



UNIVERSITY OF NAIROBI
SCHOOL OF COMPUTING AND INFORMATICS

**A FRAMEWORK FOR ADOPTION OF WEB 2.0 TECHNOLOGIES FOR
TEACHING AND LEARNING IN SECONDARY SCHOOLS: CASE OF
NAIROBI COUNTY**

A Research Project Submitted in Partial Fulfillment of the Requirements for the
Award of Degree of Masters in Information Systems, University of Nairobi School
of Informatics

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Declaration

I, the undersigned, declare that this project is my original work and that it has not been presented in any other university or institution for academic credit.

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Dedication

This research project is especially dedicated to my parents, Father, Lucas Clevens Oluoch and Mother, Dorine Atieno Oluoch for their prayers, encouragement and unending support both morally and financially to this day, and to all my siblings, Mourine, Collins, Judith, Clevens and Kevin and my niece Shenaz. Thank you all.

Acknowledgement

First and fore most I would like to thank the Almighty God for his Mercies and countless blessings that has enabled me to accomplish this task successfully. All thanks goes to him.

Secondly, I would like to express my sincere gratitude to my supervisor Mr. Joseph Ogutu for accepting to supervise this project and for his support and guidance in accomplishing this work. I wish also to thank the project panelists of Prof Elijah Omwenga, Dr Daniel Orwa and Dr Elisha Abade for their in-depth engagement, constructive criticism and useful insights that led to an acceptable successful work.

Lastly, I also like to take this opportunity to thank all those who offered me any kind of support during my study especially my colleague Mrs. Irene Boto and Mrs. syprine Okumu. Thank you and May God bless you all.

Abstract

Web 2.0 technologies is a new concept that is gaining acceptance in Kenya just as it has been in the developed Nations, as such this study was conducted in order to gain better understanding of this technology as a teaching and learning tool. In line with this problem, no study had been carried out to evaluate the contribution of social media and the other web 2.0 technologies in teaching and learning process and particularly from the perspective of teachers in Kenya secondary schools. Therefore, the overall objective of the study was to use the UTAUT model in developing a web 2.0 technology adoption model that can be used in Instruction delivery.

In the study Purposive sampling was used to select seven schools that best represented the purpose of the study. The schools select were already using one form of technology in teaching and learning. This enabled a quantitative data to be obtained by use of a questionnaire since a questionnaire was easy to administer, offered convenience to respondents and it also saved time and money during its construction process and data collection.

The findings revealed that all the four constructs were strong Predictors of teacher's behavioral intentions to accept the usage of web 2.0 technologies within Nairobi county secondary schools.

The research addressed the effects of Usefulness for performance expectancy, Competency for Effort expectancy, Peer influence for Social Influence and Internet connectivity for Facilitating Conditions as factors that affect behavioral intentions to adopt web 2.0 technologies in Teaching and learning in Nairobi County secondary schools. Four hypotheses were tested and all the tested hypotheses were Not Rejected. This enabled the validation of the proposed model and hence satisfying a key objective of proposing a web 2.0 adoption model based on the data obtained from the study.

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CHAPTER ONE

INTRODUCTION

1.1 Background

The usage of Web 2.0 technologies in education is a new idea which is still under development. Even though there exist a massive opportunity in this form of communication, the resolution by the education stakeholders to intensively pursue and incorporate this new form of technology into education especially in secondary schools is still deficient.

The secondary schools that have instituted technology in teaching and learning use computers in formal locales such as the traditional computer laboratories and to a large extent the classrooms. However various studies have proved that learning do effectively take place in other areas apart from the traditional settings, Holzinger, et al, 2006 sites incidental learning which is learning that takes place without intent to learn. The incidental learning is mostly realized by teenage students who may easily acquire new knowledge in stress free environments without being tied in a particular location. This is greatly achieved by use of mobile devices which has the potential to greatly expand the learning scenarios in the country. Holzinger et al, 2007 defines the combination of e-learning and mobile computing as mobile learning (m-learning). This is considered the new front in which web 2.0 technologies can be of immense importance in adopting web 2.0 technologies in education systems. Currently the developing world such as Kenya does not possess the mobile technology which includes adequate and affordable hardware and software which can comfortably support an array of web 2.0 technologies in the available mobile devices.

In the past five years the internet usage in Kenya just like in most of the developing countries has been rapidly growing. The quarterly statistical report from the communications commission of Kenya (CCK) of January –March 2013 indicates that the mobile Telephony penetration has reached 75.8% of the population; this has resulted into a total mobile traffic of 7.3 Billion Minutes in voice traffic. In Internet and data segment the number of subscription has attained 49.2% this is a clear indication that more and more people in Kenya continue to access the

internet via the mobile phones. The Kenya ICT Board Monitoring and Evaluation Survey Results 2011, also indicates encouraging result pertaining the general usage of internet in the country and factors affecting its spread. The report indicates that Accessing internet is largely done from mobile phones, either internet-enabled handsets (80%) or smart phones (15%) while A significant portion of PC usage (desktop or laptop) is dedicated to accessing the internet that is Desktop PC 71% and Laptops 34%.

The most important section of this report indicates that about 51% of young people of between the ages of 15 years to 35 years tend to access most of their internet activities via mobile phones the activities they most engage in are web browsing and access to social networking sites. This results coupled by the confidence level showed by people in using the internet which was reported to be at 80% will make it easy to propel the acceptance of web 2.0 in teaching and learning. Therefore the adoption of web 2.0 activities in education will lead to a shift from the teacher centered delivery of information to an interactive learner centered who should be participative users and generate their own content as they learn. This development should be encouraged even as the challenges associated with privacy and security that arouse from using web 2.0 technologies are confronted and addressed.

1.2 Problem Statement

In Kenya the ministry of education has shown commitment to the improvement of secondary school education, and through the Kenya institute of curriculum development (KICD) it has reviewed the learning curriculum so as to make it relevant to the needs of the country. This has led to the introduction of various ICT technologies in education that aid in improving instruction delivery by teachers and learning environment to students. However, in line with this no study has been carried out to evaluate the contribution of social media and the other web 2.0 technologies in teaching and learning process and particularly from the perspective of teachers in Kenyan secondary schools. Web 2.0 technologies are an increasingly growing educational platform and it is proper for all the education stakeholders to study their impact in teaching and learning process. Therefore, in response to this problem, the study proposes to use an improved

UTAUT model to measure the perception of teachers in accepting the use of web 2.0 technologies in teaching and learning process in Secondary schools in Nairobi County.

1.3 Research Objectives

The overall objective of this study is to use an improved UTAUT model to measure the intention of teachers in integrating Web 2.0 technologies in teaching, learning and assessment. The specific objectives are:

1. To establish the teachers' perspective in integrating web 2.0 technologies in secondary schools teaching and learning.
2. To determine the extent to which Usefulness for performance expectancy, Competency for Effort expectancy, Peer influence for Social Influence and Internet connectivity for Facilitating Conditions constructs can predict the acceptance of web 2.0 technologies in teaching and learning.
3. To propose a web 2.0 adoption model based on the data obtained from the study.

1.4 Research Questions

1. What factors would affect the perception of teachers in integrating web 2.0 in teaching and learning.
2. What is the effect of Performance Expectancy, Effort expectancy, Social influence and Facilitating Conditions constructs in predicting the perception of teachers in accepting web 2.0 technologies.
3. Is the UTAUT model an appropriate model in evaluating the integration of web 2.0 in teaching and learning?

1.5 Purpose of Study

The purpose of the study was to test the four constructs in UTAUT model on how they affect the intention of Teachers in Nairobi County secondary schools in accepting the use of web 2.0 technologies. The proposed model was based on relevant technology acceptance literatures, but the UTAUT model proposed by Venkatesh, et al. 2003 was the chosen theoretical foundation. Even though UTAUT model was not able to fully address the unique context of web 2.0 technologies acceptance, the study related to other studies which had used the extended UTAUT model. The study also sought to determine as to what level does constructs as proposed by Venketash et al. 2003 in the UTAUT model did influence the Nairobi County's teacher's intention to adopt the use of web 2.0 technologies in teaching and learning.

1.6 Significance of Study

In Kenya a new breed of learners is coming up Fisher et al, 2007 refers to them as the “net generation” while Prensky , 2001 calls them “digital natives” this group is known to have a huge affinity for mobile technologies for accomplishing tasks in communication, business, banking, entertainment and educational. Muyinda, 2010.

The study therefore was an effort to tap into the digital learning style of ‘digital natives’ generation. The study also has significance to all education stake holders in that the results obtained from this study could be used by teachers to come up with new and improved ways of instruction delivery. Students could also use the results to explore ways by which web 2.0 could be used in social and out of classroom activities to advance education.

Institution administrators may also find the results of this study useful in that they may use it to establish policies that regulate the adoption, usage and acceptability of web 2.0 technologies in education. This study may also be important to future research projects that may want to analyze the effects of web 2.0 demographically in order to understand how different group of students are affected by its use.

1.7 Assumptions

The assumptions made in this study were that all the respondents are computer literate and they have frequent access to internet. The results obtained from the sample population were assumed to be indicative of all the other teachers in all other parts of the county.

1.8 Limitations

Due to a limited number of teachers that are directly using web 2.0 technologies the study was conducted in schools that have already adopted one form of technology in teaching and learning.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter discusses web 2.0 technologies and its application in education as an instructional tool. The chapter will also look at two main adoption theories which are UTAUT and TAM in order to look at the choices to be made when accepting or rejecting an innovation and the extent to which the innovation is used.

The literature review begins with the development of web 2.0 technologies, its uses as instructional tools.

2.1 Web 2.0

Web 2.0 is a revolution on how the web is used even though it is considered by other users as a technology bubble. The definition of the term depends on who is asked. A web technologist will give a different definition to a science student or a professor in social sciences. The Term web 2.0 was coined in 1999 by Darcy DiNucci and it was popularized by Tim O'Reilly at the O'Reilly Media INC, in a Web 2.0 conference in late 2004. This company is famous for its technology-related conferences and high quality books. In popularizing the term the team wanted to capture the feeling that the web is developing regularly with new and exciting applications together with sites of different kinds. Anderson 2007.

There exist a number of technologies that comprises web 2.0 which are currently being applied in education. As noted by Anderson, 2007 these are not really technologies as such, but services and user processes built using the building blocks of other technologies and open standards that underpin the Internet and the Web usage. Many of which have been in service for a long time. Some of the common technologies in use include; Wikis (from the Hawaiian wiki, to hurry, swift) this is a collaborative Web site whose content can be edited by anyone who has access to

it. The best example of a wiki in use today is the Wikipedia. Blogs, Blogs refers to a simple webpage consisting of brief paragraphs of opinion, information, personal diary entries, or links, called posts, arranged chronologically with the most recent first, in the style of an online journal, and finally social networks.

2.2 Web 2.0 as instructional Tools

Since the inception of the internet the education stakeholders have used many internet tools to enhance teaching especially outside the classroom. By using Web 2.0, learners can be encouraged to use their creativity and collaboration skills in working with their peers Fong, 2011

As Instructional tools the Wiki would include quick and informative website publishing, collaborative website posting, student assignments with peer review capabilities, problem solving, focused discussions, interdisciplinary projects amongst students. Weblogs could also be used to improve students' critical thinking ability, literacy skills and their ability to use the Internet for research purposes, they allowed for instant publishing, sharing and collaboration with other students. Oravec, 2002, Ullrich, et al, 2008 experimental study explains why web 2.0 is good for learning and research. Their study demonstrates that the services offered by web 2.0 indeed stimulate active participation among learners. The findings indicate that micro-blogging provides a number of possibilities and benefits which differ from the standard classroom interaction.

In a study regarding the use of Facebook (An example of asocial network) it was noted that many students have Facebook accounts to which they visit daily to keep tabs with their postings and of other users who in most cases are their peers. This tool enables students with a particular interest to form a group within which they can exchange ideas freely over the internet. Fong et al, 2010.

An elaborate experimental study that explored the relationship between learning styles and web 2.0 uses showed a significant correlation coefficient between learning styles and web 2.0 use. Selwyn, 2007. The result of the study revealed that students found web 2.0 tools to be easy to use

and are confident in using online community tools and video sharing applications. Facts generated from the correlation analysis indicate that learners were more comfortable in deciding which of the web 2.0 applications to use based on social view point.

Even though the Education institutions may facilitate the implementation of web 2.0 technologies, the teachers and to some extent the students do play a major role on deciding whether or not to accept the use the new technology. They must understand the technology acceptance process fully so that they are able to able to identify technologies with the best instructional methods and to determine factors that affect the use of various web 2.0 technologies in instruction delivery. In coming up with a solution to this problem the UTAUT model was seen to be the appropriate tool

2.3 Relevant Models

2.3.1 Technology Acceptance Model (TAM)

TAM is an adaptation of the Theory of Reasoned Action (TRA) which was developed by Davis 1989, TAM, is heavily influenced by Theory of Reasoned Action which helps to explain human adoption behavior from a social psychological perspective Theory of Reasoned Action was developed by (Fishbein & Ajzen, 1975) and it is widely accepted and key in human behavior research. The goal of the theory is to understand and predict an individual's behavior by assessing the core variables of attitude, behavioral intention, and subjective norm. Subjective norm is an individual's perception that people relevant to them believe that they should or should not perform a behavior (Venkatesh, et al., 2003). TAM is considered to be more specific to new technologies than is TRA for it proposes a theoretical model to predict the acceptability of a technology and to identify modifications needed in order to make the system acceptable to users. TAM is considered one of the most robust and notable technology acceptance models.

