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The Influence of Social Computing in Corporate Institutions in Kenya

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Abstract: The study aimed at analyzing the influence of social computing applications in corporate institutions in Kenya using an actor network perspective which was to be achieved through three objectives: (1) to establish motives of using social computing applications in corporate institutions. (2) to establish the patterns of use of social computing application. (3) to establish how use of social computing is influencing business process. The study used an actor network approach to identify actors who would eventually mitigate use of this technology. Case studies of two corporate institutions and one public institution were carried out and data was collected through in-depth interviews, observations and on line sources. An iterative content analysis of data was performed through the lens of ANT and major themes, concepts and constructs were realized, revealing that corporate institutions in Kenya are using several social computing applications for business process and social computing is a force that is influencing the way businesses are carrying out their processes. According to analysis through the lens of ANT corporate institution in Kenya are on the translation stage, this is where disparate interests of different institutions are being aligned to common interests.

Key words: social computing; social networks; social media; actor network theory
JEL code: M150

1. Introduction

Huijboom (2009), contends that since 2003, the Internet has seen impressive growth in user-driven applications. This trend is referred to as social computing, as online applications increasingly support the creation of value by social networks of people. The elements of social computing include blogs, wikis, Twitter, instant messaging, chats, crowdsourcing, mashup, podcast, microblogging, multiplayer gaming and open source development as well as social networking and social bookmarking sites (see Appendix I).

The effect of social computing applications has had a rapid growth and therefore playing a fundamental role in shaping day to day activities of the society. Some of these simply include the way people meet other people. For example in social network sites like facebook and myspace you only need to send a friends request and become friends once the request is accepted, the way people relay information to friends through posts and chats in the circle of social network. Vannoy and Prashant (2010) suggest that while technology may influence society, society often exerts influence on technology. For example SMS text messaging was intended to deliver subscriber information but eventually was adopted by users as a vehicle of social behaviour.

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The paper discusses how corporates can use social computing capabilities to enhance business process. Social computing has potential to improve service delivery in organizational setting, the increase in use invites both public and corporate institutions to engage, innovate, and create relevance according to the types of relationships they want (Serrat, 2009). Social computing is becoming mainstream and is attracting users across all generations and levels of society (Huijboom, 2009). Kenya has a dynamic social computing community with a good percentage of the population aware and making use of social computing applications like social networking sites, chats, blogs and tweets. With evident good ICT policy from the initiatives of the Kenya ICT Board in creation of ICT capacity and a growing trend in use of social computing tools, the study aimed at establishing how corporate institutions in Kenya make use of social computing to enhance business process. *The research question to be answered is; how is social computing transforming the way corporate institutions in Kenya do business?*

We explore the research question under three research objectives (1) To establish the motives for using social computing applications in corporate institutions. (2) To establish the pattern of use social computing applications. (3) To establish how the use of social computing is influencing organizational process in corporate institutions.

2. Literature Review

This section covers background and history of social computing this is covered in (1) usage of social computing in government institution. (2) Usage of social computing in private organizations and social circles. (3) The context of the study, i.e., service delivery in Kenya and the various ICT projects and programmes currently undertaken in Kenya, the key researchable issues and how they can be addressed. (4) The conceptual framework used for the study.

2.1 Social Computing

Vannoy and Prashant (2010) define social computing as “intra-group social and business action practiced through group concensus, group cooperation and group authority, where such actions are made possible through the mediation of information technologies, and where group interactions cause members to conform and influence others to join the group.” For example chats, tweets, weblogging, social media, social bookmarking and networking site (see Appendix I).

According to the Kenya ICT Board (2010), the Kenyan government in collaboration with the World Bank through the Kenya ICT Board has been rolling out a project named Digital Inclusion (DI). The project aims to promote digital literacy and bridging barriers to digital life by bringing information services closer to people by providing necessary ICT and training. Some of the DI initiatives at the Kenya ICT Board include the Digital Village Project (DVP) also known as the “PASHA” project which aims at making ICT more accessible and affordable to a wider population. Objective of the project is to provide a suite of services to the public via computers connected to the Internet; the services include government, community based and commercial services. The “WEZESHA” project initiative aims at subsidizing the cost of owning a PC for students, Civil servants, small and medium enterprises and other groups. Consequently this will lead to increased access to the internet and use of computers in everyday life creating an infrastructure to run social computing applications.

The impressive growth of social computing tools coupled with speculations of their potential organizational benefits has led companies like IBM and Microsoft to develop new social computing platforms (e.g., Lotus Connections and MS Office SharePoint) adopted by many organizations (Hossam, 2008). With massive online potential businesses and governments have given some of this applications a keen eye and in some European and

American countries are already exploiting this opportunities to enhance processes and delivery. Social computing has enabled businesses to gain new approaches in the ways in which they conduct their business processes (Serrat, 2009).

