

CONSTRAINTS AFFECTING ADOPTION OF COMPUTERIZED ACCOUNTING SYSTEMS IN NYERI COUNTY, KENYA

Rose Nyamusi Nyang'au 

Jomo Kenyatta University of Agriculture and Technology, Kenya

rose_nyamusi@yahoo.com

Bichanga Walter Okibo

Jomo Kenyatta University of Agriculture and Technology, Kenya

bwokibo@jkuat.ac.ke

Andrew Nyanga'u

Jomo Kenyatta University of Agriculture and Technology, Kenya

nyangau200@yahoo.com

Abstract

This study sought to analyze the influences of constrains of adoption computerized accounting system by coffee societies in Nyeri County in Kenya. The study was guided by four objectives and the findings of the study indicate that: Coffee societies in Nyeri county Kenya, have not fully adopted computerized accounting systems; Cost, human resource proficiency and availability of related infrastructures are the most important constrains affecting adoption of computerized accounting system; and users' perception on the computerized accounting systems is insignificant in respect to adoption of computerized accounting systems. The study recommended that Coffee societies should consider gradual implementation of CAS since cost is one of the main constrains to computerization of the accounting system.

Keywords: Accounting Information System, Computerized Accounting Systems, Computerized Management Accounting System, Electronic Data Interchange

INTRODUCTION

The revolution in the information systems which started in the early 1950s when the first business computers became available is still in progress (Nash, 1989). With the expansion of business, the number of transactions increased and the manual method of keeping and maintaining records was found to be unmanageable. With the introduction of computers in business, the manual method of financial accounting and management is being gradually replaced with computerized ones. Strong, et al (2006), observed that the rapid change in information technology, the wide spread of user-friendly systems and the great desire of organizations to acquire and implement up-to-date computerized systems and software have made computers much easier to be used and enabled accounting tasks to be accomplished much faster and accurate than hitherto.

Coffee is important in the Kenyan economy due to its contribution to foreign exchange earnings, farm income and employment. Kenya demographic survey (2003), observed state that the primary coffee growing regions are those surrounding Mount Kenya and Aberdare zone, such regions include Nyeri, Murang'a, Kirinyaga, Embu, Meru, Nakuru, Machakos and Kiambu. Nyeri County was selected as it is located along Mount Kenya and Aberdare Zone.

Problem Statement

Coffee societies in Nyeri County, Kenya have not effectively adopted the use of computerized accounting system despite the benefits of this system. It's not clear the kind of constraints that are affecting the adoption of computerized accounting system among the coffee societies in Nyeri County, for them to realize the related benefits. This study assesses the constraints affecting adoption of computerized accounting systems of coffee societies in Nyeri, Kenya.

Objectives of the Study

The study was guided by the following objectives, from which the research questions were obtained;

- i. To establish how information technology infrastructure affects adoption of computerized accounting of coffee societies in Nyeri County.
- ii. To analyze how human resource computer proficiency affects adoption of computerized accounting by the coffee societies in Nyeri County, Kenya
- iii. To establish how installation cost affects adoption of computerized accounting system by coffee societies in Nyeri County, Kenya
- iv. To determine how user perception affects adoption of computerized accounting system by the coffee societies in Nyeri County, Kenya.

Justification of the study

The two biggest advantages of a computerized accounting system are speed and accuracy. Transactions that could possibly take several minutes by manual entries, take seconds with a computerized accounting system. Also, because only one entry needs to be made with a computerized system, the likelihood of an incorrect entry is greatly reduced.

Significance of the Study

Given the importance of coffee sub-sector in the Kenyan economy, Findings of this study will serve as important indicators as to Kenyan coffee society's readiness to face future challenges by adopting IT, which could expedite the preparation of timely financial reports and make better forecasts.

The findings should assist managers and all coffee stakeholders to identify constrains that are affecting adoption of CAS assisting them to device ways of addressing them.

The findings can be the basis to lobby with government and non government organizations taking up economic development in to focus on areas that can address the identified constrains which may include subsidized ICT infrastructure.

The study also provides vital information to both the Ministry of agriculture and the coffee board of Kenya on the role they can play to address some of the factors limiting integration of computerized accounting system in coffee societies.

Lastly, the study does add knowledge in the area of information technology in general and hindrances affecting adoption of computer based system in particular to academia and other researcher's works.

LITERATURE REVIEW

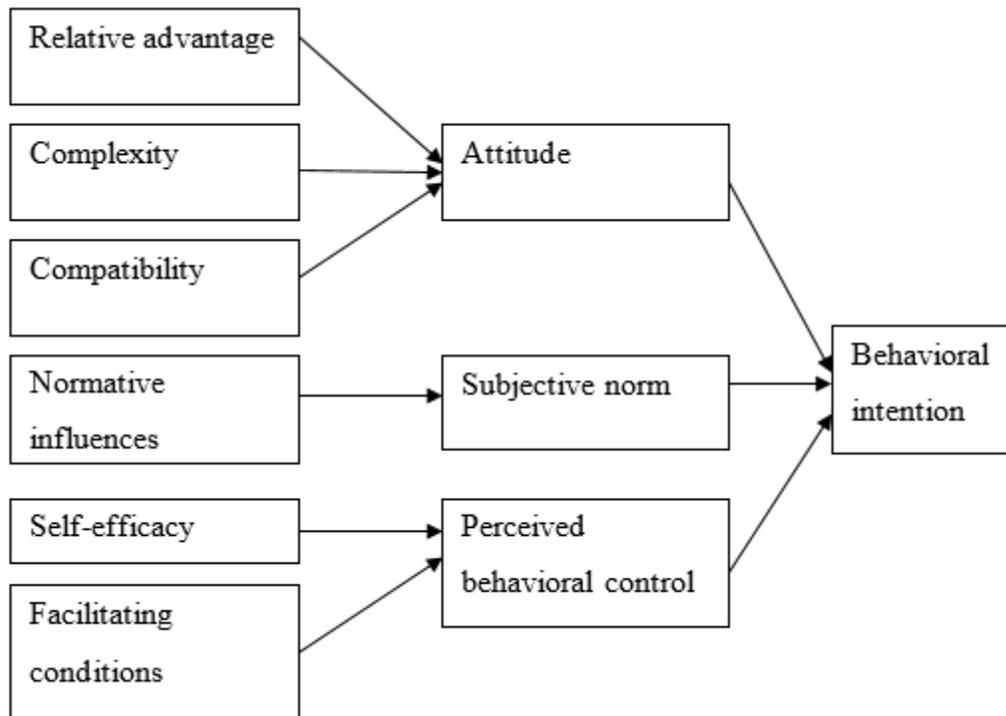
This study was guided by three theories.