The two fundamental variables identified by TAM which replaces many of TRAs attitude measures for determining an individual's Behavioral intention to use technology are perceived

usefulness and perceived ease of use. Davis, 1989 defines perceived usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance". Perceived ease of use is the "degree to which a person believes that using a particular system will not be difficult" Davis, 1989

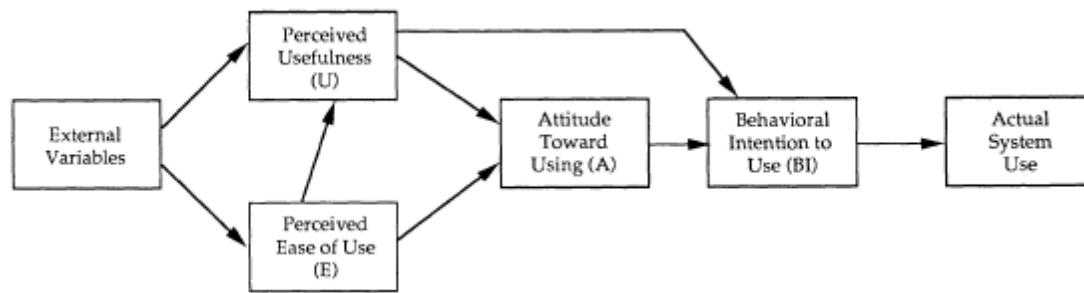


Figure 2.1: TAM Model Davis, 1989

TAM theorizes that an individuals' behavioral intention determines a system's use; behavioral intention is jointly determined by perceived usefulness and an individual's attitude toward using the new technology. The attitude/behavioral intention relationship TAM represents suggests that "all else being equal, people form intentions to perform behaviors toward which they have positive affect" Davis, et al., 1989. Understanding of user beliefs regarding a technology is important since they may influence acceptance and usage. TAM also suggests that interventions such as technology design and user training can alter user beliefs. Davis et al., 1989 notes that the main goal of TAM "is to provide an explanation of the determinants of computer acceptance that is general, capable of explaining user behavior across a broad range of end-user computing technologies and user populations" TAM proposes that the two theoretical variables, perceived usefulness and perceived ease of use on the individual level, are determining factors on an individual's acceptance of a new technology Davis, et al., 1989.

Even though TAM was not specially developed for the Education sector, it has received varied support from researchers in education. Therefore in this study, TAM has the ability to address

diverse user population and technology settings in secondary education. Both perceived usefulness and perceived ease of use is expected to have a significant impact on a user's attitude toward using Web 2.0 technologies. The Attitude towards using and perceived usefulness will determine the Behavioral intentions to use Web 2.0 technologies. Davis, 1989, Taylor and Todd, 1995 assert that Behavioral Intention is the strongest predictor of actual use. Therefore it is assumed that once a user decides or intends to use the system, they will eventually use it.

2.3.2 TAM 2

TAM has received criticism on the assumption it makes that; behavioral intention is a predictor of use. Salovaara & Tamminen, 2009 point out that though a technology may be initially accepted by a user, it may later abandoned due to factors beyond their control. Salovaara and Tamminen, 2009 assert that TAM is not sensitive to different user contexts. The technologies studied under TAM have been described by Venkatesh et al, 2003 as relatively simple, individual-oriented information technology as opposed to more complex and sophisticated organizational technologies that are of managerial concern." In order to improve the strength and address the limitations of TAM, Venkatesh and Davis, 2000 extend TAM to incorporate social influence and processes such as subjective norm, voluntariness of use, relevance, results demonstrability, output quality and perceived ease of use. These processes explain the effects of determinants on perceived usefulness and behavioral intention.

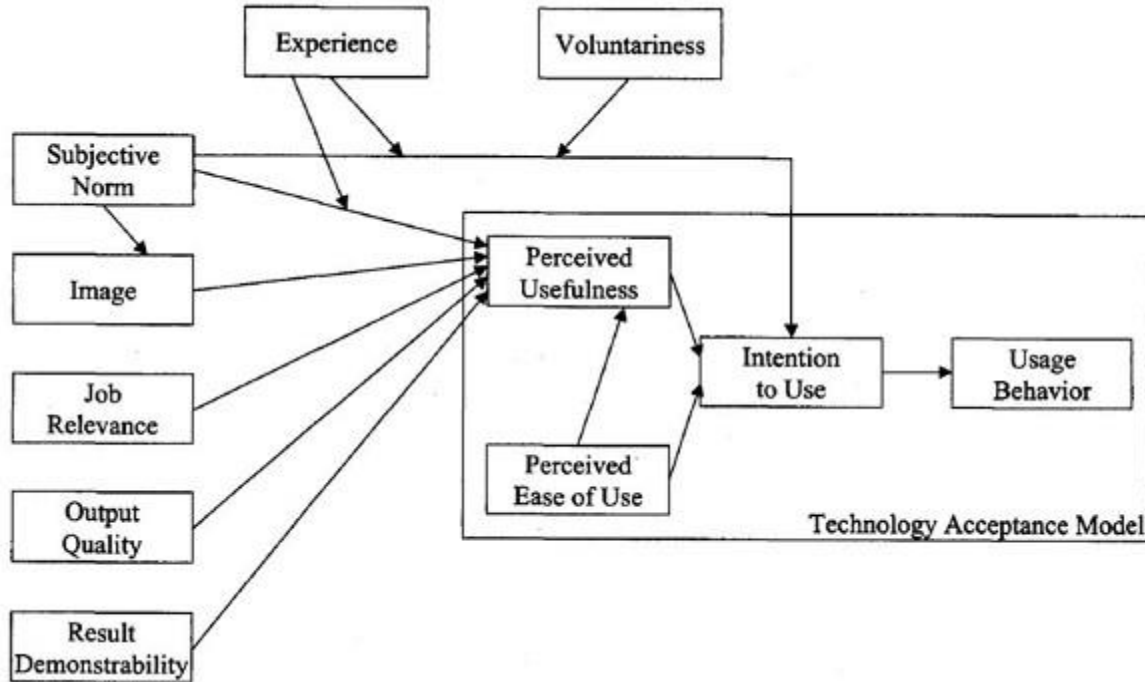


Figure 2.2: Technology Acceptance Model 2 (TAM 2)

(Venkatesh & Davis, 2000)

The determinants of perceived usefulness in TAM 2 are subjective norm, image, job relevance, output quality, result demonstrability, and perceived ease of use. Two identified moderators are experience and voluntariness. Unlike TAM, TAM 2 makes a distinction between voluntary and mandatory usage. Researchers such as Hartwick et al., 1994 suggested that usage intentions vary even when a change is organizationally mandated. In addition, TAM 2 considers that mandatory system acceptance approaches appear less effective over time than social influence Stam, et al., 2004. Fishbein et al., 1975 Describes subjective norm as an individual's perception that the majority of those who are important to them believe they should or should not perform a certain behavior. TAM 2 theorizes that in a mandatory setting, the direct compliance-based effect of subjective norm on an individual's behavioral intention is above that of perceived usefulness and perceived ease of use Lee, 2011. This is considered not to be the same in case of voluntary system usage settings. Voluntariness of use is the level to which users can choose to use a system. TAM 2 also suggests that image will positively influence subjective norm. Image is defined as the extent to which individuals believe the use of a new technology will increase their social status within a setting or how well others perceive them. Job relevance is a person's

perception of the degree to which a system is applicable to his or her job Venkatesh, 2000. TAM 2 also suggests that because the best perception of what is needed to successfully complete a task is with the users, this model will provide them with a clear understanding of how useful a technology is in completing tasks (Venkatesh, 2000).

In this study Perceived usefulness as represented in TAM 2 is a function of subjective norm, image, job relevance, and output quality and result demonstrability. Subjective norm is an individual's perception on whether other people important to them think that they should adopt or start using web 2.0 technologies, image is considered to be the level to which the use web 2.0 technologies is expected to enhance the teachers status in knowledge delivery, job relevance is considered to be the teachers perception on how Web 2.0 technologies is relevant in teaching and Learning, output quality is the teachers perception on how well the technology enables them to perform their tasks well, and finally result demonstrability is credible evidence out of the perceived results of using web 2.0 in teaching and Learning.

2.3.4 Unified Theory of Acceptance and Use of Technology

The empirical study was developed by Venkatesh, Morris, Davis and Davis, 2003. The study adopted a set of determinants and moderators that impacted on the intention by people to use information technology from eight outstanding models. The eight models are: (1) Theory of Reasoned Action (TRA), (2) Technology Acceptance Model (TAM), (3) Motivational Model (MM), (4) Theory of Planned Behavior (TPB), (5) Combined Technology Acceptance Model and Theory of Planned Behavior (C-TAM-TPB), (6) Model of PC Utilization (MPCU), (7) Innovation Diffusion Theory (IDT), and (8) Social Cognitive Theory (SCT) Venkatesh, et al., 2003. As an underlying framework, Venkatesh et al, 2003 conceptualized User Acceptance of Information Technology (UTAUT) as a unifying view of all the models.

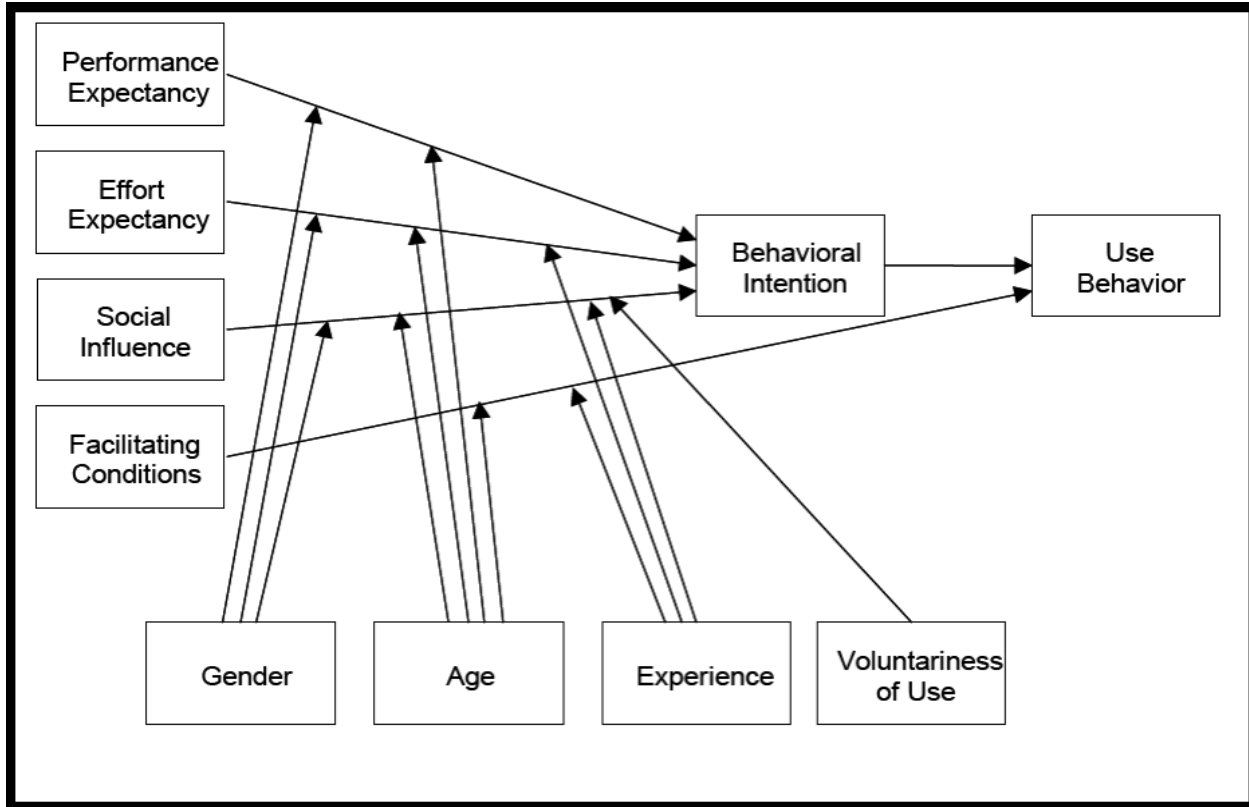


Figure 2.3 UTAUT Model (Venkatesh, 2003)

In formulating the model, critical assessment of the eight models were made by the researchers, ensued by the formulation of four principal determinants of intention and use the determinants were performance expectancy, effort expectancy, social influence and facilitating conditions. Four moderators were also developed for key relationships these were gender, age, experience and voluntariness of use. Venkatesh et al, 2003 sampled for heterogeneity across technologies, industries, business functions, and nature of use (voluntary vs mandatory) to test the model. The empirical validation of UTAUT in the longitudinal study Venkatesh et al, 2003 found the theory to account for 70% of variance in usage intention. Studies have shown that previous technology acceptance models such as TAM can only successfully predict the acceptance of a new technology in roughly 30% to 40% of cases Venkatesh and Davis, 2000. Moreover, UTAUT has the advantage of including a distinction between mediating and determining factors.

UTAUT is a relatively new Model and it needs further studies to replicate findings, validate its measures, and validate its strength Straub, 2009. Even though UTAUT has been validated in ensuing studies, there are still areas open for further research to address technology that may fall

within the 30% unexplained acceptance Baron, Patterson and Harris, 2006. Follow-up studies in recent years still portray the robustness of the model. Yu, Tao and Yang, 2007 used UTAUT to explore the behavior of 3G mobile communication users, and found that three of its constructs, performance expectancy, social influence and facilitating conditions were significant in predicting the behavior of users. A study by Alawadhi and Morris, 2008 on the use of UTAUT model in the adoption of e-government services in Kuwait also validated three key factors of the model as predictors of intention to adopt the service. Research study by Oshlyansky, Carins and Thimbley, 2007 validated UTAUT tool cross-culturally. These studies point to the effectiveness of the model.

Based on the insight derived from Venkatesh et al, 2003 theorizing and empirical analysis, and the recent validation of the key constructs of UTAUT, This study will utilize the four of UTAUT constructs (performance expectancy, effort expectancy, social influence and facilitating condition). We will improve upon Venkatesh et al, 2003 framework to develop a Basic web 2.0 technology (Social Media) Model of Teachers' usage of Web 2.0 technology (social media) for educational purpose.

2.3.4 Justification for UTAUT

TAM and UTAUT are easily applicable through the use of quantifiable variables for understanding determinants of adoption. The reason TAM does not fully meet the needs of this study is that it is not sensitive to different use frameworks. Lee et al, 2003, question the research approach that has been used in TAM where many studies base their measures on self-reported use and users who have barely interacted with the system. UTAUT Therefore tries to address many of these issues with the four variables which are Performance Expectancy, Effort Expectancy, social influence and facilitating condition. And that is why UTAUT has been selected as the theoretical framework for this study. This research tries to address the call for further validation of UTAUT Straub, 2009.

2.4 Empirical Review

The research framework for this study was derived from existing frameworks that have used the UTAUT adoption model in various web 2.0 technologies. The following studies were reviewed so as to develop the conceptual framework.