With social computing applications, businesses either public or private no longer have restricted boundaries to market products and services or to interact with prospective customers or even collaborate with organizations and governments with an aim of strengthening business prospects. Similarly it is expected that employees can become more engaged and productive through the resulting development of strong social relationships emerging as a result of a company's social network profile. According to Ostergaard and Hvass (2008), *Value Jam* is a true social computing technology developed by and run by IBM. It is used externally as a pre-conference global discussion forum by the United Nations in connection with the Habitat conference in Canada on the deteriorating living conditions in major cities around the World. People from all over the World have joined up and met at Internet cafés and meeting places or participated from home in a discussion of priorities and important aspects of city dwelling. Organizations are adopting social computing with the promise of benefits to their members, teams and business. More collaboration, better coordination, and increased access to tacit knowledge and other embedded resources are potential benefits of corporate social computing (Hossam, 2008).

2.2 Social Computing and Marketing

American Marketing Association (2007) define marketing as the activity, set of institution, and processes for creating, communicating, delivering and exchanging offerings that have value for customers, clients, partners, and society at large. As more personal and professional lives are conducted via technology, an affluent track of preferences, opinions and behaviors are being constructed. Beyond the immediate benefits of empowering stake-holders, these data once stored within databases of social computing can be mined, providing a rich source of insight on market positioning, consumer opinion and employee productivity. By applying search, pattern matching and sophisticated analytics to these structured and unstructured reservoirs of social data, organizations can position themselves to better understand their customers' perceptions, their employees' experiences and the problems that should be demanding corporate attention.

Levack (2009) Suggests that getting a cross-section of people together based on departments and personal understanding of social computing, can be achieved using small pilot projects to ensure that both the customer base and employees are comfortable and then introducing a product or an idea to clients from the nascent stage and get their input throughout the development process. An illustration of this was the launch of Generation Benz community by Mercedes-Benz USA, with on-demand customer collaboration partner Passenger. Generation Benz is one company that has found value in marketing through social computing tools.

Social computing sites such as Facebook and Twitter may assist a business to quickly track the opinions of their followers about a particular market strategy or product for example by using a tweet or status update with the company's brand attached as a hash-tag (Bostrom & Heinen, 2006). Such may assist in carrying out simple market surveys though they might not be as accurate and more detailed as the organized and quantified market surveys carried out by qualified and competent statistical experts. Customer comments and opinions on the company products may reflect some of their complaints which can then be acted on by the company.

2.3 Corporate Social Computing

Fox and Meyer (1995) defines service delivery as the provision of public activities, benefits or satisfaction to the citizens. Service delivery relates both to provision of tangible public goods and intagible services. This can be done by government institutions, parastatals, private companies, non-profit organization or individual service

providers. Service delivery can also be defined as the ability to convey the outcome of objective labour or scholarly effort to a client.

With the emerging social computing technologies organizations may need to change how they conduct business. Kwai-fun and Wagner (2007) suggest that it is important for organizations to understand social computing technologies and that a better understanding of these technologies will be beneficial to prepare for the future of their businesses. On the other hand Vannoy and Prashant (2010) contend that companies should develop new tactics to succeed in the social computing environment that embraces new concepts of management and communication and in dealing with employees, consumers, and partners as power shifts from institution to communities. Therefore mapping social computing technologies to organizational processes should be the direction of change.

With the proliferation of Information and Communication Technologies (ICTS), the Internet has been an integral part of people's daily life and serves as an important medium for people to interact in the cyber world (Kwai-fun & Wagner, 2007). Among Internet applications, blogs (weblogs) have shown tremendous growth in recent years. Moreover, according to Technorati (2008), blogs exceed all the other Internet applications in the number of users. Witnessing this unprecedented phenomenon, enterprises are seeking the opportunities to unleash the potential power of this new marketing channel. Major portal sites, such as Yahoo, MSN, Google etc., have integrated the blogging services to their web applications. On the other hand, more and more companies are also maintaining their own blog communities or simply building the official blogs to communicate directly with their customers.

Weblogs, however, are only one example of social computing technologies that can impact organization practice. IBM for instance has policies for employee podcasting (presumably recognizing the value of this technology) (IBM, 2007), while other companies have been quick to adopt VoIP calling, especially Skype. Social computing can be characterized today by focusing on collaborative, user-generated content, shared among user communities through social interactions (Hossam, 2008).

2.4 Trends of Social Computing in Service Delivery

According to Samdi (2003) service delivery in public service comprises arrangements for satisfactorily fulfilling the various demands for service by undertaking purposeful activities with optimum use of resources to delivering effective, efficient and economic service resulting in a measurable and acceptable benefits to customers.