Decomposed Theory of Planned Behavior

Decomposed Theory of Planned Behavior (DTPB) was formulated through combination of both Technology Acceptance Model (TAM) (Davis, Bagozzi and Warshaw, 1989) and Theory of Planned Behavior (TPB) (Ajzen, 1988) which was intended for providing better understanding of behavioral intention by concentrating on the factors that are likely to impact systems use. TAM is an information systems theory that models how users come to accept and use a technology. The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it, notably include Perceived Usefulness (PU) and Perceived Ease-Of-Use (PEOU). Davis (1989), asserted that PEOU and

PU influences in a significant way the attitude of an individual through two main mechanisms namely self-efficacy and instrumentality/facilitating.

Figure 1: Decomposed Theory of Planned Behavior



Source: Taylor and Todd (1995) Decomposed Theory of Planned Behavior

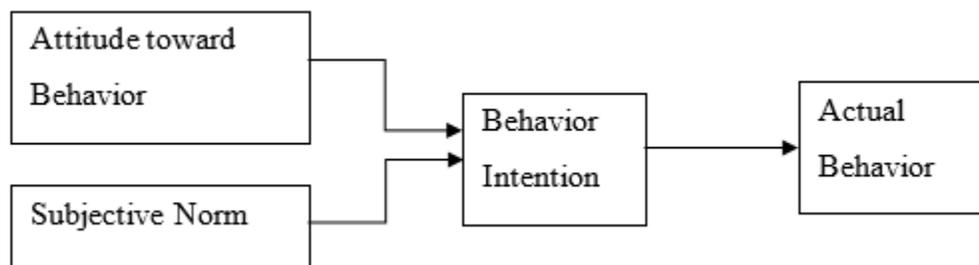
DTPB model specifies that attitude towards a technology has three dimension namely, relative advantage, complexity and compatibility. Shimp and Kavas (1984), observes that relative advantage refers to the degree to which an innovation provides benefits over and above other existing alternatives. Such benefits may include economic benefits, image enhancement, convenience and satisfaction. In the context of this study computerized accounting system can be considered an innovation and have advantages over the manual systems. The computerized system ease the workload, performs faster and the likelihood of making errors are minimal. Compatibility of an innovation is its ability to fit into the existing values, previous experience and current needs of the adopter (Rogers, 1995). Thus the coffee society's willingness to adopt computerized accounting system may be influenced by the current needs such as speedily processing the farmer's proceeds. In addition the cost of the system versus the resources available corresponds with the existing values. Given the resources available and the competing needs of the society the cost of the system may influence resource allocations towards its adoption.

Theory of Reasoned Action

According to Ajzen and Fishbein (1980), the Theory of Reasoned Action (TRA) focuses on a person's intention to behave in a certain way. Attitude would be shaped by whether or not management and employees think implementing computerized accounting system is likely to be relevant to their work (the outcome of the behavior) and whether or not they think that new that could be relevant to their work would be beneficial to them and to the organization.

From the TRA perspective, the important aspect of attitude is whether or not it is positive, negative, or neutral. For example, if management and employees of coffee societies strongly believe that implementing computerized accounting system will lead to a desirable outcome, then one could say that they have a positive attitude toward CAS. Likewise, if they strongly believe that the behavior will lead to an undesirable outcome, they are likely to have a negative attitude about it (Fishbein and Ajzen, 1975).

Figure 2: Theory of Reasoned Action



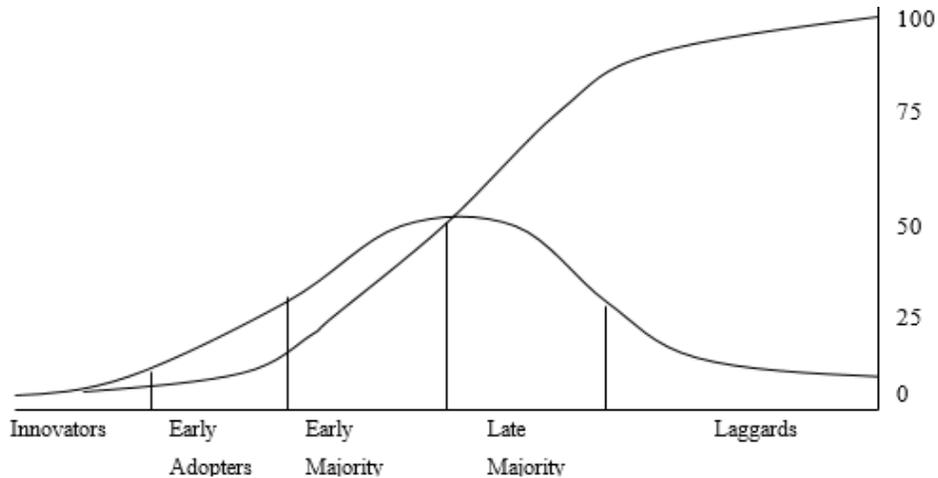
Source: Fishbein and Ajzen (1975), Theory of Reasoned Action.