2.4.1 The Usage of Social Networks in Educational Context, Sacide Güzin Mazman, and Yasemin Koçak Usluel (2009)

In this study four constructs that include, social factors, perceived ease of use, perceived usefulness and innovativeness are determined as direct constructs that affect the adoption process. Facilitating conditions, image, subjective norms and community identity were the moderating conditions for the direct factors.

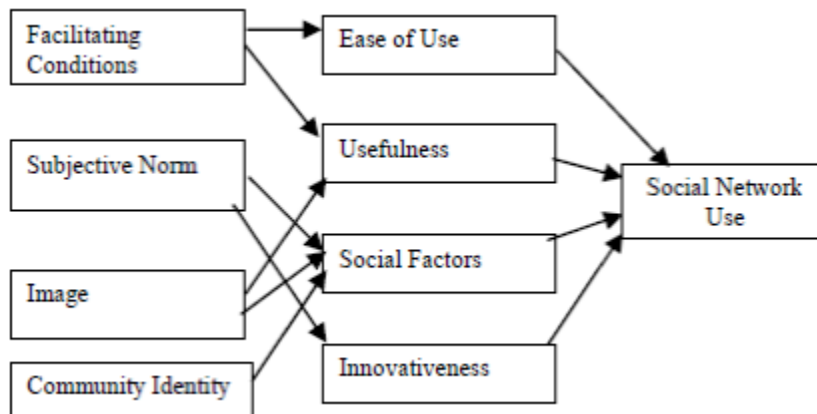


Figure 2.4; Sacide Güzin Mazman, and Yasemin Koçak Usluel (2009) model

Since education is a social activity that includes many people in the process, it is suggested that social norms and individuals own characteristics is very important to be considered. Therefore in the study social factors are regarded as the direct construct to affect usage, social factors includes many factors related to individuals and their social environments as well as their relationships with others. The study considers community identity as a precursor construct that determines social factors. Participation in these environments by posting profile information, sharing, comments and other activities provide image acquisition which is included as social factors.

Subjective norms are defined as perceived social pressure and are included as social factors since social norms are influential when participating in a social network. Perceived ease of use is also included since Social network environments require technical skills as internet usage and computer literacy. This enables students handle functions as knowledge sharing, uploading or downloading files, communication, adding pictures, menu usage. Students' ease of use perception is affected by support from friends, teachers, the help menu or any other support services that helps them to solve problems when they arise. Usefulness perception in these environments is very important since students can share their homework, files, access universal resources and information in a very short time; communicate effectively and quickly in the social networks. Finally the proposed model was developed with an aim of determining the possible factors that affect social network usage in the educational context by the students' adoption of these technologies. Instead of adapting one of the diffusion, acceptance and adoption theories or models, the researcher used a holistic view for the study. They suggested two reasons for this, first, "diffusion, acceptance or adoption of an innovation includes dynamic, inter-influential and multi-dimensional elements" second "it is assumed that all the innovations must be handled in its own context for realistic evidence."

2.4.2 Assessing User Acceptance toward Blog Technology Using the UTAUT Model; Bens Pardamean and Mario Susanto (2011)

This study employed the Unified Theory of Acceptance and Use of Technology (UTAUT) framework with three variables in order to determine behavioral intention and define the relationship with usage behavior (actual usage). Behavioral intention was determined by four variables, as mentioned in the UTAUT formulation. For the study, only two variables were used. The moderating factor for performance expectancy, effort expectancy, and social influence was Gender. Experience acted as a moderating factor for effort expectancy and social influence results. The Independent variables for the study were performance expectancy; effort

expectancy, and social influence, Dependent variables were behavioral intention and use behavior/actual use.

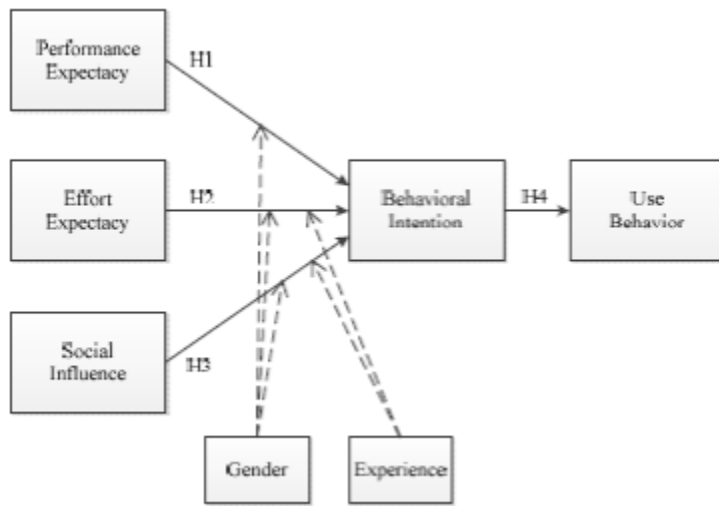


Figure 2.5; Bens Pardamean, Mario Susanto Model (2011)

Three items from demographic questions (weekly numbers of posted messages, duration of blog usage, and number of feedback messages) were used as the substitutions of use behavior.

2.5 Conceptual Framework

In developing a conceptual model for the use of Web 2.0 technologies in Nairobi county secondary schools, one of the approaches is to postulate that a number of determinant factors and mediating variables act in combination to process the teachers' intention to use web 2.0 technologies. Venkatesh et al, 2003. An alternative perspective, which builds upon this view, and the one that we adopt in this study, is that, Venkatesh et al (2003) four key factors (performance expectancy, social influence, facilitating condition and effort expectancy) influences the intention of teachers in Nairobi County to use Web 2.0 technology.

The study is to employ an improved UTAUT model with four variables in order to determine behavioral intention. The specific variables to be measured were Usefulness of the technology for Performance expectancy, Competence for Effort expectancy, Peer influence for Social influence and Internet access for Facilitating conditions. For the study three moderating factors were used. The moderating factors for Performance expectancy, Effort expectancy, Social

influence and facilitating conditions were age and gender. Duration of use acted as the moderating factor for Effort expectancy, Social influence and facilitating conditions. The independent variables for the study are Usefulness of the technology for Performance expectancy, Competence for Effort expectancy, Peer influence for Social influence and Internet access for Facilitating conditions while the Dependent is Behavioral intention to use web 2.0 technologies.

The Actual use behavior is eliminated in this model simply because the study is to measure the intention and perception of teachers in integrating Web 2.0 technologies in teaching and learning. Therefore the use of UTAUT model in the study is going to test the successful constructs of the model in determining the behavioral intention of teachers to use Web 2.0 technologies in Nairobi County.

Independent Variables

Dépendent Variable

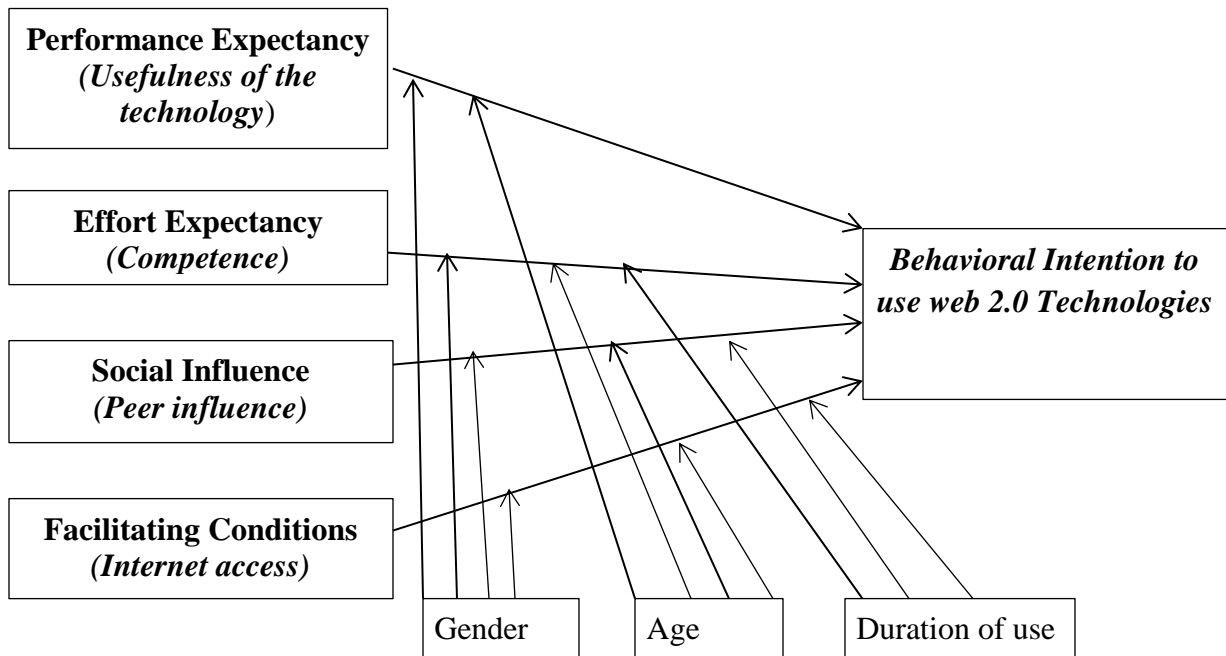


Figure 2.6 Conceptual Framework

2.5.1 Hypothesis formulation

To test the proposed model a number of hypotheses were proposed they are as stated.

Performance Expectancy

Performance expectancy is defined as the degree to which a person trusts that using a new technology will assist them gain benefits from job performance. UTAUT uses three variables from prevailing models to capture the concept of performance expectancy: perceived usefulness (TAM/TAM2) and extrinsic motivation (MM) UTAUT proposes that performance expectancy is the strongest predictor of an individual's behavioral intention to use a new technology and is significant at all points of measurement for mandatory and voluntary settings. This is because it is at this point that the usefulness of the technology is identified. Venkatesh, 2000 suggested that performance expectancy and behavior intention will be moderated by both gender and age such that performance expectancy will have a stronger moderating effect for men. Research also suggests that age has a moderating effect on performance expectancy; it will have a stronger effect on younger men than on older men, Morris and Venkatesh, 2000.

Hence the hypothesis that:

H1: Performance expectancy will have positive influence on Behavioral intentions to use web 2.0 technologies. Gender will moderate the influence of performance expectancy on behavioral intention to use web 2.0 technologies, such that the effect will be stronger in male teachers and at the same time Age will moderate the influence of performance expectancy on behavioral intention to use web 2.0 technologies, such that the effect will be stronger in younger teachers.

Effort expectancy

Effort expectancy is the degree of ease an individual associates with the use of a new technology. In this case the measure of competence a user has when using the technology. UTAUT uses three variables from existing models to capture the idea of effort expectancy. These Variables are perceived ease of use (TAM/TAM2), complexity (MPCU) and ease of use (IDT) (Venkatesh, 2003). Prior studies suggest that variables associated with effort expectancy will be stronger determinants on individuals' behavioral intention for women and older workers, Morris and Venkatesh, 2000. The variable will be moderated by gender, age and experience where it is expected that the level of competence will affect behavior more strongly during the initial and early stages of its use but it is expected that these will decrease over time as the user gains greater experience.

The study therefore proposes the hypotheses that:

H2: Effort expectancy will have positive influence on behavioral intentions to use web 2.0 technologies. Gender will moderate the influence of effort expectancy on behavioral intentions to use web 2.0 technologies, such that the effect will be stronger in male teachers. Age being the other moderator, will moderate the influence of effort expectancy on behavioral intentions to use web 2.0 technologies, Such that the effect will be stronger in younger teachers. Duration of use will lastly moderate the influence of effort expectancy on behavioral intentions to use web 2.0 technologies, such that its effect will be stronger in initial stages of use and reduce with time.

Social influence

Social influence being measured as peer influence is the extent to which users perceive that other individuals important to them believe that the users should use a new Technology. UTAUT uses three variables from existing models to capture the concept of social influence: subjective norm (TRA, TAM2 and TPB, social factors (MPCU) and image (IDT) Venkatesh, 2003. Studies propose that social influence in a mandatory context is an important determinant in user acceptance of a New technology Davis, 1989; Venkatesh, 2003. It also suggests that this may be due to mandatory compliance in behavior acceptance, which causes social influence to affect

Behavioral intention. In this case peer influence is used since persons that might influence the behavior of users are their contemporary. Venkatesh, 2003 notes that Social influence is moderated by all the four moderators. This indicates that peer influence is strongest during initial stages of technology use and decreases over time and it shows that the effect of social influence on behavior intention increases with age Morris, 2000.

The study therefore proposes the hypotheses that:

H3: Social influence will have positive influence on behavioral intentions to use Web 2.0 technology. Gender will moderate the influence of social influence on behavioral intentions to use Web 2.0 technology such that the effect will be stronger in female teachers. Age will also moderate the influence of social influence on behavioral intentions to use Web 2.0 technology such that the effect will be stronger in younger teachers. And lastly Duration of use will moderate the influence of social influence on behavioral intentions to use web 2.0 technologies such that the effect will be stronger in early stages of use and decrease with time.

Facilitating Conditions

Facilitating conditions is defined as the “degree in which an individual believes that an administrative and technical infrastructure exists to support the use of a new technology” (Venkatesh, et al., 2003). UTAUT uses three variables from existing models to capture the concept of facilitating conditions. These variables are perceived ease of use (TAM/TAM2), complexity (MPCU) and ease of use (IDT) (Venkatesh, 2003). Facilitating conditions is an important factor when performance and effort expectancy are not present. However, studies have shown that facilitating conditions, as a predictor of behavioral intention to use a new technology, is minimal when the variables performance and effort expectancy are both present. In contrast, facilitating conditions has been found to be a direct predictor of actual usage of a new technology Venkatesh, et al., 2003. In this study internet access is the key facilitating condition being measured. Internet access is key factor in determining how fast a technology can be adopted. Prior studies suggest that age and experience will be moderating factors on facilitating conditions such that effect on usage will increase with the experience and age of the users Morris, 2000.

Studies suggest that providing resources, training, and information to users has a significant effect on usage, and behavioral intentions to use a new technology.

The study therefore proposes the hypotheses that:

H4: Facilitating conditions will have a positive influence on behavioral intentions to use web 2.0 technologies. Gender will moderate the influence of facilitating conditions on behavioral intentions to use Web 2.0 technology such that the effect will be stronger in female teachers. Age will moderate the influence of facilitating conditions on behavioral intentions to use web 2.0 technologies such that the effect will be stronger among older teachers. Duration of use- will positively moderate the influence of facilitating conditions on behavioral intentions to use web 2.0 technologies, such that the effect will increase with experience.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

The rationale of this section is to illustrate the methods and procedure to be used in this study and to explore and discover useful information regarding the adoption of Web 2.0 technologies instructional delivery to improve learning and teaching methods in secondary schools. The research design target population, data collection methods and procedures, data analysis and data interpretations are presented as operational framework for the study.