Serrat (2009) suggests that social computing applications have exceptional opportunities to achieve more simple user oriented, transparent, accountable, participative, inclusive and responsive joined up, networked and efficient governments. Stanforth (2006) argues that the successful implementation of e-government projects can make contribution to development, particularly where the wider public value goal is public sector reform programmes, such as improvement in transparency and accountability are supported. She illustrate further that technology is just one of a number of heterogenous socio-technical elements that must be considered and must be managed in the design and implementation of a successful information systems project.

In Denmark the Ministry of Finances, housing the "Digital Taskforce", have created a Wiki for the purpose of creating an integration model, for the public sector servants to participate in modernizing the IT infrastructure. Also in Denmark, *sundhed.dk* ("health.dk") has launched a forum (*diabeteschat.dk)* where diabetes patients can exchange knowledge and exchange experiences about their disease. The initiative keep the patient from feeling alone as it is possible to connect in a social context with peers (Ostergaard & Hvass, 2008).

The UK Government is using *YouTub*e as a tool for "viral marketing". One of the recent examples was a video showing the impact on Global Warming as an inspiration for the citizens to save energy and reduce carbon dioxide exhaustion. Also UK patients discuss and rate their experiences resulting from a hospital treatment at *patientopinion.co.uk* for the hospital to become more aware of the end-users experiences and to get free knowledge. This knowledge is vital for the administrators of the health sector, trying to answer questions on where to make things better, cheaper, and more effective (Ostergaard & Hvass, 2008).

In US bike users have created a site (*nyc.mybikelane.com*) where one can complain about road conditions, trucks and cars blocking bike lanes. Pictures are taken and license plates are registered and merged with geographic data in order to create a collective knowledge on where problems exist, and to speak up, taking advantage of the network at large, to the local government (Ostergaard & Hvass, 2008).

2.5 The Actor-Network Theory

ANT offers a notion of heterogeneity to describe projects. The theory was developed by scholars including Bruno Latour, Michel Callon and John Law from the study of science and technology to qualitative research traditions presently used in information systems. Information systems researchers consider in an interpretive view reality can only be accessed through social construction such as language consciousness and shared meanings (Tatnall & Gildings, 1999).

Actor-network theory was devised as a reaction to the often too global concept like those of institution, organization, states and nations, adding to them more realistic and smaller sets of association (Latour, 2007). ANT aims at accounting the very essence of societies and nature. According to latour (2007), the ANT agenda is the attribution of human, unhuman, nonhuman characteristics: the distribution of properties among these entities the connection established between them: the circulation entailed by these attributions: the transformation of these attributions and the connection of the many elements that circulates. An actor in ANT is a semiotic definition "Actant" that is something that act or to which activity is granted by others. An actant can be literally anything provided it is granted to be the source of an action (Latour, 2007).

Doolin and Lowe (2002) argues that ANT perceives contemporary society as constituted by heterogenous collectivities of people, but always together with technology, machine and objects. He further states that it is the intricate inter-relations among the heterogenous elements of technosceince that make up our society and organizations. And that actor-networks come in a variety of material forms, such as people, texts, machine and architectures. ANT treats the world as a set of related bits and pieces and there is no social order. There is only endless attempts at ordering through formation and stabilization of networks (Stanforth, 2006). The study will consider a number of "actants" this will include technical innovations, people, government institutions, finances, content, and system builders.

Allen (2004) contends that an ANT analysis of sociotechnical change does not assume that technological outcomes are determined by pre-existing technological capabilities or trajectories. He further postulates that ANT analysis seeks to explain how sets of actants (human and non-human) with diverse interest come together to create relatively stable technological arrangements. Based on studies that used the ANT framework, suggests that a key process for creating and maintaining the actor-networks is through enrollment, defined as a continuous process of persuasion and control in what the behaviour of diverse actants is kept in accordance with a specific set of technological arrangements.

2.6 Conceptual Framework

The study used Actor-Network Theory (ANT) as a research framework to explain relationship between actors

involved. ANT has been widely used. For instance, Andrade and Urquhart (2010) used ANT to examine the different phases of an information and communication technology (ICT) initiative intended to bring development to underserved rural communities in the Peruvian Andes, ANT has informed the analysis of the implementation of inter-organizational information systems (Rodon et al., 2008), health information systems (Cho et al., 2007) and enterprise resource planning systems (Elbanna, 2008). It has also been used in the study of the redeployment of a computer-aided dispatch system for the London ambulance service (McGrath, 2002) as well as the re-examination of the failed implementation of the computerized baggage handling system at Denver International Airport (Mahring et al., 2004).