Innovation diffusion theory

Albert Bandura (1960) popularized Innovation diffusion theory (IDT) by establishing a powerful model which has been vastly used to determine factors influencing different type of computer technology and IT adoption including general IT adoption, Electronic Data Interchange (EDI) and web service standards adoption, IT diffusion patterns and the relationship between IT adoption and firms' competitive advantage in both developed and developing countries.

Fulk et al, (1990) in the diffusion of innovation theory sees innovations as being communicated through certain channels over time and within a particular social system where individuals are seen as possessing different degrees of willingness to adopt innovations and thus it is generally observed that the portion of the population adopting an innovation is approximately normally distributed over time when plotted over a length of time representing various categories of adopters namely innovators, early adopters, early majority, late majority and laggards (Gable and Raman, 1992).

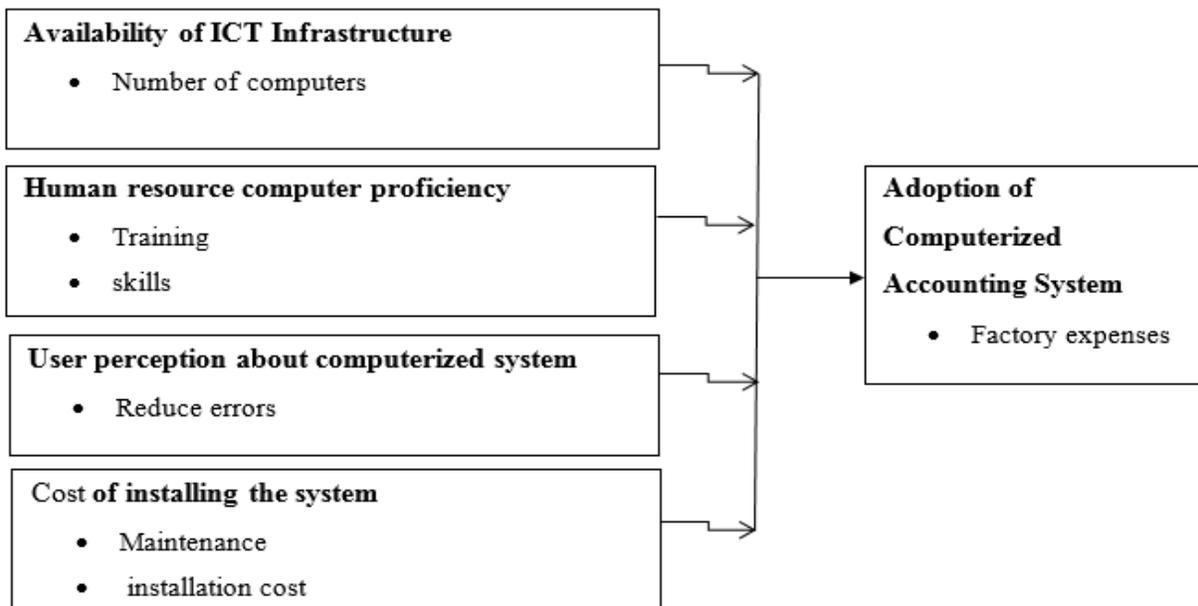
Figure 3: Innovation Diffusion Theory



Source: Rogers (1995), Innovation diffusion theory

Innovators are the first individuals to adopt an innovation. Early adopters are the second fastest category of individuals who adopt an innovation. These individuals have the highest degree of opinion leadership among the other adopter categories. Early Majority Individuals adopt an innovation after a varying degree of time. This time of adoption is significantly longer than the innovators and early adopters. Late Majority Individuals will adopt an innovation after the average member of the society. These individuals approach an innovation with a high degree of skepticism. Laggards are the last to adopt an innovation. Unlike some of the previous categories, individuals in this category show little to no opinion leadership.

Figure 4. Conceptual Framework



RESEARCH METHODOLOGY

Research Design

For the purpose of undertaking the study, a descriptive survey design was adopted, where both qualitative and quantitative data was collected. The design was ideal for this study given the need to collect information on CAS adoption and constrains affecting adoption of CAS by coffee societies in Nyeri County

Target population and Sample size

Table 2. Targeted population for this study and the sampled size

Employees	Population	Percentages	Sample size
Managers	103	20%	45
Accountants	309	60%	135
Human Resource	103	20%	45
Totals	515	100%	225

Confidence level was based on the sample size and population of the study. 95% confidence level was informed by the bigger sample size of 80% in relations to population therefore larger the sample size leads smaller the confidence interval of 0.05.

Sampling technique was carried out in such a way that the selected members of the population have characteristics representative of the entire population. A purposeful sampling was done where every society had a chance and a computer generated random sampling was conducted where the employees were randomly drawn from the society in Nyeri County societies and factories.