3.1 Research design

A descriptive survey design was used in the study since the study focused on the intention of teachers in integrating web 2.0 technologies in teaching and learning. The design was chosen because of its ability to generalize the findings to a larger population. The design also describes the specific phenomenon in the current trends, current events and linkages between different factors at the current time Kothari, 2004. The type of data that was used was the primary data that was obtained from the questionnaire administered to the chosen respondents. A quantitative approach was to be used because the study focused on obtaining numerical findings.

3.2 Target Population

The target populations for this study were the teachers from seven purposefully chosen secondary schools in Nairobi County. The study targeted a population of teachers who represented the National schools, County School and district schools. The population size of teachers in this study was estimated to be about 400 Teachers.

3.3 Sampling Procedures

Out of all the schools in Nairobi County, purposive sampling method was used to select seven schools that best represent the purpose of the study. The schools selected on the basis of having

adopted at least one form of information technology in teaching and learning. The selected school also had to represent National, County and District schools.

The sampling frame in each selected secondary school was the total number of teachers in that institution. Through a simple random sampling method a sample size of about 50% was selected from each frame. This is because the sample were all not of an even number. This is the number which is subjected to the study.

Table 3.1: Sample Distributions per selected schools

Schools	Number of staff (Sample Frame)	Sample Size	Per (%) of Sample size	Returned Questionnaires	Response Rate
Starehe Boys Centre	98	50	51.0%	31	62.0%
Lenana School	75	40	53.3%	19	47.5%
Loreto Girls Nairobi	60	30	50.0%	17	56.6%
Starehe Girls Centre	53	25	47.1%	15	60.0%
Highway Secondary	41	20	48.8%	16	80.0%
Pumwani Secondary	40	20	50.0%	14	70.0%
Nileroad Secondary	15	15	100.0%	7	46.6%
Total	382	200	52.4%	119	59.5%

3.4 Data Collection

The type of data to be obtained from this study has Quantitative attributes since the study is to measure the level of acceptance in numerical specifications.

The data collection instrument that was used in the study was a questionnaire. In constructing the questionnaire we began by anticipating possible sources of errors which might make the respondents give erroneous information or even fail to answer a question completely. This was done to minimize threats to reliability and validity that may be present in the study. We also ensured that the operational definitions matched the theoretical concepts and that the sample population will answer the questions adequately. In safeguarding relevance of the study the objectives were explained, justified and made clear to the respondents by use of the cover letter that accompanied the questionnaire. This was also done to convince the respondents on the importance of the research so as to give accurate responses.

In coming up with the questions for the study the relevance of the questions to the study was also tested. This was to ensure that the questions do not contain wasted questions. In doing this we first checked if the questions can be analyzed using the selected tool of analysis for the study. To avoid a situation I which some questions were not answered, the wordings were checked properly to avoid pitfalls associated with wording of the questions.

The method of data collection was through the distribution of questionnaires to the schools that are taking party in the study. This method was selected over other methods such as interviewing studies because of a number of factors that are critical to the time frame of conducting the study. These factors include, the use of questionnaires is not very expensive to carry out as compared to the other forms of data collection, the respondents were assured of anonymity since no interviewer was present, and the questionnaire was to be completed by the respondents at their own convenience, Standardized wording was easily applicable and lastly this method of data collection saves time and money for the researcher.

The respondents in this study are teachers who were randomly selected from the participating secondary schools. The teachers are considered to be at different levels of integrating technology in teaching. Therefore a 5 point Likert scale was used because of the concern that the teachers

may not properly differentiate the different levels in the scale if wider scale were used. The questions were made easy to understand to all teachers. The questionnaire was also designed to capture all possible information on factors affecting the acceptance and integration of web 2.0 technologies as well as to gather information on qualitative attributes of teachers.

3.5 Reliability

Reliability is the assessment of the degree of consistency between multiple measures of a variable. It is designed to demonstrate the extent to which the operations in a study such as data collection can be repeated and similar results are obtained and the attributes being measured is believed not to have changed in the interval between measurements even if the test is administered by different people using same or alternative forms of the test. A measure is deemed reliable if an individual's score on the test is the same when given more than once in similar test and under similar circumstances. A reliable instrument or test must meet two conditions; it must measure a single dimension and it must have a small random error.

In this study Cronbach's alpha coefficient which is the most common measure of scale of reliability was used to measure reliability of the questionnaire. This test was selected over the other tests on the strength that it has been applied to similar studies, Venkatesh et al 2003. The generally agreed lower limit for Cronbach's alpha is 0.7, Davis 1989. If the value obtained in any test is below 0.7 the test is normally considered not to be reliable.

The Reliability measurement was first done by analyzing all the valid responses from the pilot data of 5 teachers conducted at Pumwani High school and 5 teachers from Starehe boys centre. The analysis was to measure the internal consistency based on inter-item correlation. The method of internal consistency for establishing reliability is mainly on finding out how the respondents responded on all items or a group of items on the questionnaire. The reliability estimates generated by this method is known as coefficient of internal consistency. In the pilot test the result was as shown in Table 3.2 below.

Table 3.2: Reliability Test of Pilot test items in Questionnaire

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.855	.870	38

3.6 Data analysis

The technique that was used in data analysis was partial correlation. This technique was chosen because of its ability to estimate the relationship between the predictor and criterion variable. In order to see the actual relationship between the variables without the influence of other variables, controlling the effects of other variables is necessary. The effects of the other variables on the relationship between the predictor and the criterion are eliminated when they are held constant. This process of exercising statistical control is known as partializing. A partial correlation measures the degree of association between two variables that would exist if all influences of other variables are removed. The purpose is to find the unique variance between two variables while eliminating the variance of the third variable. The Pearson's partial correlation between the two variables after controlling the variables in the partial statement is equivalent to the Pearson's correlation between the residuals of two variables after regression on the controlling variables. The partial correlation technique was therefore chosen in order to establish the degree of association between primary constructs the independent variables and the dependent variables.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.0 Introduction

This chapter presents the analysis and the results of the study. Data analysis was done through SPSS version 17.0 software. Descriptive statistics was used to analyze data where relative frequencies were used in some questions and other were analyzed using multiple responses with the help of Likert scale in obtaining correlation

4.1 Response rate

The number of questionnaires distributed was 200 and out of this number 119 were found to be valid for use in the analysis process. This represented a response rate of about 60%.

4.2 Reliability test (cronbach's alpha)

The table 4.1 below shows the result of the alpha scores obtained when all the items in the questionnaire were subjected to Cronbach's alpha test in order to check on the internal consistency based on inter- item correlation.

Table 4.1: Reliability Test of items in Questionnaire

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.877	.894	38

The questionnaire items obtained the recommended alpha score of above 0.7. The reliability analysis results in table 4.1 show that alpha coefficient of 0.877, is considered to be a very good score. These results show that the Questionnaire was a reliable measuring instrument, therefore all the items as corrected appear to be worthy of retention and all the items correlate with the

total scales to a good degree. The detailed result of the reliability test are indicated in APPENDIX B

4.3 General Characteristics of the teachers

4.3.1 Name of Institution and Gender Characteristics

As a starting point of the analysis the results were analyzed to obtain the overall distribution of teachers as well as gender characteristics across the targeted schools. As shown in the Table 4.2, the results indicate that Starehe boys Centre accounted for (31) 26.1% of the total respondents with (15) 12.6% being males and (16) 13.4% being females. Lenana School recorded (19) 16.0% of the total respondents. The females posted (19) 7.6% and the males (10) 8.4% of the totals. The Loreto Girls accounted for (17) 14.3% of the total respondents with (10) 8.4% being males and (7) 5.9% being females. In Starehe girls the number of respondents was (17) 12.6%, with females being (11) 9.2% of the totals and the males at (4) 3.4% of the total respondents. At Highway secondary (16)13.4% of the total respondent was realized with (9) 7.6% being females and (7) 5.9% males of the total respondents. In Pumwani Secondary (14) 11.8% of the total respondents was realized with (6) 5.1% being females and (8) 6.7% being males. And lastly at Nileroad Secondary school with total responses of (7) 5.9%, the females accounted for (4) 3.4% while the males were (3) 2.5% of the total respondents. In total, the collected data had almost equal distribution of males and females in that (62) 52.1% were females while (57) 47.9% were males.

Table 4.2: Name of Institution and Gender Characteristics

Name of institution		Gender		Total
		Female	Male	
Highway Secondary	Count	9	7	16
	% within Institution	56.3%	43.8%	100.0%
	% of total	7.6%	5.9%	13.4%
Lenana School	Count	9	10	19
	% within Institution	47.4%	52.6%	100.0%
	% of total	7.6%	8.4%	16.0%
Loreto Girls	Count	7	10	17
	% within Institution	41.2%	58.8%	100.0%
	% of total	5.9%	8.4%	14.3%
Nileroad Secondary	Count	4	3	7
	% within Institution	57.1%	42.9%	100.0%
	% of total	3.4%	2.5%	5.9%
Pumwani Secondary	Count	6	8	14
	% within Institution	42.9%	57.1%	100.0%
	% of total	5.0%	6.7%	11.8%
Starehe Boys	Count	16	15	31
	% within Institution	51.6%	48.4%	100.0%
	% of total	13.4%	12.6%	26.1%
Starehe Girls	Count	11	4	15
	% within Institution	73.3%	26.7%	100.0%
	% of total	9.2%	3.4%	12.6%
Total	Count	62 (52.1%)	57 (47.9%)	119 (100%)

4.3.2 Age and Level of Education Characteristics

The data was then categorized into levels of education and age groups. The results are as shown in the Table 4.3. In the age group of 25 to 34, (41) 34.5% of the total number of respondents was recorded, in this age group the majority of respondents were graduate teachers at (30) 73.2% as compared to Diploma (7) 17.16% and Postgraduate (4) 9.8%. The age group of 35 to 45 years accounted for the highest number of respondents at (80) 42.0% of the total number of respondents. In this category the graduate teachers were the highest with (40) 80.0% as compared to postgraduate at (7) 14.0% and diploma at (3) 6.0%. In the age group of 46 to 55 years the respondents were (14) 11.8% with the graduate teachers being (8) 57.1% as compared to diploma and postgraduate which were both at (3) 21.4%. The age group of 56 to 65 years accounted for (9) 7.6% of the total number of respondents with graduate teachers at (6) 66.7% as compared to diploma at 0.8% and postgraduate at 1.7%. And lastly the age groups of respondents who were 65 years and above were only (5) 4.2% of the total respondents and still in this category the graduate teachers were (4) 80.0% as compared to diploma at 0.8%. This age group reported the least number of respondents. In general the results show that the majority of the respondents were Graduate teachers since they accounted for 73.9% (88) of the total respondents. The postgraduate teachers accounted 13.4% (16) and the least number was from the diploma teachers who accounted for 12.6% (15).

Table 4.3: Cross tabulation of Age and Level of education

Age Group		Level of Education			Total
		Diploma	Graduate	Postgraduate	
25 - 45 Years	Count	7	30	4	41
	% within Age Group	17.1%	73.2%	9.8%	100.0%
	% of Total	5.9%	25.2%	3.4%	34.5%
35 – 45 Years	Count	3	40	7	50
	% within Age Group	6.0%	80.0%	14.0%	100.0%
	% of Total	2.5%	33.6%	5.9%	42.0%
46 – 55 Years	Count	3	8	3	14
	% within Age Group	21.4%	57.1%	21.4%	100.0%
	% of Total	2.5%	6.7%	2.5%	11.8%
56 -65 Years	Count	1	6	2	9
	% within Age Group	11.1%	66.7%	22.2%	100.0%
	% of Total	.8%	5.0%	1.7%	7.6%
Over 65 Years	Count	1	4	0	5
	% within Age Group	20.0%	80.0%	.0%	100.0%
	% of Total	.8%	3.4%	.0%	4.2%
Total	Count	15	88	16	119
	% within Age Group	12.6%	73.9%	13.4%	100.0%
	% of Total	12.6%	73.9%	13.4%	100.0%

4.3.3 Duration of use

The results were then organized and then categorized based on the duration that the teachers had been using all or any of the web 2.0 technologies. The duration of use was grouped into three categories for easy analysis and reporting, the groups were 1 to 3 years, 4 to 6 years and above 7 years. From the data respondents with experience of up to 3 years were (35) 29.4%, those whose experience is between 4 to 6 years were (60) 55.5% while those whose experience is above 7 years accounted for (15) 12.6%. The respondents who did not answer question on level of experience were (3) 2.5% of the total respondents. In general the results show that the majority of the respondents have used web 2.0 technologies for up to 6 years.

The table 4.4 shows the analysis of the results.

Table 4.4: Duration of use

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
1-3 Year	35	29.4	29.4	29.4
4-6 Years	66	55.5	55.5	84.9
Above 7 Years	15	12.6	12.6	97.5
4.00	3	2.5	2.5	100.0
Total	119	100.0	100.0	

4.3.4 Frequency of Use

The results were then organized to show the frequency of use statistics as recorded in table 4.5. (86) 72.3% of the total respondents indicated that they use web 2.0 technologies on Daily basis. The weekly users were (21) 17.6% while (9) 7.6% of the total respondents were monthly users. The analysis also included some missing entries which accounted for 2.5% of the total respondents. This result was a clear indication that a larger number of respondents clearly were using the technologies they know daily.

Table 4.5 Frequency of use

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Daily	86	72.3	72.3	72.3
weekly	21	17.6	17.6	89.9
Monthly	9	7.6	7.6	97.5
5.00	3	2.5	2.5	100.0
Total	119	100.0	100.0	

4.4 Descriptive Statistics of the Independent Variables

4.4.0 Analysis of the responses for constructs measuring statements

A summary of the responses for the measured statements for each constructs was compared on a statement by statement basis. The Likert scale in the questionnaire had five levels from strongly disagree to strongly agree. The responses of strongly disagree and Disagree were summarized and presented as Disagree. The responses for agree and strongly agree were summarized and presented as agree. The Neutral response was left unchanged as neutral. The Table 4.6 shows the output summary of the combined responses to come up with Disagree, Neutral and Agree.