Likewise, ANT has demonstrated its value in explaining technology standardization, for example personal digital assistant (Allen, 2004) and web browser (Faraj et al., 2004), and technology adoption, for example internet (Hannemyr, 2003) and e-commerce (Tatnall & Lepa, 2003). Similarly, ANT has proved particularly useful to understand the dynamics of the actions of heterogeneous actors both at the organizational level (Sarker et al., 2006) and across organizations (Baygeldi & Smithson, 2004). ANT has also been used for the analysis of information technology development, implementation and/or adoption in the developing world. It served to demonstrate the conflict between the Western assumptions inscribed in geographical information systems and the local practices in India (Walsham & Sahay, 1999).

In the same way, Gao (2007) explains the difficulties of achieving standardization when the actors have dissimilar views, while Heeks and Stanforth (2007) study reveals the tension between stabilizing the network of actors and stabilizing the technical design of a Sri Lankan e-government initiative. The ANT analysis of the scalability of the Health Information Systems Program (HISP), a project aiming at the delivery of primary health care in several developing countries, not only highlights the relevance of an attractor — the one which enrolls users around a new design — but also confirms Latour's (1986) observation that divergent yet sufficiently similar interests of the actors make the network robust (Braa et al., 2007).

The studies summarized above demonstrate the advantages of using ANT as a theoretical lens. ANT makes it possible to frame the analysis of the interplay between technology and society in the middle ground. As I have discussed, a number of information systems studies have used ANT in both the developed and developing world; however, none to my knowledge have used ANT to analyze the influence of social computing to corporate institutions and social change.

The merit for ANT for this study was that by studying the social networks of actors it allows to observe how the "actants" that is technology, concept and people build their relations and what eventually lead to adopting to the network of actors. Since the ways in which social computing applications will ultimately be used cannot be predicted in definite terms, by establishing behavior patterns between humans and non-humans we are able to understand the engagement process that leads to usage of a particular application. By adopting ANT perspective, we make deliberate effort into and discover how social computing can be employed in corporate institution.

A methodological ANT approaches "science and technology in the making as opposed to ready made science" (Latour, 1987). It entails micro-level studies of the places where science and technology comes into being (Cressman, 2009). The study will examine ANT using three concepts this includes Black boxing, irreversibility and Translation.

2.7 Black-boxes/Punctualization

The term black-box is used to describe a technical object not unique to ANT. A black-box in this case can be a computer, a personal digital assistant, a mobile phone or other technical objects that operates as it should.

Cressman (2009) suggests that a black-box is a technical artifact that appears self-evident and obvious. Punctualization refers to the process by which complex actors-actor networks are black-boxed and linked with other networks to create larger networks, "the process of punctualization thus converts an entire network into a single point or node in other networks (Callon, 1991)."

2.8 Irreversibility

Callon's concept of the (possible) irreversibility of an aligned network captures the accumulated resistance against change quite nicely (Callon, 1994). It describes how translations between actor-networks are made durable, how they can resist assaults from competing translations. Callon (1991) states that the degree of irreversibility depends on the extent to which it is subsequently impossible to go back to a point where that translation was only one amongst others and the extent to which it shapes and determines subsequent translations.

2.9 Translation

The concept answers the question of what actually occur during the process of technical innovation. The concept was developed by a French philosopher Michel Serres, as a term that attempt to overcome the arbitrary division between related aspects. According to Brown (2002) Translation is the process of making connections or forging passage between two domains, or simply establishing communication. "It is the act of invention brought about through combination and mixing varied elements."

From the above perspective using ANT, the study attempts to open the black box of science and technology by tracing complex relationships that exist between public institutions, corporate institutions, information, technology (social computing) and people. To achieve this study maps the way in which chosen actors define and distribute roles, and mobilize or invent others to their roles, through studying associations between heterogeneous actors that are proposed. Figure 1 outlines the network to be studied, and maps the relationship between the various actors that eventually determines which social computing tools are used and how are they used to aid organizational process.