Data Collection

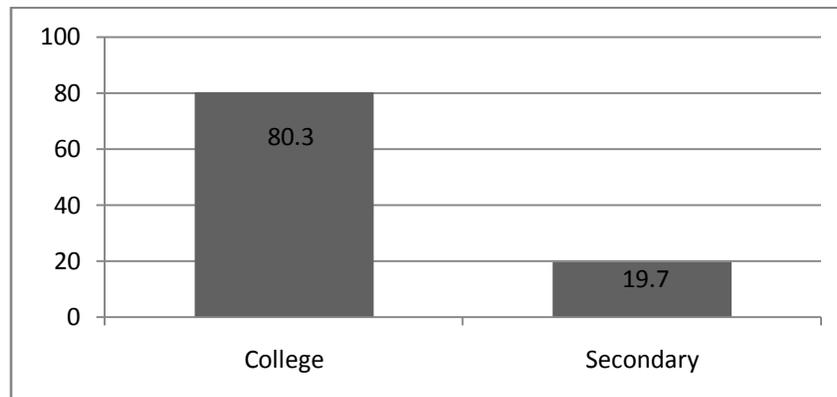
Data was collected using self-administered, semi - structured questionnaires which were self developed and hand delivered to the respondents and collected after they were completed. This method was adopted because it covered all the areas that the researcher intended to research on and the perception that the respondents were well versed with the subject under research thereby requiring no guidance when responding to the questions.

ANALYSIS AND FINDINGS

Demographic information

The education level of the respondents was categorized as either secondary or college level. As shown in Figure 5 majority had a college level of education with 80% reporting college level of education and 20% secondary education. It follows therefore that the respondent were fairly educated to articulate the CAS adoption issues.

Figure 5: Education level



CAS Adoption

The adoption level of CAS was established by assessing the extent to which the accounting system of the societies was computerized at different level. As shown in Table 2 below, 40.8% of the factories and societies had computers in their premises while 59.2% had no computers at all. This implies that 59.2% of the factories and societies had zero of adoption given they did not computers which is a critical pre-requisite of CAS adoption.

Table 2. CAS Adoption

Presence of computer	Frequency	Percentages
YES	57	59.2%
NO	14	40.8%
TOTALS	71	100%

For those factories and societies who had computers the study sought to establish whether they have a complete CAS system. None of the Societies had fully computerized their accounting system. Instead those who had computers, 4.2% had Microsoft Word software while 36.6% had

Microsoft Word and Excel. It follows therefore that most societies had computers but used the basic soft software for their operation. This confirms earlier study by Banerjee and Lloyd (1995), they found out that seventy nine percent of their respondents entered data on spreadsheets manually as opposed to computerized accounting system. These studies indicated that although the organizations do have computers, the use of this tool in management accounting system is limited.

Computerized Functions by Coffee Societies

The partial computerized system could only process and maintain members' transactions. The members' transaction information processed and maintained by the societies in their computers' systems include members' proceeds, deductions and net pay. Even members transactions management however was being done fully by 11.2% while 8.5% indicated they partially perform these functions as shown in Table 3 below.

Table 3: Computerized Functions by Coffee Societies

System maintain members deductions			Members net pay generate automatically	
Description	Count	Percentages	Count	Percentages
No	57	80.3%	57	80.3%
Partial	6	8.5%	6	8.5%
Yes	8	11.2%	8	11.2%

Availability of infrastructures and CAS adoption

After establishing the extent of CAS adoption by the coffee societies the study sought to assess the effects of availability of relevant infrastructure on adoption. The respondents were required to indicate which aspect of infrastructure availability affects adoption and to which extent. As shown in Figure 7 enough computers was rated as the most significant in CAS adoption. This finding explains why 40.8 % (Figure 6) of the coffee societies did not have computers at all. Further, the awareness by the society's management about the vendors or developers of the CAS was also rated strongly as a major determinant of CAS adoption. This corresponds with past findings Obeid (2011), on ministry of health shows that infrastructure and the decision for change are factors affecting adaptability of computerized accounting on government hospitals.