Table 4.6: The output summary of the combined responses

Strongly Disagree	Disagree	Neural	Agree	Strongly Agree
Disagree		Neutral	Agree	

4.4.1 Performance Expectancy

The Teachers were asked to indicate their level of agreement with the five statements of performance expectancy that indicates the level of usefulness of web 2.0 technologies. Table 4.7 shows the results of the responses level associated with each measured statements. The teachers were first asked if they find Social networks useful in teaching. A high percentage of teachers at 77.3% agreed with the statement, 7.6% were neutral while 15.1% disagreed. Therefore from the results most teachers agreed that web 2.0 technologies useful in teaching.

The teachers where then presented with a second statement that was used to establish whether Social networks can enable them to complete their task quickly, The results reported that 75.6% of the teachers agreed with the statement that using web 2.0 technologies will enable them complete their task quickly while 14.3% disagreed and 9.2% were neutral. The Teachers were then asked to state whether using networks would improve their satisfaction in teaching, 69.7% of the respondent agreed with the statement that using web 2.0 Technology would improve their satisfaction in teaching, 17.6% disagreed with the statement while 12.6% of the respondents were neutral in their responses. In the question where the teachers were asked if the use of social networks would improve their work, 73.9% of the respondents agreed with the statement, 18.5% disagreed with it while 7.6% were Neutral in their response. Finally the teachers were asked to give their opinion on how compatible is social networks to all subjects taught in secondary schools, 62.2% of the respondents agreed with the statement, 26.9% disagreed with it while 10.9% were neutral with their responses.

Table 4.7: The responses level associated with each measured statement in Performance expectancy

Performance Expectancy		Statistics of Agree and disagree with statement			
PE	Statements	Disagree %	Neutral %	Agree %	Total %
PE1	I find Social networks to be useful in Teaching	15.1	7.6	77.3	100.0
PE2	Social networks can enable me to complete my Task quickly	14.3	9.2	75.6	100.0
PE3	Social networks can improve my satisfaction in Teaching?	17.6	12.6	69.7	100.0
PE4	Social networks can improve my work performance	18.5	7.6	73.9	100.0
PE5	Social networks is compatible with All Subjects	26.9	10.9	62.2	100.0

4.4.2 Effort Expectancy

Effort expectancy was designed to capture data that indicates the level of competency that the teachers have when using web 2.0 technologies and how these levels will influence the acceptance and use of the technology. The Table 4.8 clearly shows the response analysis of the results.

Table 4.8: The responses level associated with each measured statement in Effort expectancy

Effort Expectancy		Statistics of Agree and disagree with statement			
EE	Statements	Disagree %	Neutral %	Agree %	Total %
EE1	My interaction with Social networks is clear and understandable	15.1	12.6	72.3	100.0
EE2	To become skillful in using Social networks is easy for me.	17.6	18.5	63.9	100.0
EE3	I find Social networks easy to use	12.6	21.0	66.4	100.0
EE4	Learning to operate and use Social networks is easy for me	13.4	20.2	66.4	100.0

To establish the effort made by teachers the teachers were first asked state if their interaction with Social networks is clear and understandable, 72.3% of the teachers agreed with the statement, and 15.1% disagreed while 12.6% were neutral. The statement shows that majority of the teachers easily interact with web 2.0 technology. Secondly the teachers were asked to respond to the statement that if to become skillful in using Social networks is easy for them, 63.9% of the respondents agreed with the statement, 17.6% disagreed with the statement while 18.5% were neutral. The results shows that majority of the teachers can easily acquire skills in using web 2.0 technology. The third statement was used to measure how easy it is to use Social networks, 66.4% agreed with the statement 12.6% disagreed while 21.0% were neutral. Even though majority of respondents find web 2.0 technologies easy to use, a considerable number were not sure on whether the statement is valid. The final statement was used to measure on how easy it is to learn, operate and use Social networks, 66.4% agreed with the statement, 13.4% disagreed while 20.2% gave a neutral response. The results clearly shows that majority of teachers can easily learn, operate and use web 2.0 technologies.

4.4.3 Social Influence

The social influence was designed to capture data and generate statistics on peer influence in an attempt to establish its role in the acceptance of web 2.0 technologies in Nairobi county secondary schools. To establish this, the teachers were asked three statements for them to indicate their level of agreement with the statements. The Table 4.9 clearly shows the response analysis of the results.

Table 4.9: The responses level associated with each measured statement in Social Influence

Social Influence		Statistics of Agree and disagree with statement			
SI	Statements	Disagree %	Neutral %	Agree %	Total %
SI1	My peers are using Social networks in their undertakings.	7.6	16.0	76.5	100.0
SI2	Friends who influence my behavior think that I should use Social networks in teaching.	22.7	22.7	54.6	100.0
SI3	My fellow Teachers thinks it is important that I use Social networks in Teaching.	16.0	14.3	69.7	100.0

The teachers were first asked whether their peers were using Social networks in their undertakings, 76.5% agreed with the statement, 7.6% disagreed while 16.0% gave a neutral response. These responses show that the majority of teachers know someone who is using web 2.0 technologies in teaching. The second statement wanted the teachers to respond to whether their friends who influence their behavior think that they should use Social networks in teaching, 54.6% agreed with the statement, 22.7% disagreed while 22.7% were neutral. These results were not high which shows that a considerable number of teachers are not influenced by their peers on their choices of accepting or not accepting web 2.0 technology. The third and final statement inquired whether their fellow teachers think that it is important for them to use web 2.0 technologies in teaching. 69.7% of the respondents agreed with the statement, 16.0%

disagreed while 14.3% gave a neutral response. The result shows that a large majority of teachers are influenced by their fellow teachers in using web 2.0 technologies in teaching and learning.

4.4.4 Facilitating Conditions

Facilitating condition was designed to generate statistics on how the availability of internet connections to Nairobi county secondary schools influences the acceptance of web 2.0 technologies. The teachers were therefore presented with four statements to indicate their level of agreement to the statements. The Table 10 clearly shows the response analysis of the results.

Table 4.10: The responses level associated with each measured statement in Facilitating Conditions

Facilitating Conditions		Statistics of Agree and disagree with statement			
FC	Statements	Disagree %	Neutral %	Agree %	Total %
FC1	I have the resources (financial/equipment) necessary to use Social networks.	35.3	35.3	29.4	100.0
FC2	I have the knowledge and ability to use Social networks	18.5	10.1	71.4	100.0
FC3	There are people available for assistance with Social networks difficulties in school.	42.0	19.3	38.7	100.0
FC4	I am Constrained by lack of Internet connectivity to use Social networks	47.9	21.0	31.1	100.0

The teachers were first asked whether they have the resources necessary to use Social networks. 29.4% agreed with the statement, 35.3% disagreed while 35.3% were neutral. This results clearly shows that a large number of respondents do not have enough resources to support the use of web 2.0 technologies. In the second statement the teachers were asked to respond to the

question on whether they have knowledge and ability to use Social networks. 71.4% agreed with the statement, 18.5% disagreed while 10.1% gave a neutral response. This is a clear indication that the majority of teachers in Nairobi County do have the relevant knowledge and the ability to use web 2.0 technologies. In third statement the teachers were asked if there were people available for assistance with Social networks difficulties in schools.38.7% agreed with the statement, 42.0% disagreed while 19.3% gave a neutral response. The result is a clear response that most of the schools in Nairobi County do not have experts who can assist in advancing the academic use of web 2.0 technologies. The fourth and the final statement asked the teachers whether they are constrained by lack of internet connection to use Social networks. 31.1% agreed with the statement, 47.9% disagreed while 21.0% gave a neutral response. The response to this question indicates internet connectivity is not a deterrent to the acceptance of web 2.0 technologies. This is because 68.9% of the total number of the respondents was either neutral or disagreed with the statements.

4.4.5 Behavioral intention

Behavioral intention was designed to capture data and generate statistics on the behavior of teachers to accept the use of web 2.0 technologies. In order to collect relevant data to generate statistics the teachers were presented with four statements to indicate their level of agreement to the statements. The Table 4.11 clearly shows the response analysis of the results.

Table 4.11: The responses level associated with each measured statement in Behavioral Intentions

Behavioral Intentions		Statistics of Agree and disagree with statement			
BI	Statements	Disagree %	Neutral %	Agree %	Total %
BI1	I intend to start using Social networks immediately.	26.9	32.8	40.3	100.0
BI2	I plan to use Social networks to Teach.	21.0	26.1	52.9	100.0
BI3	I believe that I could communicate to others the benefits of using Social networks in Teaching.	12.6	4.2	83.2	100.0
BI4	I would have no difficulty explaining why Social networks may or may not be beneficial.	16.8	8.4	74.8	100.0

The teachers were first asked if they intend to start using Social networks immediately. 40.3% agreed with the statement, 26.9% disagreed, 32.8% were neutral. This is an indication that a minor majority plans to start using web 2.0 technologies. The second statement asked the respondents if they intend to start using Social networks. 52.9% agreed with the statement, 21.0% disagreed while those who gave a neutral response were also 26.1%. The result also indicates that a good number of teachers in Nairobi county plan to start using Social networks in teaching. In the third statement the teachers were asked if they could communicate to others the benefits of using Social networks in teaching and learning, 83.2% agreed with the statement, 12.6% disagreed while 4.2% gave a neutral response. The result is a clear indication that a majority of teachers in Nairobi County do not have a problem communicating the benefits of web 2.0 technologies to other teachers. In the fourth and final statement the teachers were asked to agree to a statement that they would have no difficulty in explaining why web 2.0 technologies may or may not be beneficial. 74.8% agreed to the statement, 16.8% disagreed while 8.4% gave neutral response. Just as in the second statement, a large majority of teachers in Nairobi County do not have a problem in explaining the benefits of Social networks in teaching and learning.

4.5 Pearson correlation Statistics

Pearson correlation measures the relationship between the independent variable and dependent variable. To establish the correlation between the independent variables and the dependent variables in this study, Pearson correlation coefficients for each independent variables and dependent variables were computed.

4.5.1 Partial Correlation for Performance Expectancy and behavioral intention with control variables

The correlation between the performance expectancy and behavioral intention with control variables age, gender, experience (Duration of use) are as shown in table 4.12 the Pearson's correlation coefficient between performance expectancy and behavioral intention with gender, age and experience as control variables are +0.573, +0.548, and 0.555 respectively. Positive correlation on all the above cases is an indicator of a direct relationship between performance expectancy and behavioral intention. The significance (2-tailed) value in all the cases is less than the threshold of 0.05 and therefore the associations are significant.

Table 4.12: Pearson correlations between Performance Expectancy (PE) (Independent variable) & Behavioral intention (BI) (Dependent Variable)

Pearson correlations between Performance Expectancy (PE) (Independent variable) & Behavioral intention (BI) (Dependent Variable)			
Control Variables	PE	Pearson coefficient	BI
Gender	PE	Correlation	0.573
		Significance (2-tailed)	0.000
Age	PE	Correlation	0.548
		Significance (2-tailed)	0.001
Duration of use (Experience)	PE	Correlation	0.555
		Significance (2-tailed)	0.000

4.5.2 Partial Correlation for Effort Expectancy and behavioral intention with control variables

The correlation between effort expectancy and behavioral intentions with gender, age and experience (duration of use) as control variables as shown in Table 4.13 are as follows +0.601, +0.538 and +0.592 respectively. The positive correlation coefficient values in all the above cases are an indicator of a direct relationship between effort expectancy and behavioral intentions. An increase in the value of effort expectancy causes an increase in the value of behavioral intentions based on this the correlation between effort expectancy and behavioral intentions is positive and very strong, given that the values are much closer to possible values of positive 1 (+1). The significance (2-tailed) values are less than the threshold of 0.05 which makes the correlation significant.

Table 4.13: Pearson correlations between Effort Expectancy (EE) (Independent variable) & Behavioral intention (BI) (Dependent Variable)

Pearson correlations between Effort Expectancy (EE) (Independent variable) & Behavioral intention (BI) (Dependent Variable)			
Control Variables	EE	Pearson coefficient	BI
Gender	EE	Correlation	0.601
		Significance (2-tailed)	0.000
Age	EE	Correlation	0.538
		Significance (2-tailed)	0.000
Duration of use (Experience)	EE	Correlation	0.592
		Significance (2-tailed)	0.000

4.5.3 Correlation for Social Influence and behavioral intention with control variables

The correlation between the social influence and behavioral intentions with control variables are as shown in Table 4.14, the correlation coefficients between social influence and behavioral intentions with gender, age and experience as control variables are +0.481, +0.453 and +0.463 respectively. The positive correlation coefficient in all the cases here is an indicator of a direct relationship between the variables. Given that values are not very close to positive 1 (+1) the correlation between social influence and behavioral intentions is not very strong. The significance (2-tailed) values are less than the threshold of 0.05 therefore it makes the association significant.

Table 4.14: Pearson correlations between Social Influence (SI) (Independent variable) & Behavioral intention (BI) (Dependent Variable)

Pearson correlations between Social Influence (SI) (Independent variable) & Behavioral intention (BI) (Dependent Variable)			
Control Variables	SI	Pearson coefficient	BI
Gender	SI	Correlation	0.481
		Significance (2-tailed)	0.000
Age	SI	Correlation	0.453
		Significance (2-tailed)	0.001
Duration of use (Experience)	SI	Correlation	0.463
		Significance (2-tailed)	0.000

4.5.4 Partial Correlation for Facilitating Conditions and behavioral intention with control variables

The Pearson's correlation coefficients of the association between facilitating conditions and behavioral intentions with age gender and Experience as control variables are as shown in Table 4.15. The correlation between facilitating conditions and behavioral intentions with Gender, Age and Experience as control variables are +0.479, +0.401 and +0.481 respectively the positive correlation coefficient in all the cases is an indicator of a direct relationship between the two variables. The correlation coefficients are much closer to zero; this makes the correlation between the two variables to be weak. The significance (2-tailed) values are less than the threshold value of 0.05 which makes the association between facilitating condition and behavioral intention significant.

