of data collected. Discussion of the findings will also be discussed extensive Data analysis

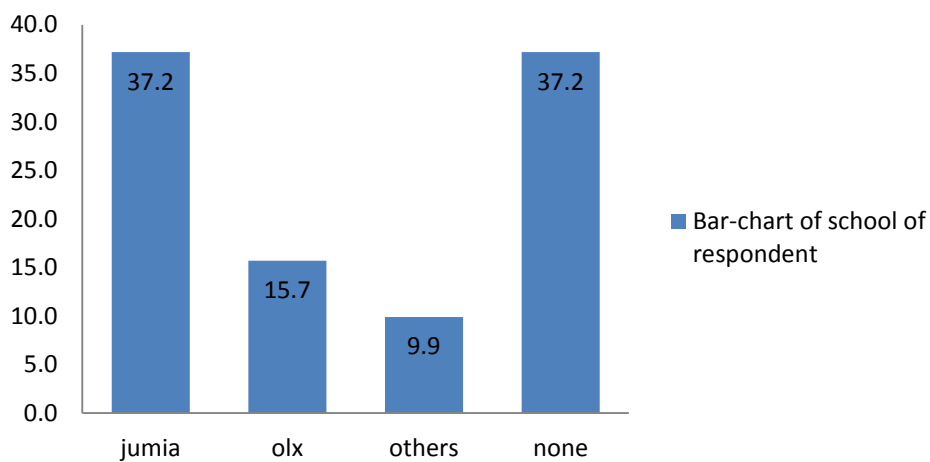
### Pie-chart of online purchases



60.3% of MMU student have embraced online buying while 39.7% have never purchased anything online. This is attributed to various reasons

1. Fear of conmen
2. Lack of information

**Bar-chart of site shopped by respondent**



37.2% online shoppers used jumia while the same percentage had never used any site to purchase any product. Olx had 15.7% while other online buying site had 9.9% .

**KIND OF GOODS PURCHASED IN RELATION TO GENDER**

|                         |             | gender |        |
|-------------------------|-------------|--------|--------|
|                         |             | male   | female |
|                         |             | Count  | Count  |
| kind of goods purchased | Clothes     | 10     | 12     |
|                         | Furniture   | 5      | 6      |
|                         | electronics | 23     | 15     |
|                         | Utensils    | 2      | 1      |
|                         | Never       | 27     | 20     |



Five categories were used gathering information about the preference of product purchased. In general men tend to shop more online than women at MMU. The category of clothes had more women shoppers than male. Also it was noticed that electronics had more shoppers than any other product online.

## MODEL

The logistic regression may be written as

$$\ln(y) = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3$$

|                             |               |   |        |
|-----------------------------|---------------|---|--------|
| Logistic regression         | Number of obs | = | 121    |
|                             | LR chi2(3)    | = | 141.80 |
|                             | Prob > chi2   | = | 0.0000 |
| Log likelihood = -10.367641 | Pseudo R2     | = | 0.8724 |

| Everpurcha~d | Coef.     | Std. Err. | z     | P> z  | [95% Conf. Interval] |
|--------------|-----------|-----------|-------|-------|----------------------|
| Site         | .3838097  | .8411257  | 0.46  | 0.648 | -1.264766 2.032386   |
| Source       | 1.585415  | .7402853  | 2.14  | 0.032 | .1344819 3.036347    |
| Quality      | 1.845119  | .7653706  | 2.41  | 0.016 | .3450198 3.345217    |
| _cons        | -11.21038 | 2.282608  | -4.91 | 0.000 | -15.68421 -6.73655   |

$$\ln(y) = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3$$

$$\ln(y) = -11.2104 + 0.3838x_1 + 1.585x_2 + 1.8451x_3$$

Where

$x_1$  = site

$x_2$  = source of money

$x_3$  = quality of product

y = having ever purchased online

from the model

LR  $\chi^2(3) = 141.80$

Pro  $\chi^2 = 0.0000$  hence the model fits the data well

Ho : the model is a best fit

P= 0000

Pcedo R2 =91.85% of independent variable regressed on dependent is explained by the model

( $\chi = 141.80$ ,  $df = 121$ ,  $p = 0.000$ )

Site was insignificantly required in the model

( $z = 0.46$ ,  $df = 1$ ,  $p = 0.648$ )

Source of money was significantly required in the model

( $z = 2.14$ ,  $df = 1$ ,  $p = 0.032$ )

Quality of good was significantly required in the model

( $z = 2.41$ ,  $df = 1$ ,  $p = 0.016$ )

Constant was significantly required in the model

( $z = -4.91$ ,  $df = 1$ ,  $p = 0.000$ )



Pro>chi 2 = 0.0000 hence the model fits the data well

Ho : the model is a best fit

P= 0000

Pcedo R2 =87.12% of independent variable regressed on dependent is explained by the model

(chi = 141.61, df = 121 ,p = 0.000)

Source of money was significantly required in the model

(z = 2.44, df = 1, p = 0.015)

Quality of good was significantly required in the model

(z= 3.22, df=1 , p= 0.001)

Constant was significantly required in the model

(z= -4.91, df=1 , p= 0.000)

Hence the model was fit.