Figure 6: Effects of availability of Infrastructure

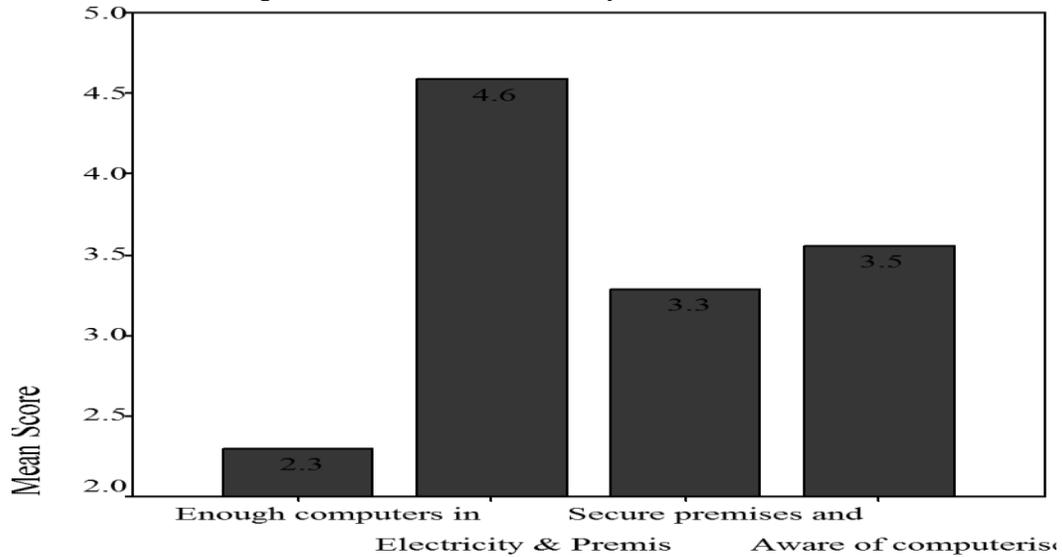


Table 4. Availability of Infrastructure Model

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.738 ^a	.545	.539	2.1368

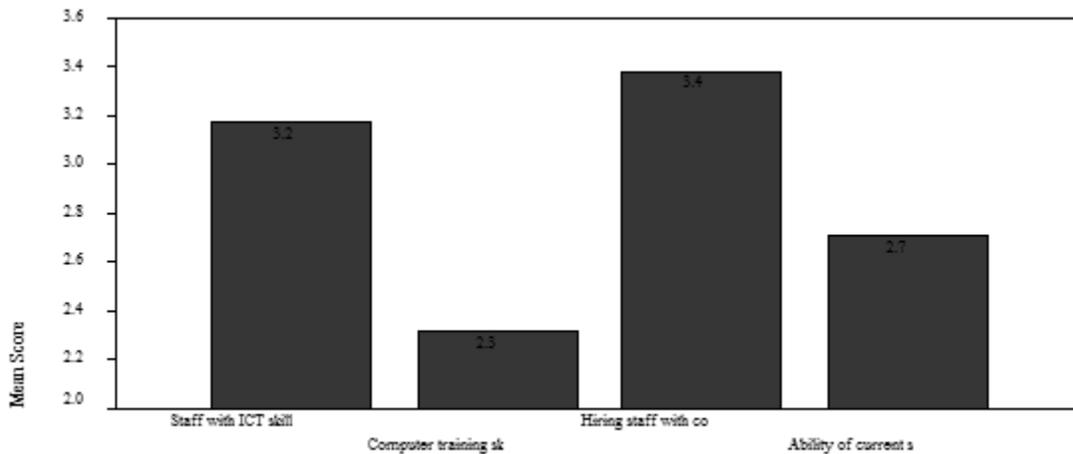
a. Predictors : (constant) Availability of infrastructure

This study also sought to establish the relationship between availability of infrastructure and CAS adoption. The two variables were regressed to generate a model. The R Square statistic in the second represent the variation of CAS adoption accounted for by availability of infrastructure. In this case 54.5% of variation in CAS adoption was accounted for by the availability of infrastructure as shown in Table 4.

Human Resource and CAS adoption

The human resource is an important factor in CAS adoption since they are the end user of the systems. The study sought to assess the importance of human resource by the coffee societies in CAS adoption. As shown in Figure 7 hiring of staff with computer skills is the most important having a mean score of 3.4. Further, the study found out that apart from computer literate staff having staff that can specifically implement CAS is an important aspect of human resource as far as CAS adoption is concerned.

Figure 7: Effect of Human Resource on CAS adoption



The findings correspond with a number of past studies on human resource and adoption of technology based systems. Studies conducted separately by Cragg and King (1993), and Allison (1999), found out that a skilled and knowledgeable work force is closely linked with the successful implementation of technology. Similarly Spectrum (1997), asserted that lack of skills amongst workforce affects the use of computerized system. On computerized accounting systems a study by Banerjee and Lloyd (1995) found out that the reluctance by members of staff in handling CMAS and the inability to utilize CMAS effectively is mainly due to lack of knowledge.

Table 5. Human Resource Computer Proficiency

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.760 ^a	.578	.572	2.05858

a. Predictors : (constant) Human Resources

R=0.760^a indicates a strong correlation between Human Resource Computerized Proficiency and Computerized Accounting System. The R square statistic of the model is .578 implying that 57.8% of the variation in CAS adoption is accounted for by the human resource in computer proficiency. 42.2% remains unexplained.

Cost and CAS adoption

CAS adoption has cost implication since it requires investment on necessarily equipments and software. As such the study sought to establish the effect of cost in CAS adoption by the coffee societies. As shown in Figure 6 the cost of maintenance was related as one of the most important cost related factor that may hinder the option of CAS. Further cost of related infrastructures such as secure premises and electricity are prohibitive as far as CAS adoption is concerned. This was also revealed in other study such as MacNeil and Delafield (1998), who found out that the main inhibitors to implementing technology in the classroom are lack of financial resources for hardware, software, and infrastructure and lack of time for professional development and planning. Further, Collins (1999) concluded that one of the factors that influence the companies not to implement IT in their business is the additional cost factor incurred for acquiring hardware and the high consultant fees.

Table 6. Cost Model

Model summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.851 ^a	.724	.720	1.66456

^a Predictors: (Constant), Cost

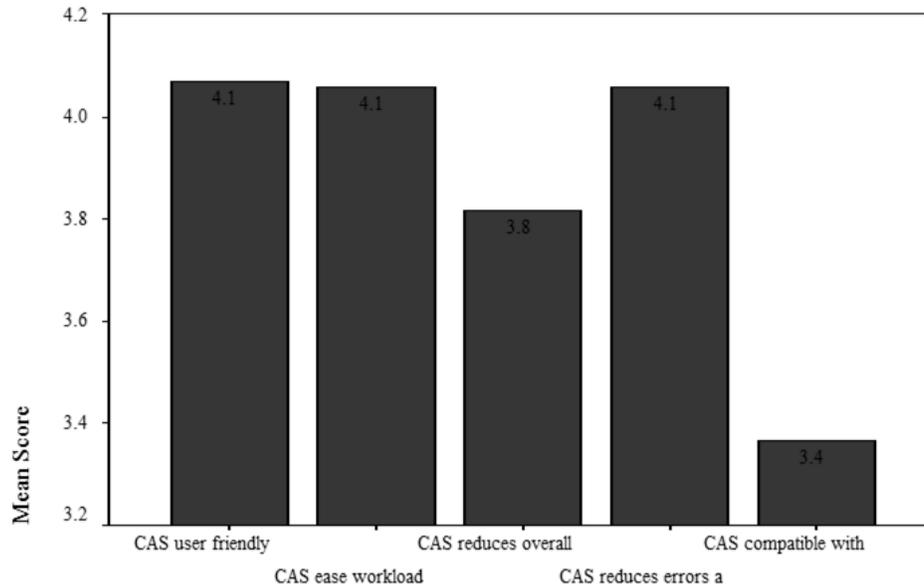
The R square value of the model is .724 implying that the 72.4% variation of CAS adoption is accounted for by cost. The regression model analysis results for the cost and adoption of CAS is as shown in table above 0.720, it shows the degree to which model shrinks R².