Table 4.15: Pearson correlations between Facilitating Conditions (FC) (Independent variable) & Behavioral intention (BI) (Dependent Variable)

Pearson correlations between Facilitating Conditions (FC) (Independent variable) & Behavioral intention (BI) (Dependent Variable)			
Control Variables	FC	Pearson coefficient	BI
Gender	FC	Correlation	0.479
		Significance (2-tailed)	0.000
Age	FC	Correlation	0.401
		Significance (2-tailed)	0.000
Duration of use (Experience)	FC	Correlation	0.481
		Significance (2-tailed)	0.000

4.5.5 Partial Correlation for Performance Expectancy and behavioral intention with Age and Gender as control variables

The Pearson's correlation coefficients of the association between performance Expectancy and behavioral intentions with age group and gender as control variables are as shown in Table 4.16. The correlation between performance Expectancy and behavioral intentions with Gender, Age group as control variables is +0.547. The positive correlation coefficient is an indicator of direct relationship between the two variables. The significance (2-tailed) value is less than the threshold value of 0.05 this makes the association significant.

Table 4.16: Correlation for Performance Expectancy and behavioral intention with Age and Gender as control variables

Control Variables			Behavioral Intention
Age Group & Gender	Performance Expectancy	Correlation	0.547
		Significance (2-tailed)	0.000
		df	115

4.5.6 Partial Correlation for Effort Expectancy and behavioral intention with Age, Gender and Duration of use as control variables

The correlation coefficient between effort expectancy and behavioral intentions with gender, age and experience (duration of use) as control variables as shown in Table 4.17 is +0.555. The positive correlation coefficient value is an indication of a direct relationship between effort expectancy and behavioral intentions. The significance (2-tailed) values are less than the threshold of 0.05 which makes the correlation significant.

Table 4.17: Correlation for Effort Expectancy and behavioral intention with Age, Gender and Duration of use (experience) as control variables

Control Variables			Behavioral
Age Group, Gender & Duration of use	Effort	Correlation	0.555
		Significance (2-tailed)	0.000
		df	114

4.5.7 Partial Correlation for Social Influence and behavioral intention with Age, Gender and Duration of use (experience) as control variables

The correlation between Social Influence and behavioral intentions with gender, age and experience (duration of use) as control variables as shown in Table 4.18 is 0.437. The positive correlation coefficient value is an indication of a direct relationship between Social Influence and behavioral intentions. The significance (2-tailed) values are less than the threshold of 0.05 which makes the correlation significant.

Table 4.18: Correlation for Social Influence and behavioral intention with Age, Gender and Duration of use (experience) as control variables

Control Variables			Behavioral
Age Group, Gender & Duration of Use	Social	Correlation	0.437
		Significance (2-tailed)	0.000
		df	114

4.5.8 Partial Correlation for Facilitating Conditions and behavioral intention with Age and Duration of use (experience) as control variables

The Pearson's correlation coefficients of the association between facilitating conditions and behavioral intentions with age and Experience as control variables is as shown in table 4.19 is +0.412 the positive correlation coefficient indicates a possible direct relationship between the two variables even though it is a weak association because the correlation coefficient is closer to zero. The significance (2-tailed) value is less than the threshold value of 0.05 this makes the association significant.

Table 4.19: Correlation for Facilitating Conditions and behavioral intention with Age and Duration of use (experience) as control variables

Control Variables			Behavioral
Age Group & Duration of use	Facilitating	Correlation	0.412
		Significance (2-tailed)	0.000
		df	115

4.6 The Analysis of Moderating factors on independent Variables

The cross tabulation between the moderating factors and the independent variables was carried out to establish just how each of the moderating factor will affect the association between the independent variables and the dependent variables.

4.6.1 Cross tabulation between Performance Expectancy and Age Group

The Table 4.20 shows a cross tabulation results between age group and performance expectancy. The results clearly show that out of all the respondents, 28 (68.3%) out of 34 teachers who are at the age of 25 to 34 years agree with the performance expectancy statements. In the age group of 35 to 45 years 35 (70.0%) out of 50 teachers agree with the performance expectancy statements. In the age group of 46 to 55 years 3 (60.0%) out 5 teachers agree with the statements also in the age group of 56 to 65 years 10(71.3%) out of 14 teachers do agree with the statements. When the percentages within the age groups are combined the results shows that 53.0% of the young teachers between the ages of 25 years to 45 years agree with performance expectancy statements as opposed to 23.6% of teachers in this age group who disagree or are neutral in their responses. In the age group of teachers above 45 years only 14.3% of the respondents agreed with the statements. This implies that the performance expectancy is much stronger in younger teachers.

Table 4.20 Cross tabulation between Performance Expectancy and Age Group

Age Group* Performance Expectancy Cross Tabulation					
Age Group		Disagree	Neutral	Agree	Total
25 - 34 Years	Count	1	12	28	34
	% within Age Group	2.4%	29.3%	68.3%	100.0%
	% of Total	8.0%	10.1%	23.6%	34.5%
35 – 45 Years	Count	8	7	35	50
	% within Age Group	16.0%	14.0%	70.0%	100.0%
	% of Total	6.7%	5.9%	29.4%	42.0%
46 – 55 Years	Count	2	2	10	14
	% within Age Group	14.3%	14.3%	71.3%	100.0%
	% of Total	1.7%	1.7%	8.3%	11.8%
56 -65 Years	Count	2	2	5	9
	% within Age Group	22.2%	22.2%	55.5%	100.0%
	% of Total	1.6%	1.7%	4.2%	7.6%
Over 65 Years	Count	3	0	2	5
	% within Age Group	2.5%	0.0%	40.0%	100.0%
	% of Total	1.9%	0.6%	1.7%	4.2%
Total	Count	16	23	80	119
	% within Age Group	13.4%	19.4%	67.3%	100.0%
	% of Total	13.4%	19.4%	67.3%	100.0%

4.6.2 Cross tabulation between Performance Expectancy and Gender

The Table 4.21 shows the cross tabulation between performance expectancy and gender; It is clear from the results that an almost equal number of male and females teachers agree with the

statements of performance expectancy at 66.2% for females and 68.5% for males, a clear indication that both males and females find web 2.0 technologies useful in teaching and learning in secondary schools.

Table 4.21 Cross tabulation between Performance Expectancy and Gender

Gender* Performance Expectancy Cross tabulation					
Gender		Disagree	Neutral	Agree	Total
Female	Count	7	14	41	62
	% within Gender	11.3%	22.6%	66.2%	100.0%
	% of Total	5.8%	1.8%	34.5%	52.1%
Male	Count	9	9	39	57
	% within Gender	15.8%	15.8%	68.5%	100.0%
	% of Total	7.6%	7.5%	32.8%	47.9%
Total	Count	16	23	80	119
	% within Gender	13.4%	19.4%	67.3%	100.0%
	% of Total	13.4%	19.4%	67.3%	100.0%

4.6.3 Cross tabulation between Effort Expectancy and Gender

The cross tabulation table between effort expectancy and gender as shown in Table 4.22 is intended to show the upshot of gender on the competency level in relation to web 2.0 technologies acceptance. As the results indicates 42(67.8%) out of 62 females agree while 42 (73.6%) of males agreed with the effort expectancy statements. In total (62) 52.1% of females and (57) 47.9% of males response ratio indicates that the competency level among the gender is equal with the females slightly ahead.

Table 4.22 Cross tabulation between Effort Expectancy and Gender

Gender* Effort Expectancy Cross tabulation					
Gender		Disagree	Neutral	Agree	Total
Female	Count	7	13	42	62
	% within Gender	11.3%	21.0%	67.8%	100.0%
	% of Total	5.9%	10.9%	35.3%	52.1%
Male	Count	5	10	42	57
	% within Gender	8.8%	17.6%	73.6%	100.0%
	% of Total	4.2%	8.3%	35.3%	47.9%
Total	Count	12	23	84	119
	% within Gender	10.1%	19.4%	70.6%	100.0%
	% of Total	10.1%	19.4%	70.6%	100.0%

4.6.4 Cross tabulation between Effort Expectancy and Age Group

Table 4.23 shows the cross tabulation table between effort expectancy and age group. The results clearly show 73 (80.2%) out of 91 of young teachers between the ages of 25 years up to 45 years do agree with the statements of effort expectancy. This values decreases as the age's increases. This is an indication that competency in using web 2.0 technologies is higher in younger teachers than in older teachers.

Table 4.23 Cross tabulation between Effort Expectancy and Age Group

Age Group* Effort Expectancy Cross Tabulation					
Age Group		Disagree	Neutral	Agree	Total
25 - 45 Years	Count	1	3	37	41
	% within Age Group	2.4%	7.3%	90.2%	100.0%
	% of Total	0.8%	2.5%	31.6%	34.5%
35 – 45 Years	Count	5	9	36	50
	% within Age Group	10.0%	18.0%	72.0%	100.0%
	% of Total	4.2%	7.5%	30.3%	42.0%
46 – 55 Years	Count	1	7	6	14
	% within Age Group	7.1%	50.3%	42.8%	100.0%
	% of Total	0.8%	5.9%	5.0%	11.8%
56 -65 Years	Count	3	3	3	9
	% within Age Group	33.3%	33.3%	33.3%	100.0%
	% of Total	2.5%	2.5%	2.5%	7.6%
Over 65 Years	Count	2	1	2	5
	% within Age Group	40.0%	20.0%	40.0%	100.0%
	% of Total	1.7%	0.8%	1.7%	4.2%
Total	Count	12	23	84	119
	% within Age Group	10.1%	19.4%	70.6%	100.0%
	% of Total	10.1%	19.4%	70.6%	100.0%

4.6.5 Cross tabulation between Effort Expectancy and Duration of Use

The Table 4.24 shows the results of cross tabulation between effort expectancy and duration of use. A larger percentage teachers who have used web 2.0 technologies for a period of up to 6 years, agrees with the statements in effort expectancy at (21) 42.1% of the total respondents this is higher as compared to all other durations. This effect is seen to reduce as the duration of use increases.

Table 4.24 Cross tabulation between Effort Expectancy and Duration of Use

Duration of use* Effort Expectancy Cross tabulation					
Duration of use		Disagree	Neutral	Agree	Total
1 – 3 Years	Count	5	9	21	35
	% within Duration of use	14.3%	25.8%	60.0%	100.0%
	% of Total	4.2%	7.5%	17.7%	29.4%
4 – 6 Years	Count	4	12	50	66
	% within Duration of use	6.1%	18.1%	75.7%	100.0%
	% of Total	3.4%	10.1%	42.1%	55.5%
Above 7 years	Count	1	2	12	15
	% within Duration of use	6.7%	13.3%	80.0%	100.0%
	% of Total	0.8%	1.7%	10.1%	12.6%
Total	Count	12	23	84	119
	% within Duration of use	10.1%	19.4%	70.6%	100.0%
	% of Total	10.1%	19.4%	70.6%	100.0%

4.6.6 Cross tabulation between Social Influence and Gender

In order to determine the effect of gender on peer influence across tabulation of gender and social influence was created. From the table 4.25 the results indicate that a higher number of females that is (42) 35.3% of the total respondents agree with the statements in social influence than males at (34) 28.5% of the total. This is an indication that peer influence is greater among female teachers than in male teachers.

Table 4.25 Cross tabulation between Social Influence and Gender

Gender* Social Influence Cross tabulation					
Gender		Disagree	Neutral	Agree	Total
Female	Count	6	14	42	62
	% within Gender	9.7%	22.6%	67.8%	100.0%
	% of Total	5.0%	11.8%	35.3%	52.1%
Male	Count	6	17	34	57
	% within Gender	10.6%	29.9%	59.6%	100.0%
	% of Total	5.0%	14.3%	28.5%	47.9%
Total	Count	12	31	76	119
	% within Gender	10.1%	26.1%	63.9%	100.0%
	% of Total	10.1%	26.1%	63.9%	100.0%

4.6.7 Cross tabulation between Social Influence and Duration of Use

To determine the effect of Duration of use to social influence, across tabulation as shown in table 4.26 of the two was carried out and the following results were obtained. (41) 34.5% of teachers who have used the technology between 4 to 6 years agree with the statements in social influence, and they represent highest user's duration who agree with the statements. This is followed by

duration of 1 to 3 years at (24) 17.6% then the duration of above 7 years at (13) 10.9% these values seem to drop as the duration of use increases.

Table 4.26 Cross tabulation between Social Influence and Duration of Use

Duration of use* Social Influence Cross tabulation					
Duration of use		Disagree	Neutral	Agree	Total
1 – 3 Years	Count	8	6	21	35
	% within Duration of use	22.9%	17.2%	60.0%	100.0%
	% of Total	6.7%	5.0%	17.6%	29.4%
4 – 6 Years	Count	4	21	41	66
	% within Duration of use	6.0%	31.8%	62.1%	100.0%
	% of Total	3.3%	17.7%	34.5%	55.5%
Above 7 years	Count	0	2	13	15
	% within Duration of use	0.0%	13.3%	86.6%	100.0%
	% of Total	0.0%	1.7%	10.9%	12.6%
Total	Count	12	31	57	119
	% within Duration of use	10.1%	26.1%	63.9%	100.0%
	% of Total	10.1%	26.1%	63.9%	100.0%

4.6.8 Cross tabulation between Social Influence and Age Group

Table 4.27 shows a cross tabulation between age group and social influence. From the table the results shows that 60 (65.9%) of respondents out of 91 younger teachers of ages between 25 to 45 years agree with the statements in social influence. On the other hand the older generation teachers of ages 46 years and above only 16 (57.1%) of the respondents agreed with the statements. This also indicates that a large number of older teachers disagree with the statements

at 60.0%. The results indicated that peer influence is higher among younger teachers than older teachers.

Table 4.27 Cross tabulation between Social Influence and Age Group

Age Group* Social Influence Cross Tabulation					
Age Group		Disagree	Neutral	Agree	Total
25 - 45 Years	Count	3	12	26	41
	% within Age Group	7.3%	29.3%	63.4%	100.0%
	% of Total	2.5%	10.1%	21.8%	34.5%
35 – 45 Years	Count	4	12	34	50
	% within Age Group	8.0%	24.0%	68.0%	100.0%
	% of Total	3.4%	10.1%	28.6%	42.0%
46 – 55 Years	Count	2	3	9	14
	% within Age Group	14.3%	21.4%	64.3%	100.0%
	% of Total	1.7%	2.5%	7.6%	11.8%
56 -65 Years	Count	0	4	5	9
	% within Age Group	0.0%	44.4%	55.5%	100.0%
	% of Total	0.0%	3.3%	4.2%	7.6%
Over 65 Years	Count	3	0	2	5
	% within Age Group	60.0%	0.0%	40.0%	100.0%
	% of Total	2.5%	0.0%	1.6%	4.2%
Total	Count	12	31	76	119
	% within Age Group	10.1%	26.1%	63.9%	100.0%
	% of Total	10.1%	26.1%	63.9%	100.0%

4.6.9 Cross tabulation between Facilitating Conditions and Gender

In order to see the relationship between gender and facilitating condition a cross tabulation was made between the two as shown in table 4.28. From the results (24)20.2% females and (22) 18.4% of males agree with the statements of facilitating condition This was an indication that both Gender acknowledge that availability of internet connection is critical in the acceptance of the technology.