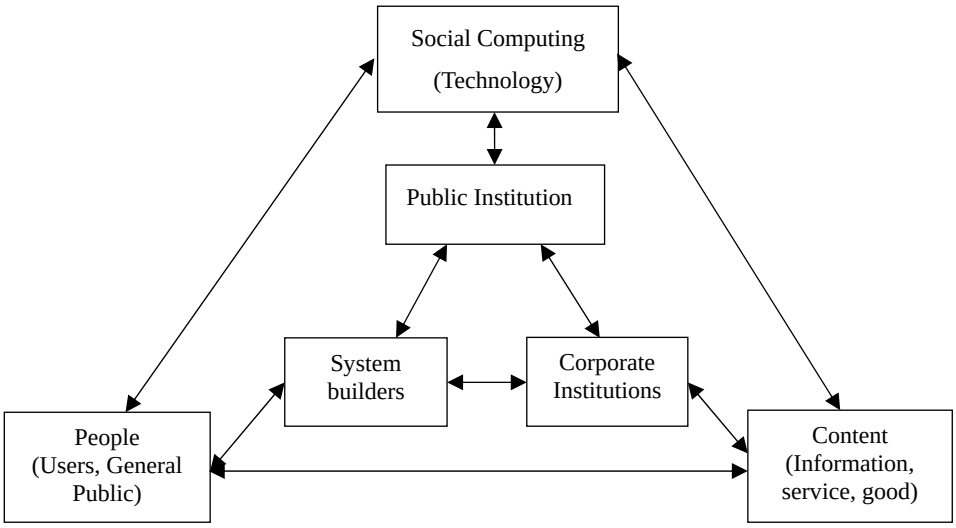

Figure 1 Schematic Actors in a Multi-level Network

The arrows in Figure 1 are indicative in reality each element may be connected to several others, with bi-directional relationships. The study focuses on the heterogeneous association between the various actors (system builders, people, content, corporate institutions, public institutions and technology (social computing) that

constitute the network, by assessing performance of individuals and evaluating their interests with an aim of describing the nature of these connections.

3. Case Study

3.1 Population and Sampling: Case Study

Case studies of two corporate and one public institution were used to investigate the phenomenon of social computing studied in the context of service delivery in Kenya. Among the considered organizations included company A (a corporate institution), company B (a software developer company) and company C (a public institution). The respondents included users, Customer service manager of company A, Director shared services of company C and Chief Executive Officer of company B. Company A, a leading ISP company in Africa was chosen because from preliminary investigation it was found out that it was among the corporate institutions in Kenya who highly use social computing applications to facilitate business process. Company B a software developer commonly known to develop web applications, is a fast growing company and in the middle of the Nairobi city center and therefore was chosen for convenience since it could allow frequent visits during data collection. Company (Institution) C which was the only public institution considered, was chosen to substitute the initial institution that was chosen, company C plays a major role in integrating public service in the various ministries.

According to analysis a large number of social computing applications and services are used to facilitate organizational process and social interaction online with rich exchange of information and evolution of aggregate knowledge have dominated the internet. In relation to data collected in Kenya, the use of social computing in corporate institutions to aid business processes is a rapidly growing phenomenon. Many corporate institutions are on a daily basis adapting to the new technology and devising new ways of doing business. Common themes were observed in use of social computing applications by corporate institutions in Kenya and this were categorised in how corporate institutions use social computing applications to aid organisational process, this uses crossed several applications and they include.

Common themes emerging in the study
• Communication with various stakeholders
• Marketing and advertising
• Driving web traffic

3.2 Communication with Various Stakeholders

Businesses in Kenya use various types of social computing applications to communicate with their stakeholders in their operating environment. Social computing applications such as blogs are being used by companies in Kenya to pass urgent important messages to stakeholders such as customer, employees, suppliers and partners. Usage of blogs is helping companies to develop better relationships with their set target groups thus helping them market themselves more efficiently and effectively because they help them personalize their companies and their ranges of products. Some years back a media house had changed the company logo and had invited their viewers to comment on the same on a blog which they had set up, it turned out most of the viewers were not content with the change they had made and this resulted to a revert to the old logo. Most comments based on the fact that the new logo was not representative of the company. This gave rise to a very important issue that arose as a result of using social computing applications in organization, the issue of “power” with use of these applications a boardroom decision is not final as it used be, and power has been transferred to viewers who gave

the final say on what they expect. Application of instant messaging is helping businesses save time and effort by eliminating lag in e-mail response time and cuts on the usage of telephone.

CEO, of company B he mentioned:

> "Among some of the software applications we develop for our clients is the Instant messaging system for churches which they use to spread gospel to their congregation and for corporate institutions which are mostly used for viral marketing".

Customer Service Manager of company A said:

> "We utilize several social computing applications this includes Blogs, broadcast SMS system, corporate instant messaging, knowledge based systems (corporate wikis) and social media to deliver service to our customers. All this are mostly used to disseminate information a good example is the broadcast short message service system which can instantaneously send messages to all our customers and this usually happens automatically, informing them on what is causing a network outage".

The CEO of company C categorically specified that the instant messaging system has become a communication vehicle which is used frequently by businesses and because of its business value more and more businesses are adapting to it and using it more in their daily activities this became evident with the continuous increase in clients requests. The Customer Service Manager insisted on how communication to their clients had been made easier through using Broadcast *SMS* systems which operate automatically and message being sent simultaneously this had enabled shift from other modes which involved calling the clients or sending alert email which consumed much time and money.

3.3 Marketing and Advertising

From what was observed many companies are using social networking sites as platform of reaching out to prospective customers. This includes use of widgets to advertise their products and also marketing by postings on user profile, this is usually made possible by using a network of friends. Users usually get a chance to view company products and services when they are subscribed members which is usually free to subscribe in most popular social network sites like Facebook, Twitter, Myspace, and LinkedIn. Once you are a subscribed member when you log in your account you are able to access information posted on your wall inclusive links to company website and also you can view advertisements placed on widgets.