Users' perception and CAS adoption

The users' perception is an important factor in adoption of technology thus the study sought to assess the effect of perception on the adoption of CAS. As shown in Figure 8 the management perceives CAS as user friendly, easy to use and reduces errors. These three aspects of perception had a mean score of 4.1. Equally important is the fact that CAS reduces the overall operational cost of coffee societies. These findings confirms Amidu, Effah and Abor (2011), who examined the benefits of computerized accounting among Small and medium enterprises (SME) in Ghana. The finding revealed that the use of computer enables them to reduce cost, enhance clerical works and provide sufficient space to store data and process information for management decision. The findings supports Al-Gahtani and King (1999) findings that

accounting data is processed faster by using a computerized accounting system than it is achieved through manual efforts. Given the findings, CAS is favorably perceived by the management which may accelerate its adoption rather than hinder.

Figure 8: Users' Perception



The relationship between various variables and the adoption of CAS

Table 7: The Model Summary

Model	R	R Square	Adjusted R square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	sig. F Change
1	.895 ^a	.801	.789	1.44470	.801	66.462	4	66	.000

a. Predictors : (Constant), Cost, Availability of Infrastructure, Human Resource, Users' Perception.

The measure of the proportion of the variance in the dependent variable (CAS adoption) that was explained by variations in the independent variables is shown in Table 7. In this case adjusted R Square shows that 80.1% of the variance was explained. This implies that human resource, cost, availability of infrastructure and users' perception explains 80.1% variance in CAS adoption by coffee societies.

SUMMARY OF THE FINDINGS

1. Effects of availability of ICT infrastructure on CAS adoption

The study found out that availability of information technology infrastructure is an important factor that influences the adoption of CAS. Specifically lack of enough computers was found to be the main constrains of CAS adoption. Compared to human resource, cost and users perception, availability of infrastructure was the second most important constrains of CAS adoption. Availability of ICT infrastructure compared to CAS adoption had a correlation of 0.400 which is a positive correlation.

2. Effects of human resource computer proficiency on CAS adoption

Human resources computer proficiency considered in the study included computer literacy level, ability to implement CAS and relevant computers skills. The findings revealed that computer literacy level of the staff, mean of 3.2 and ability to implement CAS, mean of 3.4, are the most important elements of the human resource in respect to CAS implementation. As compared to cost, availability of infrastructure and users' perception, human resource proficiency was the third most important factor in determining the adoption of CAS by the coffee societies in Nyeri County. Human Resource has a correlation of 0.305 compared to 0.611 for Cost and 0.400 for Availability of Infrastructure.

3. Effect of users' perception on CAS adoption

User perception was considered in terms of how the managers as part of the staff who uses the system perceive the ease of use of the system. The perception on how useful CAS is in terms of easing workload and reducing errors was also considered as part of the users' perception. The findings revealed that the managers perceived CAS as tool that can reduce workload and errors. They also perceived CAS as a means of reducing the cost of operation. However users' perception was not an important constrain to adoption of CAS since it only had a correlation of 0.203. The study revealed that regardless of the adoption level of CAS undertaken by the societies, managers perceived CAS favorably. In essence therefore perception of CAS did not affect its adoption.

4. Effect of cost on CAS adoption

The cost of CAS adoption was considered in terms of cost of hardware, software, consultancy fee and maintenance. The cost of other related infrastructure was also considered. The maintenance cost of CAS was found to be the most important element of cost. Compared to availability of infrastructure, human resource proficiency and users' perception, cost was the most important factor. Therefore coffee societies adoption of CAS was mainly affected by cost involved in all the aspects of implementation. Cost had a correlation of 0.611 which was the highest correlation compared to others.

CONCLUSION

The study sought to find the effects of availability of infrastructure on the adoption of CAS. The study concludes that cost, availability of resources and human resource proficiency in that order. Society's lacks enough computers along with other related infrastructure to enable them adopt CAS effectively. The available ICT resources are basic mostly used for administrative work and limited accounting operations.

The study also concludes that human resources in the coffee societies are not computer literate enough to implement CAS. This is mainly because their hiring procedure does not emphasize on ICT proficiency as qualification.

The study shows that the managers are aware of the benefits associated with computerized accounting system and therefore they will be willing to implement computerized accounting system once installed in order to reap the benefits associated with accounting information system in case there is availability of funds to acquire ICT infrastructure and to train them how to work with such system effectively.

The cost of implementation is prohibitive. Apart from the initial investment, the recurrent cost such as maintenance and technical support are also a hindrance to CAS implementation. These challenges have resulted in partial implementation of CAS and in most cases complete none implementation. Though some coffee societies have computers they are mainly used for basic operations.

RECOMMENDATIONS

Coffee societies should consider gradual implementation of CAS since cost is one of the main constrains to computerization of the accounting system. This will spread the cost of implementation over a long period of time. Coffee societies should device recruitment policies that emphasize on computer skills. This will reduce the training cost that may be incurred for training the recruited staff. However, the existing staff should be given incentives to seek training on the relevant computer skills. The policy makers should consider zero rating hardware and software that are used in accounting system to reduce cost of CAS. This will encourage coffee societies to adopt CAS and improve on transparency and accountability in the coffee sector. Various stakeholders in the coffee sector should consider networking the coffee factories with marketer and other stakeholders to encourage coffee societies adopt CAS.

FURTHER RESEARCH

This study was limited to CAS adoption by coffee societies. However, the study recommends further research in the challenges facing the societies in using ICT in marketing their produce.