Table 4.28 Cross tabulation between Facilitating Conditions and Gender

Gender* Facilitating Conditions Cross tabulation					
Gender		Disagree	Neutral	Agree	Total
Female	Count	4	34	24	62
	% within Gender	6.4%	54.8%	38.7%	100.0%
	% of Total	3.4%	28.5%	20.2%	52.1%
Male	Count	9	26	22	57
	% within Gender	15.8%	45.6%	38.6%	100.0%
	% of Total	7.5%	21.8%	18.4%	47.9%
Total	Count	13	60	46	119
	% within Gender	10.9%	50.5%	38.6%	100.0%
	% of Total	10.9%	50.5%	38.6%	100.0%

4.6.10 Cross tabulation between Age Group and Gender

The table 4.29 shows the cross tabulation relationship between age group and gender of the respondents. Even though the total number of male almost equals that of females it is clear that more respondents were teachers of a younger age group of between 25 years to 45 years.

Table 4.29 Cross tabulation between Age Group and Gender

Age Group		Female	Male	Total
25 - 45 Years	Count	19	22	41
	% within age Group	46.3%	53.7%	100.0%
	% of Total	16.0%	18.5%	34.5%
35 – 45 Years	Count	30	20	50
	% within age Group	60.0%	40.0%	100.0%
	% of Total	25.2%	16.8%	42.0%
46 – 55 Years	Count	9	5	14
	% within age Group	64.3%	35.7%	100.0%
	% of Total	7.6%	4.2%	11.8%
56 -65 Years	Count	4	5	9
	% within age Group	44.4%	55.6%	100.0%
	% of Total	3.4%	4.2%	7.6%
Over 65 Years	Count	0	5	5
	% within age Group	.0%	100.0%	100.0%
	% of Total	.0%	4.2%	4.2%
Total	Count	62	57	119
	% within age Group	52.1%	47.9%	100.0%
	% of Total	52.1%	47.9%	100.0%

4.7 Hypothesis Validation

H1 Performance expectancy has an influence on behavioral intention and was moderated by age and gender such that the effect was expected to be stronger in younger male teachers. The

Pearson's correlation coefficient between performance expectancy and behavioral intention as shown in Table 4.12 is positive and significant, when the control variables are considered individually that is when gender is used as a control variable, the value of the Pearson's correlation coefficient is +0.573, when age is considered individually the value is +0.548 and duration of use gives a value of +0.555. The significance (2-tailed) of each of this control variable is less than 0.05 at 0.000 hence the values are significant. When the combined effect of gender and age as control variables is introduced, the correlation still remains positive and significant with a Pearson's correlation coefficient value of +0.547 and significance (2-tailed) of 0.000, this result is shown in table 4.16. The cross tabulation between performance expectancy and gender in table 4.21 shows that more males as compared to females at 68.5% agree with the measurement statements of performance expectancy, a further cross tabulation between performance expectancy and age group in table 4.20 shows that a higher percentage of younger teachers between the ages of 25 to 45 years agree with the performance expectancy statements as compared to teachers who are above 45 years. And as table 4.29 shows most male teachers are found between the as of 25 years and 45 years, therefore it can be said that performance expectancy is stronger for younger male teachers. Hence Hypothesis 1 is Not Rejected.

H2: Effort expectancy; The association of Effort expectancy with behavioral intention was moderated by gender, age and duration of use such that the effect was expected to be stronger in younger male teachers and in early stages of use. The Pearson's correlation coefficient between effort expectancy and behavioral intention as shown in Table 4.13 is positive and significant, when the control variables are considered individually that is when gender was used as a control variable, the value of the Pearson's correlation coefficient was +0.601, when age was considered individually the value was +0.513 and duration of use give a value of +0.592. The significance (2-tailed) of each of this control variable was less than 0.05 at 0.000 hence the values are significant. When the combined effect of gender age group and duration of use as control variables was introduced as shown in table 4.17, the correlation still remained positive and significant with a person's correlation coefficient value of +0.555 and significance (2-tailed) of 0.000. In order to affirm the results a cross tabulation between gender and effort expectancy

statements as shown in table 4.22 was developed, the results showed that 73.6% of male teachers agree with the measured statements of effort expectancy as compared to 67.8% of female teachers. A further cross tabulation between age and effort expectancy as in table 4.23 show that 80.2% of teachers between the ages of 25 years to 45 years agree with the statements of effort expectancy as compared to 39.2% older teachers who are above 46 years. Lastly the cross tabulation between effort expectancy and duration of use in table 4.24 shows an indication that teachers who have used the technology for less than 6 years agreed more with the measured statements of effort expectancy. The levels of agreement also tend to reduce as the number of duration of use increases. Given that most males are between the age of 25 years and 45 years as in table 4.29 and effort expectancy is stronger in males and with growing experience young males find that their level of competency to use a technology increases need less effort in this technology. Hence the Hypothesis 2 is therefore Not Rejected.

H3: Social Influence; The association of peer influence with behavioral intention was moderated by gender, age and duration of use, such that the effect was expected to be stronger in younger female teachers in early stages of use. The Pearson's correlation coefficient between social influence and behavioral intention as shown in Table 4.14 is positive and significant, when the control variables are considered individually that is when gender is used as a control variable, the value of the person's correlation coefficient was +0.481, when age is considered individually the value is +0.453 and duration of use gives a value of +0.463. The significance (2-tailed) of each of this control variable is less than 0.05 at 0.000 hence the values are significant. When the combined effect of gender age group and duration of use as control variables is introduced as shown in table 4.18, the correlation still remains positive and significant with a Pearson's correlation coefficient value of +0.437 and significance (2-tailed) of 0.000. In order to affirm the results a

Cross tabulation between gender and Social influence statements as show Table 4.25 was developed, the results showed that 67.8% of female teachers agree with the measured statements of Social influence as compared to 59.6% of male teachers. A further cross tabulation between age group and Social influence as in table 4.27 show that 65.9% of teachers between the ages of 25 years to 45 years agree with the statements of Social influence as compared to 57.1% older teachers who are above 46 years. . Lastly the cross tabulation between Social influence and

duration of use in table 4.26 shows that 84.4% of teachers who have used the technology for less than 6 years agreed more with the measured statements of Social influence. The levels of agreement also tend to reduce as the number of duration of use increases. These results show that social influence has a significant and stronger positive association with behavioral intention and that the effect is stronger in younger female teachers and the influence decreases as the duration of use increases. These findings suggest that hypothesis 3 is Not Rejected.

H4: Facilitating condition; the association between facilitating conditions with behavioral intention was moderated by gender and duration of use, such that the effect was expected to be stronger in younger female teachers in early stages of use. The Pearson's correlation coefficient between facilitating conditions and behavioral intention as shown in Table 4.15 is positive and significant, when the control variables are considered individually that is when gender is used as a control variable, the value of the person's correlation coefficient is +0.479, when age is considered individually the value is +0.401 and duration of use gives a value of + 0.481. The significance (2-tailed) of each of this control variable is less than 0.05 at 0.000 hence the values are significant. When the combined effect of gender age group and duration of use as control variables is introduced as shown in table 4.19 the correlation still remains positive and significant with a person's correlation coefficient value of +0.412 and a significant (2-tailed) value of 0.000. In order to affirm the results a Cross tabulation between gender and facilitating condition statements was developed as show Table 4.28. The result shows that more females at 61.2% either did not agree with the facilitating condition statements or were neutral in their responses. The number of males in the same category also stood at 61.4%. This is a clear indication that a majority of the respondents were not in agreement with the facilitating conditions statements. These results show that facilitating condition has a significant and strong positive association with behavioral intention but from the results the effect is not only stronger in younger female teachers alone but also in male teachers. This was an indication that the effect of facilitating conditions and in particular in internet connectivity affects both male and female teachers in almost equal measure in their effort to adopt web 2.0 technologies. These findings therefore suggest that hypothesis 4 is Not Rejected.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary, conclusion, recommendations and findings of the study, on the need to establish factors that influences behavioral intention to use of web 2.0 technologies within Nairobi County. It also highlights the limitations of the study and the recommendation for further research and practice. The background of the study which provided the general introduction and the definition of the research problem was presented in chapter one. The literature review that focused on the study and other relevant models was discussed in chapter two. The methodology that specified the sampling procedures and the data collection methods that was used in the study was discussed in chapter three. And finally Chapter four was used to present the statistical procedures, their interpretation, presentation and the discussion of the resulting model of the study.

5.1 Summary of the Study

This research sought to assess the validity of the UTAUT model as recommended by Venkatesh, et al., 2003 in web 2.0 technology adoption in Nairobi county secondary schools. The proposed model was analyzed using the SPSS software. The general applicability of the proposed model depended on the reliability of the results obtained. There were five constructs under study; the constructs were Usefulness for Performance expectancy, Competency for effort expectancy, Peer influence for social influence, Internet connectivity for facilitating condition and behavioral intention. The actual use behavior construct was not being directly tested as the targeted population was in different stages in the acceptance of the technology and also the study was carried out mainly to establish the perception of teachers in adopting web 2.0 technologies in teaching and learning within Nairobi County. The response rate in this study was 60% that is out of 200 questionnaires that were sent out 119 questionnaires were properly filled and they were fit

for analysis. The 38 items in the questionnaire reported a Cronbach alpha of 0.877 which indicated that the internal consistency of all the items in the questionnaire was satisfactory.

Finally the primary objective of the analysis carried out was to find the partial correlation between the independent constructs which included Performance expectance, Effort Expectancy, Social influence and Facilitating condition and the dependent constructs (Behavioral intention) which were measured by using the Pearson's correlation coefficient.

5.2 Key findings

The proposed model had five constructs, where all the independent constructs reported positive and significant correlation with behavioral intention. The results of each constructs are in response to the first and second objectives which stated as follows, *'To Establish the teachers' perspective in integrating web 2.0 technologies in secondary schools teaching and learning.'* as the first objective and *'To determine the extent to which Performance Expectancy, Effort expectancy, Social influence and Facilitating Conditions constructs can predict the acceptance of web 2.0 technologies in teaching and learning.'* as the second objective. The findings are as discussed below.

5.2.1 Performance Expectancy

Performance expectancy was found to be a direct predictor of Behavioral intention. Its influence was high since it posted a significant Pearson's correlation coefficient of +0.547 when age and gender were the control variables. When the effect of each variable is considered on its own, gender posted a Pearson's correlation coefficient of +0.573 while age posted +0.548. This outcome suggests that teachers in Nairobi County do perceive an increased change in performance when they take up web 2.0 technologies as learning and teaching tool. To achieve this, the respondents were asked five items namely whether they find Social networks to be useful in Teaching, secondly whether using Social networks can enable them to complete your Task quickly, thirdly whether using Social networks will improve their satisfaction in Teaching. The fourth question was whether using Social networks will improve their work and lastly

whether Social networks are compatible with All Subjects being taught. The results indicated that 67.0% of all the respondents agreed with all the statements presented in performance expectancy all the respondents seem to agree that web 2.0 technologies could bring added benefits to teaching and learning. On the basis of the strength of this study the relevant education stakeholders may use the results to attempt and influence teachers on the usefulness of using web 2.0 technologies in teaching and learning in order to increase adoption. This should be done by highlighting the advantages of web 2.0 technologies as compared to the traditional teaching methods.

5.2.2 Social influence

Social influence was found to be a direct predictor of Behavioral intention. It posted a significant Pearson's correlation coefficient of +0.437 when age, gender and duration of use were the control variables. When the effect of each variable is considered on its own, gender posted a Pearson's correlations coefficient of +0.481, age posted +0.453 while duration of use posted +0.463. In this construct there were 3 items that participants were supposed to respond to. The first one was whether their peers are using Social networks in their undertakings, secondly whether their friends who influence their behavior think that they should use Social networks in teaching and lastly whether their fellow teachers thinks it is important that I use Social networks in Teaching. With a response rate of 63.9% of all the respondents agreeing with the statements the result indicated that social influence is very significant in adoption of web 2.0 technologies in teaching and learning. In order to achieve this, the education stake holders need to set up training centers to encourage and train teachers in web 2.0 uses and applications and most importantly the curriculum developers should include web 2.0 techniques when developing secondary schools curriculum for teachers.

5.2.3 Effort Expectancy

Effort expectancy was found to be the strongest predictor of behavioral intention with a Pearson's correlation coefficient of +0.555. When the variables are considered independently,

gender posted +0.601, age posted +0.538 and duration of use gave a value of +0.592. In this construct four questions were posted to the respondents namely, whether their interaction with Social networks is clear and understandable, secondly whether to become skillful in using Social networks is easy for them, thirdly whether they find Social networks easy to use and lastly whether learning operate and use Social networks is easy for them. With 70.6% of the respondents agreeing with the statements was a clear signal that the competency in using web 2.0 technologies is considerably high. It also implies that migration to full adoption of web 2.0 technologies should be structured and incremental as level of competency increases. Teachers should be trained first on web 2.0 technology applicability at the same time relevant and compactible equipment should be acquired in stages to assist in this up take and finally the migration should be carried out gradually.

5.2.4 Facilitating Condition

Facilitating condition was found not to be a strong predictor of behavioral intention; this is because it had a significant but weak Pearson's correlation coefficient of +0.412. When the variables are considered independently, gender posted Pearson's correlation coefficient of +0.479 while duration of use posted a value of +0.481. In facilitating condition, respondents were asked four items the first one being, whether they have the resources (financial/equipment) necessary to use Social networks, Secondly whether they have the knowledge and ability to use Social, thirdly whether they have people available for assistance with Social networks difficulties in school, and lastly whether they are constrained by lack of internet connectivity to use Social networks. With only 38.6% of respondents agreeing with the statements, these results clearly show that majority of the respondents did not agree with the statements of facilitating conditions making the facilitating condition a critical factor in web 2.0 adoption.