From observation, 75% of media houses in Kenya have profiles in Facebook and Twitter where the listeners can contribute to topics be discussed live on radio or television and this is a more convenient way compared to when calling, the presenter usually samples viewers comments and the listeners usually have a chance to view comments which were not read out by accessing their profile. Small businesses like clothing shops and fast food joints post their products on these pages. This has enabled them to increase market penetration especially among the youth and also minimizes advertising costs. Companies are taking advantage of viral marketing which is defined as the *word of mouth in wrap speed*. This usually involves creating excitement about your company products in such a way that prospective customers cannot resist being a friend or a fan in your page for example many comedians who run TV shows have succeeded to grow their client base through online friends in social networking sites like Facebook and twitter pages. A growing trend among corporate institutions was noted more and more companies are integrating their websites with the popular social networking site like Facebook and Twitter.

The Customer Service Manager of company A, mentioned

> "We run a twitter account which we use to communicate with our customers; this was initiated with the nature of

operations of our organization".

The CEO, company B mentioned:

"Patterns of use of social computing applications are likely to use than not to use which is basically attributed to change in lifestyle of individuals. People try to save time to enable them cover a lot in a small time frame".

User A said mentioned:

"The new generation appreciates companies which hunt for their attention and therefore, if a company can run a profile in popular social networking site then the others should follow suit or they risk extinction".

According to these observations companies are transforming their business operations to adapt to new ways of doing business through use social computing resources available. Company B uses Twitter as platform of interacting directly to its clients and this includes handling complaints, responding to request and so on. The CEO, company B attributes change in lifestyle as a major driver of adoption and eventual use of social computing technology which accounts to some percentage of user considering the fact that the young generation feel it is important to fit in to new ways of doing things.

3.4 Driving Web Traffic

Both company A and company B widely utilize social networking sites not only to communicate with their clients directly but also to direct clients to their website. Among the common use of these applications includes driving web traffic according to observations and analysis more and more Kenyan firms have commercial profiles in either Facebook or Twitter and another percentage of organizations both public and corporate create company links in social networking sites and popular blogs which usually directs users to their websites and enables the users to view products and services offered by the company. Entertainment companies for example local restaurant and others with entertainment broadcast make use of social networking sites to update their clients on events which are oncoming. A good example is a popular singing competition program on a local television was widely publicized using both Twitter and Facebook. Despite having an event website they integrated the website with the social networking sites and this easily allowed users to easily navigate back and forth while searching for information about the event.

4. Discussion

In the case of the use of social computing applications in corporate institutions the study began by identifying some of the important actors. The interview with the customer service manager of company A instigated the study and identified some of the other important actors. From this point on the key was to follow the actors, both human and non-human, searching out interactions, negotiations, alliances and networks. Negotiations between actors needed to be carefully investigated. Apart from the obvious human to human kind of negotiation, there was also human to non-human interactions such as the business people trying to work out how social computing applications operates, and how to adapt this technology to their own business purposes.

Social computing phenomenon has been discussed under three actor network theory concepts, this include; translation, irreversibility and black-boxing. These three ANT concepts demonstrate the transition from not using social computing technology to using the technology for business processes in corporate institutions. It exposes the various roles actors play in eventual acceptance of social computing usage in businesses. In the translation stage we see how individual interests are aligned to common interests through common interests, definition and

inscription. Once actors in the network reach a critical mass and stability is achieved then an irreversible state is reached and through the irreversibility concept it demonstrated how users cannot go back to a state of not using the technology. Once standards are defined and adopted, the technology and users are black-boxed in a single unit used and without questioning users only think about input and output.

4.1 Translation

Interests of actors in the network vary widely and these interests encourage or constrain the use of social computing applications to aid process. Company A is interested in, disseminating information faster, improving transparency in their services, increasing the service charges and reducing the role of the middlemen. Company B is interested in marketing and advertisements, enhancing community values and reducing costs. Company C is interested in increasing revenue, reducing response time and getting public view on services offered.

The first step of translation process is the aligning of the interests of actors within this actor network. By aligning the interests of actors within a network, the network becomes stable and social computing technology is then firmly established. Aligning of the interests of actors in this network involves the translation of these interests into a common interest. Among others company A's interests in use of social computing technology involves communication to clients and other members of the supply chain. This is common to interests of company B and company C. Company B's interests being viral marketing and others are translated into interests in promoting use of social computing. This translation is achieved in the network through common definitions, meaning and inscriptions attached to social computing technology. This common definition involves use of common social computing tools, having common purposes and intentions of use, types of processes aided by these tools.