While cost, human resource computer proficiency and availability of infrastructures are important factors in CAS adoption, the role of governance of coffee societies on CAS adoption should be investigated. This is based on the fact that governance plays an important role in decision making on adopting new technology.

REFERENCES

- Ajzen, I., and Fishbein, M. (1980), *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- Allison, I.K. (1999), Information systems professionals' development: A work-based learning model. *Journal of Continuing Professional Development*, 2(3), 86-92.
- Al-Taweel, L. (2001), *Accounting Technology in Developing Countries: A case Study of Syria*, Unpublished PhD, Portsmouth University UK..
- Al-Gahtani, S. S., and King, M. (1999), Attitudes, satisfaction and usage: factors contributing to each in the acceptance of information technology. *Behaviour and Information Technology*, 18(4), 277-297
- Aduwa-Ogiegbaen, S. E., and Iyamu, E. O. S. (2005), Using Information and Communication Technology in Secondary Schools in Nigeria: Problems and Prospects. *Educational Technology and Society*, 8 (1), 104-112.
- Amidu, E. and Abor, J. (2011), "E-Accounting Practices among Small and Medium Enterprises in Ghana". *Journal of Management Policy and Practice* 12(4) 2011.
- Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), *Encyclopedia of human behavior*, 4. New York: Academic Press, pp. 71-81.
- Banerjee, J. and Lloyd, A. (1995), "Management Accountants and Information Technology", *Management Accounting*, 8(9) pp. 12-15.
- Blaylock, J. (2005), "A Paperless Office is a must today" *Practical Accountant*, Sept 2005, Supplement, Vol.38, p18-18, 1p
- Boockholdt, J. (1999), *Accounting Information Systems Transaction Processing and Control*. The Mac-Graw-Hill companies, London.
- Burgess, G. (1997), "A Categorized Study of the Use of IT in Small Business" Detailed Survey Report, Small Business Victoria, Melbourne, Australia.
- Chan, K. F., and Kelvin, A. (1990), Computer application by small and medium scale industry in Hong Kong, *International Conferences on Small and Medium Scale Enterprises*. Universiti Utara Malaysia. 1 (1), 225.
- Chen, J. C., and William, B. C. (1993), "The Impact of microcomputer systems on small business". *Journal of Small Business Management*. 31(3): 97-102.
- Coffee Act No. 9 (2001), *Coffee Development Fund*: Nairobi: Government of Kenya.
- Collins, J. C. (1999), How to select the right accounting software. *Journal of Accountancy*, October, 67-77.
- Cooper, D.R., and Schindler, P.S (2005), *Business research methods*, 8th edition, MC Graw-Hill, New Delphi, India
- Cragg, P. B., and King, M. (1993), "Small-firm computing: motivators and inhibitor". *MIS Quarterly*. March: 47-60.
- Davis, F. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of Information Technology". *MIS Quarterly*. 13(3): pp.319-340.

- Davis, F., Bagozzi, R., and Warshaw, P. (1989), "User Acceptance of Computer Technology. A Comparison of Two Theoretical Models". *Management Science* 9 (7). Pp. 60-97.
- DeLone, W.H. (1981), "Firm size and the characteristics of computer use". *MIS Quarterly*, December: 65-77.
- Donaldkiso, J. W. (2009), *Intermediate Accounting*, the first part, the translation of Hamid Ahmed Hajjaj, Al-Marekh Publishing House, the second Arabic edition , pp. 455.
- Duschinsky, P., and Dunn, P. (1998), "Competitive advantage from IT". *Chartech News*, The Institute of Chartered Accountants, April: 7.
- Elliot, R. K. (1992), "The third wave breaks on the shores of accounting". *Accounting Horizons*. 6(2): 61-85.
- El Louadi, M. (1998), "The relationship among organization structure, information technology and information processing in small Canadian firms". *Canadian Journal of Administrative Sciences*. 15(2): 180-199.
- Elawi, A. (2008), "*Obstacles of computerizing the accounting system applied in the Ministry of Education*," Master Thesis, University of Al al-Bayt.
- Economic Survey (2004), "*Central Bureau of Statistics*", Nairobi: Ministry of Planning and National Development.
- Ernst and Young (2001), *Advancing with E-commerce*. Paris: Commissioned by the National Office for the Information Economy.
- Gable, G. G., and Raman, K. S. (1992), "Government initiatives of IT adoption in small businesses: Experiences of the Singapore small enterprise computerization program". *International Information Systems*, January. 1(1): 68-92.
- Giovanni, F. and Mario, A. (2003), Small company attitude towards ICT based solutions: some key-elements to improve it. *Educational Technology and Society*, 6 (1). pp.56-90.
- Hassan, R. (2001), *human resource management, vision for the future*, University Publishing House, Alexandria, p. 211.
- Heeks, R., and Davies, A. (2000), Different Approaches to Information Age Reform. In: R. HEEKS, ed, *Reinventing Government in the information age*. London and New York: Routledge, pp. 22-48.
- Huber, G. (1990), "A Theory of the Effects of Advanced Information Technologies on Organizational Design, Intelligence and Decision-Making." *Academy Management Review*, Vol. 15, pp. 47-71,
- Islam, R. (2010), *Basic Accounting*, 1st edition, Hazi Book Deport Publications, Bangladesh.
- Jenson, J., Lewis, B., and Smith, R. (2002), No one way: Working models for teachers' professional development. *Journal of Technology and Teacher Education*, 10 (4), 481-496.
- Khattab, N. (2002), *The analysis of the factors affecting the efficiency and effectiveness of accounting information systems in Jordanian commercial banks*, Master Thesis, University of Al-Albayt,
- Kvale, S. (1996), *An introduction to qualitative research interviewing*. London: SAGE Publishers Ltd.
- Lees, J. D. (1987), "Successful development of small business information systems". *Journal of Systems Management*. 25(3): 32-39.
- Lauder, G., and Westhall, A. (1997), *Small firms on-line*. London: Commissions on Public Policy and British Business.
- Long, D. and MacGregor, A. (1996), *Integrating Information Technology*. Chartered Accountants Journal of New Zealand 75, (3), 66-67.
- Lymer, A. (1997), *The Internet and Small businesses: a study of impacts*. Fifth European Conference on Information System.