5.3 Conclusions

This research has addressed the effects of performance expectancy (Usefulness), Effort expectancy (competency), Peer influence for Social Influence and Internet connectivity for Facilitating Conditions as factors that affect behavioral intentions to adopt web 2.0 technologies

in Teaching and learning in Nairobi County secondary schools. Four hypotheses were tested and all the tested hypotheses were Not Rejected. The result partially supported work done by Venkatesh et al. 2003. The predictor variables of behavioral intentions to adopt the use of web 2.0 technologies were Usefulness for performance expectancy, Competency for Effort expectancy, Peer influence for Social Influence and Internet connectivity for Facilitating Conditions.

Performance expectancy was found to be strong predictor of behavioral intention to use web 2.0 technologies. From the study it recorded a significant Pearson's correlation coefficient of +0.547 with the control variables. Effort expectancy was also found to be a strong predictor of behavioral intention with a significant correlation coefficient of +0.555. When it comes to social influence and Facilitating conditions, social influence had a significant Pearson's correlation coefficient of +0.437 while facilitating conditions had a coefficient of +0.412. Even though the constructs were not very strong, they were still good determinants in the adoption of web 2.0 technologies in secondary school education.

The proposed model was validated in that all the constructs in use were found to be significant in terms of behavioral Intentions towards the acceptance to use web 2.0 technologies in Nairobi County secondary schools. This in essence answered the third objective which stated *'To propose a web 2.0 adoption model based on the data obtained from the study.'*

5.4 Recommendations and further research

This research has major implications; first the UTAUT model is applicable to the Kenyan education system context with varying degree of explanatory power. This is because the UTAUT model can be used in explaining other behaviors in the Kenyan education system such as teaching of Mathematics in primary schools or at the universities.

Secondly other investigation is needed with respect to range of age, gender and duration of use that might be considered when examining technology acceptance and adoption behaviors. This is because the current users of technology are savvy, young and educated, whereas most researches to date has focused on ranges within the work place which in most cases is consisted of older

teachers. This calls for more research to be focused on young users and the rate of acceptance is likely to be high.

This research model should be retested with a broader and larger sample size of teachers. In this retest the influence of the moderators should be checked in a broader setting. It would also be important and useful to test the research model with the whole population of teachers in the country so as to get a clear representation of the level of acceptance and intention to adopt the web 2.0 technology. It will also be useful to retest the model with a population of users who have successfully adopted other similar or relevant technologies of teaching and learning with a broader representation in terms of ages, gender and duration of use.

Lastly, Future research should adopt a longitudinal approach as this research adopted a cross-sectional approach. This will enable the researchers to show how the teachers' attitude and behavior may change over time as opposed to a slice of time. Future researchers should also conduct separate research on teachers who have not had a chance to interact with any type of technology against those who are technology savvy so as to draw a comparison on this type of data.

References

1. Ajzen, I., & Fishbein, M., 1980. Understanding attitudes and predicting social behavior. *Englewood Cliffs, NJ: Prentice Hall.*
2. Ajzen, I., 1991. The theory of planned behavior. *Organizational Behavior and Human Decision Processes, vol. 50, no. 2, pp. 179-211.*
3. Alawadhi, S., & Morris, A., 2008. The use of the UTAUT model in the adoption of e-government services in Kuwait. *The proceedings of the 41st Annual Hawaii International Conference on system sciences. IEEE Computer Society. P.219.*
4. ANDERSON, C., 200. The Long Tail: How endless choice is creating unlimited demand. Random House Business Books: *London, UK.*
5. Ashcraft, D. Anderson, P., 2008. What is Web 2.0? Ideas, technologies and implications for education: JISC, Technology and Standard Watch.): Collaborative online learning: a constructivist example. *Journal of Online Learning and Teacher 4.*
6. Carlsson, C., Carlsson, J., Hyvönen, K., Puhakainen, J., & Walden, P., 2006. Adoption of mobile devices/services – Searching for answers with the UTAUT. *Paper presented at the 39th Hawaii International Conference on System Sciences, Hawaii.*
7. Concannon, F., Flynn, A., & Campbell, M., 2005. What campus-based students think about the quality and benefits of e-learning? *British Journal of Educational Technology, 36(3), 501-512.*
8. Croop, F. J., 2009. Student perceptions related to mobile learning in higher education. *Unpublished Dissertation, Northcentral University, Prescott Valley, Arizona.*

9. Creswell, J. W., 2003. Research design: Qualitative, quantitative, and mixed methods approaches. *Sage Publications, Inc. Thousand Oaks, CA: Sage Publications, Inc.*
10. Cooper, D. R., & Schindler, P. S., 2006. Business research methods 9th ed. Boston: *McGraw-Hill Irwin.*
11. Davis, F. D., 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly.*
12. Fisher, M. and Baird, E. D., 2007. Making m-Learning Work: Utilizing Mobile Technology for Active Exploration, Collaboration, Assessment, and Reflection in Higher Education. *Journal of Educational Technology Systems.*
13. Fong, W.W., Van Leuven, N., 2011. Communications For Everyday Life; *Ginger Press, Toronto*
14. Felix, L., Stolarz, D., 2006. Hands-On Guide to Video Blogging and Podcasting: Emerging Media Tools for Business Communication. Focal Press: *Massachusetts, USA.*
15. Graham, P.: Web 2.0, <http://www.paulgraham.com/web20.html>; O'Reilly, Tim: O'Reilly Network 2005, <http://www.paulgraham.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>.
16. Handy, J. H., Whiddett, R., & Hunter, I., 2001. A technology acceptance model for inter-organisational electronic medical records systems. *AJIS*, 9(1).
17. Hartwick, J., & Barki, H., 1994. Explaining the role of user participation in information system use. *Management Science*, 40(4), 440-465.

18. Holzinger, A., Pichler, A., Maurer, H., 2006. Multi Media e-Learning Software Triangle Case-Study: Experimental Results and Lessons Learned. *Journal of Universal Science and Technology of Learning*, 61–92
19. Lee, Y., Kozar, K. A., & Larsen, K. R. T., 2003. The Technology Acceptance Model: *Past, present, and the future*. *Communications of the Association of Information Systems* (12), 752-780.
20. Lin, C. -P., & Anol, B. 2008. Learning online social support: An investigation of network Information technology based on UTAUT. *CyberPsychology & Behavior*, 11, 268–272.
21. Lin, J., Chan, H. C., & Jin, Y., 2004. Instant messaging acceptance and use among college students. *Paper presented at the 8th Conference of the Pacific Asia Conference on Information Systems*.
22. Meister, D. B., & Compeau, D. R., 2002. Infusion of innovation adoption: An individual perspective. *Paper presented at the ASAC*.
23. Oravec, J.A., 2002. Bookmarking the world: weblog applications in education. *Journal of Adolescent & Adult Literacy*.
24. O'Reilly, T., 2006c. Web 2.0 Compact Definition: Trying Again. O'Reilly Radar (blog). Available online at: http://radar.oreilly.com/archives/2006/12/web_20_compact.html
25. Patterson, L., 2006. The Technology Underlying Podcasts. *Computer*. Vol. 39 *IEEE Computer Society*.
26. Prensky, M., 2001. Digital Natives, Digital Immigrants. *On the Horizon*, 9(5), 1-6.

27. Robin, L., 2011. Student Acceptance of Mobile Learning. Electronic Theses, *Florida State University*.
28. Sheppard, B. H., Hartwick, J., & Warshaw, P. R., 1988. The Theory of Reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *The Journal of Consumer Research*, 15(3), 325-343.
29. Stam, K. R., Stanton, J. M., & Guzman, I. R., 2004. Employee resistance to digital information and information technology change in a social service agency: A membership category approach *Journal of Digital Information*, 5(4).
30. Straub, E. T., 2009. Understanding technology adoption: Theory and future directions for informal learning. *Review of Educational Research*, 79.
31. Venkatesh, V., & Davis, F.D., 2000. A theoretical Extension of the technological acceptance model: four longitudinal fields studies. *Management Science*, 45(2), 186-204.
32. Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D., 2003. User acceptance of information technology: Toward a unified view. *MIS Quarterly*, (27:3), 425-478.
33. Wang, Y. and Shih, Y., 2009. "Why do people use information kiosks? A validation of the Unified Theory of Acceptance and Use of Technology", *Government Information Quarterly* 26: 158-165.
34. Wang, Y. -S., Wu, M. -C., & Wang, H. -Y. (2009). Investigating the determinants and age and gender differences in the acceptance of mobile learning. *British Journal of Educational Technology*, 40, 92-118.

Appendix A: QUESTIONNAIRE

TEACHERS QUESTIONNAIRE FOR MSC RESEARCH TITLED " A FRAMEWORK FOR ADOPTION OF WEB 2.0 TECHNOLOGIES FOR TEACHING AND LEARNING IN SECONDARY SCHOOLS: CASE OF NAIROBI COUNTY"

I am a master's student at the University of Nairobi in my initial stages of preparing a Research project. The information obtained herein will be used in building a framework that will be used in utilizing web 2.0 technologies (Social Networks) in teaching and learning.

The term Web 2.0 technologies is used in this research to refers Social networking applications and tools such as **blogs, microblogs, podcasts, Facebook, twitter, whatsapp, video sharing, wikis and web chat**. This are the tools that this research seeks to identify how suitable they are in teaching and learning.

I kindly request you to sacrifice 10 to 15 minutes of your precious time to complete this questionnaire. Kindly complete the questionnaire as truthfully as possible.

Your privacy and confidentiality is guaranteed as you participate in this study. The information provided herein will be treated with utmost confidence and will only be used for the purpose of this research.

SECTION A

TEACHERS INFORMATION

1. level of Education: Postgraduate [] Graduate [] Diploma []
2. Age: below 25 [], 25-33 [] 35 – 45 [], 45- 55 [], 55- 65 [], Over 65 []
3. Gender male [] Female []

4. Institution Name:

SECTION B

5. Which of the following Social networking (web 2.0 technology) tools have you ever used?

- A. Blogs [] B. Wikis [] C. Facebook [] D. Podcasting [] E. Twitter []
F. web chat [] G. Whattapp []

6. For how long have you used the tool (s)?

7. How often do you use the service(s)?

- Daily [] weekly [] Monthly [] yearly [] Do not Know []

SECTION C

Please indicate your level of agreement with the following statements by ticking the appropriate box

1-Strongly disagree, 2- Disagree, 3-Neutral, 4- Agree, 5-Strongly agree

8. PERFORMACE EXPECTANCY (PE)

NO	Statement	1	2	3	4	5
PE 1	Can Social networks be useful in Teaching					
PE 2	Can using Social networks enable you to complete your Task quickly					
PE 3	Can Using Social networks improve your satisfaction in Teaching.					
PE 4	Can Social networks improve your work					
PE 5	Is Social networks compatible with All Subjects					

9. EFFORT EXPECTANCY (EE)

NO	Statements	1	2	3	4	5
EE 1	My interaction with Social networks is clear and understandable					
EE 2	To become skillful in using Social networks is easy for me.					
EE 3	I find Social networks easy to use					
EE 4	Learning to operate and use Social networks is easy for me					

10. SOCIAL INFLUENCE (SI)

NO	Statements	1	2	3	4	5
SI 1	My peers are using Social networks in their undertakings.					

SI 2	Friends who influence my behavior think that I should use Social networks in					
SI 3	My fellow Teachers thinks it is important that I use Social networks in Teaching.					

11. FACILITATING CONDITIONS (FC)

NO	Statements	1	2	3	4	5
FC 1	I have the resources (financial/equipment) necessary to use Social networks.					
FC 2	I have the knowledge and ability to use Social networks					
FC 3	There are people available for assistance with Social networks difficulties in					
FC 4	I am Constrained by lack of resources to use Social networks					

12. BEHAVIORAL INTENTION (BI)

NO	Statements	1	2	3	4	5
BI 1	I intend to start using Social networks immediately.					
BI 2	I plan to use Social networks to Teach.					
BI 3	I believe that I could communicate to others the benefits of using Social					
BI 4	I would have no difficulty explaining why Social networks may or may not be					

Any other statement.

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For any further queries contact;
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Appendix B: Cronbach's Reliability Test

	Scale Mean if	Scale Variance if	Corrected Item-	Cronbach's Alpha
Performance	57.7931	144.063	.805	.945
Performance	57.7847	144.691	.769	.946
Performance	57.8940	143.766	.774	.946
Performance	57.8604	145.838	.650	.947
Performance	58.0620	146.922	.523	.949
Effort Expectancy	57.8436	144.481	.773	.946
Effort Expectancy	57.9528	144.276	.746	.946
Effort Expectancy	57.8772	146.201	.706	.947
Effort Expectancy	57.8856	144.911	.770	.946
Social Influence	57.7259	149.077	.633	.947
Social Influence	58.0957	145.534	.636	.947
Social Influence	57.8772	147.944	.560	.948
Facilitating	58.4738	151.418	.341	.951
Facilitating	57.8856	144.617	.715	.946
Facilitating	58.4486	150.516	.339	.951
Facilitating	58.5831	152.649	.250	.952
Behavioral	58.2805	149.105	.457	.950
Behavioral	58.0957	147.867	.529	.949
Behavioral	57.7091	146.140	.743	.946
Behavioral	57.8352	144.097	.771	.946
Performance	57.8789	144.889	.835	.945
Effort Expectancy	57.8898	144.881	.826	.945

Social Influence	57.8996	147.368	.731	.947
Facilitating	58.3478	149.380	.692	.947
Behavioral	57.9801	146.613	.773	.946

Appendix C: Letter of Authorization



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Our Ref: UON/SCI/MSC(IS)/2012

26 November 2013

To Whom It May Concern

Dear Sirs/Madam

FERDINAND ONYANGO OLUOCH – REG. NO.P56/73541/2012

The above named is a bona fide student pursuing a Master of Science in Information Systems degree at the School of Computing and Informatics, University of Nairobi. He is currently carrying out his research on the project entitled: "A Framework for Adoption of Web 2.0 Technologies for Teaching and Learning in Secondary Schools : Case of Nairobi County".

We would be grateful if you could assist Mr. Oluoch as he gathers data in Nairobi County secondary schools for his research. If you have any queries about the exercise please do not hesitate to contact us. The information you provide will be solely for the project.

Yours faithfully

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PROF. W. OKELO-ODONGO
DIRECTOR
SCHOOL OF COMPUTING AND INFORMATICS