Inscription or definition of its properties, usefulness or desirability is used to support the translation of interests. Inscription of social computing include defining the logic behind individual use social computing applications such as chat, blogs, social networking sites etc. (see Appendix I). The interpretations placed on the individual applications and the way it aids organizational processes act as text supporting the translation of actor's interests and hence aligning the network. A company which uses instant text messaging systems to market their products justifies viable use of this application to conduct process and based on this company A uses this application for similar or a different purpose to aid process and therefore through translation the individual interests of different companies are aligned to common interest.

4.2 Irreversibility

The actor network grows to reach a critical mass and then reach a state of stability. If the network of actors becomes unstable, it can disappear as quickly as it emerges, taking with it the technology which then becomes obsolete. At some point the use of social computing technology becomes an essential and standard part of the processes in company A, company B, company C and all the other companies and individual users using this technology. Social computing becomes part of the technical as well as the social part of the organization, technical in the sense that it is the structure that sustains organizational process and social in the sense that it facilitates interactions between users and actors in concern. It then becomes impossible or very difficult to go back to not using social computing technology.

More importantly in establishing social computing technology is the defining of standards and protocols. These are established within actor networks by negotiations, translation, inscription and the alignment of the interests of major stakeholders. Such standards definition may occur at an international level, while having local consequences. Hence there are distinct but liquid associations between overall concerns and local concerns.

4.3 Black-boxing

Once standards are adopted by the actor network they become difficult to reverse. Hence users become locked into the network and its standards. In a stable network, the shift to not using social computing technology to aid process is irreversible. The technical and social standards become a black-box, whose contents and operation no longer need to be considered and are a matter of indifference. Social computing is then treated as part of everyday life, embedded in organizational activity and taken-for-granted. Only input and output matters. Both the technical and the social network are sealed, regular and stable. Social computing technology is then accepted without questioning how it works, or whether it represents the best way to do things. It is no longer exciting or new; just an extension of self, part of the organizational environment, embedded in the social and technical framework.

Figure 2 demonstrates the various stages social computing technology will go through before being accepted and utilized to aid business process in corporate institutions.

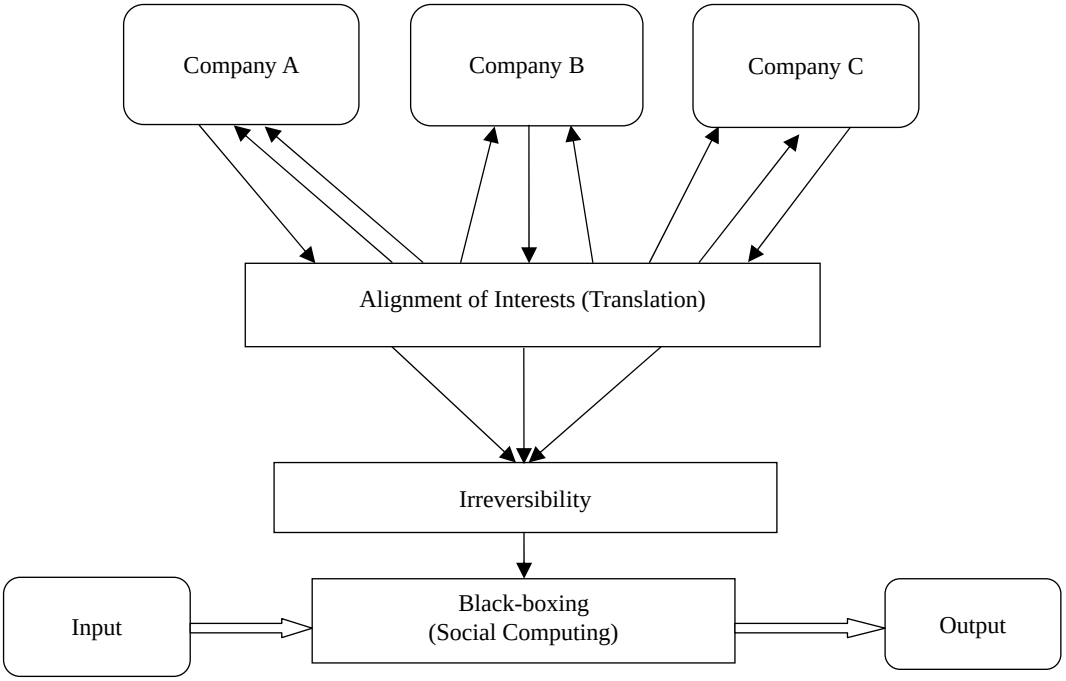

Figure 2 ANT Perspective of Social Computing Technology

4.4 Motive of Use

The use of social computing applications to aid business process in corporate institutions is on a steady increase; literally more companies are discovering the value of using these tools to do business. According to the first objective of the study which was to establish motives of using social computing applications in corporate institutions, this came out clearly during the study first motive to use which came out during interview with the CEO of company B he said:

> "Change is inevitable more importantly to business institutions when technology is the concern, customers are constantly raising their standards and therefore we have to adapt to new ways of doing things for our survival as a business. If our customers can be found in Facebook, LinkedIn or twitter then we have to follow them there."