## CHAPTER FIVE

### Conclusion

This research paper on Online buying behavior among MMU students using logistic model our objective was online buying behavior among MMU students. We discovered that ever purchased significantly depend on the quality of good and the source of money. Lady's tend to buy clothes more than men online. The current study is descriptive in nature and it has made an attempt to understand the behavior of MMU consumers towards online shopping. Although statistical significance of various parameters has not been examined but the generalized results obtained through data analysis has given clear indication of increasing significance of online stores in the life of Kenyan people. The e-stores are frequently visited by the shoppers. The ease and convenience provided by these stores for 24/7 has made very easy shopping for consumers worldwide. The analysis discussed in the above section has documented that the Indian customers are also getting addicted to the online shopping and they do like various features of online shopping as by rest of the world. But the statistics available has shown that Kenyan market is still not a fully developed market for e-tail stores. There is huge scope of web-stores in various areas and in almost all the segments. The young population is the biggest attraction of this industry and they may contribute substantially to the growth of online shopping in Kenya. The majority of internet users are youngsters, the majority of goods and services demanded are related to only this segment. Travel planning is one of the biggest services used by Kenya online shoppers. The present study has several implications for business strategists. Considering the empirical evidences of the present study it can be concluded that

### Recommendations

1. The e-commerce market has a great potential for youth segment. If the demographic features are considered carefully then it can be easily identified that maximum number of respondents of online shopping are lying in age group of 18-25 years. There is wide mismatch in this segment compared with the global market therefore the e-commerce companies in line with manufacturers and service providers should target this segment for rapid future growth of their business.
2. The buying behaviour of youth can be elaborated through findings obtained through survey. By focussing on various factors identified in this study, the

corporate can make their marketing strategies in better way. It will help to convert their potential customers into active customers. By improving the after sales services, providing more secured payment options, timely delivery of the goods with better packaging can further boost the demand of various products and services through web stores.

3. The market segments like toys, flowers and house wares must be targeted by the marketers on through e-tail penetration. And the market for other products and services must be expanded through more awareness among the customers.

4. As many people (approx. 21 percent of sample) has shown fear of unsecured transactions in online payment therefore the e-stores specifically mention about the security of transactions of their e-stores which will increase the faith of customers for online shopping.

5. Further the strategist can also focus on the internet penetration plan of the government to understand the future scope of size of online shopping in Kenya companies

### **Limitations of the study**

Student tend to fear the online market due to con men

## Questionnaire

I am Chacha Maroa Julius a 4<sup>th</sup> year student taking BSC Applied Statistics with Computing doing a project on online buying behavior among Maasai Mara University students. Your response and cooperation will be highly appreciated all details obtained are private of this study.

### **Personal Details**

1. Gender Male   
Female
2. Age
3. Year of study 1.  2.
4. School Science   
Business and Economic   
Education   
Natural Resources   
Art
5. Have you ever purchased an item online  
Yes   
No
6. How often do you purchase online  
Weekly   
Monthly   
Yearly   
Never
7. How many items have you ever purchased online  
1-5   
5-10   
10 and Above   
Never
8. Which kind of goods do you shop online  
Clothes   
Furniture

Electronics

Utensils

9. Have you ever window-shopped online

Yes

No

10. What is your greatest fear in online purchasing

Conmen

Lack of information

Quality of product

11. Which sites do you know that does online sales

12. What was the quality of the good you bought

High

Medium

Low

13. What is the source of money you use to buy online goods and services

Family

Helb

Personal jobs

14. Have you ever considered committing an illegal act to finance online buying

Yes

No

15. Do you see online buying going to greater heights in future

Sure

Slightly sure

Neutral

Never

16. What do you think should be done to online buying to make it more successful

Advertisement

Offers

Promotion

News letters



17. Who introduced you to online buying website

Family

Internet

Friends

Advertisement

18. How much did you spend online

-----

**THE END**



## DATA MANAGEMENT

Quantitative data collected in hard copies (questionnaires) were double entered into a computer database designed using Microsoft-Access application. File Back-up was performed regularly to avoid any loss or tampering. Data cleaning and validation was performed to achieve a clean dataset that was exported into a Statistical Package format (SPSS). All electronic files were stored in a flask disc. A clean dataset (SPSS file) was stored in a computer hard drive for analysis.

Qualitative data were accurately transcribed into Microsoft-Word format. All the emerging themes were coded and latter analysed.

All the filled questionnaires and interview guides were properly kept in lockable drawers for confidentiality.

## Budget

| <b>Item</b>                  | <b>Number</b> | <b>Unit Cost<br/>(Ksh)</b> | <b>Estimate (Ksh)</b> |
|------------------------------|---------------|----------------------------|-----------------------|
| Travelling                   | 3             | 700                        | 2100                  |
| Printing proposal material   | 2             | 300                        | 600                   |
| Purchase of internet bundles |               | 1000                       | 1000                  |
| Stationary                   |               | 1400                       | 1400                  |
| Questionnaires               | 240           | 5                          | 1200                  |
| Total                        |               | 3405                       | 6300                  |

## Work plan

| <b>Activity</b>              | <b>Resources</b>                        | <b>Time frame</b> |
|------------------------------|---|-------------------|
| Obtaining data               | Questionnaires                          | Dec 2015          |
| Creation SPSS data templates | One Laptop                              | Jan 2016-Feb 2016 |
| Data Analysis.               | Laptop, SPSS, MS Excel and SAS Packages | February 2016     |
| Write a report               | Laptop and stationery.                  | March 2016        |
| Presentation of the report   | Laptop and flash disk                   | April 2016        |

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