- MacNeil, A., and Delafield, D. P. (1998), Principal leadership for successful school technology implementations. *Paper presented at the 9th International Conference of Society for Information Technology and Teacher Education*, March 10-14, Washington, DC, USA.
- Mansfield, E. (1968), *Industrial Research and Technological Innovation: An Econometric Analysis*, New York: Norton,
- Marshall, C., and Rossman, G. (1999), *Designing qualitative research* 3rd ed., Thousand Oaks-CA: Sage.
- Moorthy, K. M. (2010), The Necessities of Paperless Accounting System. *American Journal of Scientific Research* 7, pp.106-118
- Nash, H. (1989), *Accounting Information Systems, Second Edition*, PWSKent Publishing Company.
- Obeid, A. S. (2011), Factors Affecting the Applicability of the Computerized Accounting System. *International Research Journal of Finance and Economics* 64, pp37- 44
- Odedra, M. (1993), IT policies in the commonwealth developing countries. In: G. HARINDRANATH and J. LIEBENAU, eds, *Information technology policies and applications in the commonwealth countries*. 1 edn. London: Commonwealth secretariat, pp. 9-35.
- OECD. (2004), *The Economic Impact of ICT – Measurement, Evidence and Implications*, Paris: OECD.
- Orodho, J.A. (2009), *Techniques of writing research proposals and report in education and social sciences*. Nairobi: Masola Publishers.
- Peter, S. (1999), "Technology trends crucial for small business". *Inside Tuscon Business*. 8 (48): 5.
- Porter, M., and Millar, V. E. (1985), "How information gives you competitive advantage". *Harvard Business Review*. 63(4): 149-160.
- Powell, P., and Xiao, Z. Z. (1996), "The extent, mode and quality of IT use in accounting". *Journal of Applied Management Studies*. December, 5(2): 143-158.
- Premkumar, G., Ramamurthy, K., and Crum, M. (1997), Determinants of EDI Adoption in the Transportation Industry. *European Journal of Information Systems*, 6, 107-121.
- Premkumar, G., and Roberts, M. (1999), Adoption of new information technologies in rural small businesses. *Omega*, 27(4), 467-484.
- Qatanani, K. (2002), *The impact of using the accounting information on management performance in the public industrial shareholding companies in Jordan*, Master Thesis, University of Al al-Bayt.
- Raman, K. S., and Yap, C. S. (1996), "From a resource rich country to an information rich society: an evaluation of Information Technology policies in Malaysia". *Information Technology for Development*. 7: 109-131.
- Ramirez, C., and Cosme, W. (2008), "Is technology necessary to streamline human resources management?" *Caribbean Business*; 9/25/2008, Vol. 36 Issue 38, pS4-S4, 1/4p
- Raymond, I. (1985), "Organizational characteristics and MIS success in the context of small business". *MIS Quarterly*. 9(1): 37-52.
- Read, G. (1996), Managing the knowledge-based organization: Five principles every manager can use. *Technology Analysis and Strategic Management*, 34(3), pp. 223-232.
- Romney, M. (1997), *Accounting Information Systems* Ninth Edition, Pearson Education (Singapore) Pte. Ltd, India.
- Reynolds, W., Savage, W., and Williams, A. (1994), *Your Own Business*: London: ITP.
- Strong, J., Portz, K., and Busta, B. (2006), *A First Look At The Accounting Information Systems Emphasis At One University: An Exploratory Analysis*." *The Review of Business Information Systems*, Volume 10, Number 2.
- Strydom, Y. (2002), *Ethics in Research* Osborn: Trevor Ltd Shiundu, J.S. and Omulando, S.J. (1992) *Curriculum: Theory and practice in Kenya*. Nairobi: Oxford

Stefanou, C. (2006), The Complexity and the Research Area of AIS, *Journal of Enterprise Information Management*, 19(1), pp. 9-12.

Stephen A. Moscové, Mark J., and Seemkin, (1989), *Accounting information systems for decision-making - concepts and applications-*, the translation of Kamal El-Din Saad, Ahmed Hamed Hajjaj, Al- Mareikh Publishing House, Riyadh, Saudi Arabia, pp. 802 - 803.

Seyal, A. H. and Rahim, M.M. (2006), A Preliminary Investigation of Electronic Data Interchange Adoption in Bruneian Small Business Organisations. *The Electronic Journal of Information Systems in Developing Countries*, 24 (4), 1-21.

Thong, J.Y.L., (1999), "An Integrated Model of Information Systems Adoption in Small Business" *Journal of Management Information Systems*, 15(4), 187-214.

Taylor, T., and Todd, K. (1995), Understanding Information Technology Usage: A Test of Competing Models, *Information Systems Research*, 6, 144-176.

Wilson, R. A., and Sangster, A. (1992), "The Automation of Accounting Practice". *Journal of Information Technology*.7: 66-75.

Yick, K. (1993), "Organized and Strategic Utilization of Information Technology, A Nation Wide Approach", *Information and Management*, 24, pp. 329-339.

Zarowin, S. (1998), "Accounting software: the road ahead". *Journal of Accountancy*. January: 67-69.