So most corporate institutions use these applications to adapt to changes in their environments where meeting

their clients personally may be difficult or either having an aim of going where the customer is located.

Using social computing tools in corporate institutions reduces costs immensely, the customer service manager of company A demonstrated this as a major driver to using this applications. Any business organization aims at maximizing its profits and therefore one way of achieving this is minimizing costs, social computing enables organizations to achieve this. Consider an application like social networking sites which are used for viral marketing cutting down cost to almost zero. Social computing tools has also shown a unique feature which cannot achieved by traditional business processes, with an application like instant text messaging an organization can reach a large number of customer in the shortest time possible at the same time. Time is always of great importance and therefore corporate institutions are aiming at cutting down on response time to clients requests, this has been achieved with local telecommunication organizations that run company profile in social networking sites like Facebook and Twitter.

4.5 Patterns of Use

The second objective of the study was to establish patterns of use of social computing applications in corporate institutions. Under this objective the study aimed to ascertain which social computing applications are commonly used in organizations and how are they used to aid business process. Under this among the commonly used social computing applications include company blogs, corporate wikis, corporate chats, instant text messaging systems, and social networking sites. These applications are mainly used to disseminate information, customer retention, and marketing. Considering a tool like the corporate chat has completely transformed customer service, first it facilitates real time response to customer queries irrespective of where the customer is located, in addition the back and forth communication is stored in a company database which can be used for future reference.

4.6 Influence of Social Computing

The third research objective was to establish how use of social computing is influencing organizational process in corporate institutions. The CEO Company B when asked how social computing is influencing process in their company he said:

> "It has facilitated efficiency in service delivery and also it has created a platform for interacting directly with customers apart from this customer support has been streamlined by use of social computing applications. The organization has built continuing trust through use of this technology."

Social computing is gaining an edge in the business forum since it is seen to be transforming the arena in a more efficient and effective way. Clients complain have been reduced, since they do not have to wait for a long time to get service from institutions, their search costs have reduced since the services are just a click away. Response of the customer service manager of company A on how social computing technology is influencing business process was as follows:

> "Use of social computing applications has enabled the organization eliminate middle men who initially were their connection to the end users, through the use of social media the company can bypass the distributor and talk to the end user directly informing them of the real situation they are facing."

The influence of social computing applications to business process is conspicuously evident; middlemen are being eliminated from the supply chain which is interesting since it is impacting on all levels in the supply chain. This is accounted to the level of transparency that comes with the technology and therefore it is hard to lie to the customers and anyone who does this is risking a backlash. Despite the immense positive influence, use of social

computing applications also brings along negative influence to business process this includes; lack of privacy, loss of control and no room for mistakes is allowed when using social computing application and incase of a mistake it may cause the company great loss.

4.7 Emerging Issues

An interesting matter was how concepts and ideas were completely divided. The interview with the CEO of company B a software developer firm, revealed that only technical aspects of the technology are given a close attention on their part, this involves how the technology works and how it can aid business process and therefore some issues are left without being properly explored, like how the use of social computing applications will impact the social aspect of the society. How individuals will react to this technology or how it will impact on the social behavior of employees or users. On the other hand corporate institutions which utilize these tools are biased on how best the technology meets their demand and therefore are not concerned on how these tools are developed and challenges faced by their technical counterparts who are concerned with proper functioning of these applications.

In a broad perspective the use of social computing applications in corporate institutions is expected to face more challenges which arise as a result of the training acquired by business people, An overview of business courses offered in a large number of local colleges reveals that business studies offered in these colleges are oriented toward equipping the student with knowledge biased to business issues despite the socio-technical environment and therefore any technical training acquired to facilitate working in a business environment is only technically oriented without cross-cutting issues that concerns the social part of it. This issues that outweighs technology use and adoption since the two sides must move concurrently to enable easy understanding of the business value that use of social computing brings to corporate institutions.

4.8 Supporting Studies

Kwai-fun and Wagner (2007) in their study of social computing and its impacts on organizations suggested that organizational computing should take advantage of employees' social computing expertise and acceptance and to further capture the attention of customers. In the study based on literature and findings more and more corporate institutions are tapping into the business value of social computing applications by using them to aid business process. Huijboom (2009) postulates that social computing technology continues to grow in popularity and penetration across the globe. This is seen from the study how more corporate institutions are adopting to the new ways of doing business through use of social computing applications.

The study indicates that actor's knowledge and interaction patterns play a critical role in the success of processes facilitated by social computing. Scantelbury, Brown, and Thorpe (2008) found that while the tool functionalities were decisive in take up, they were secondary in terms of developing strong social networks. The real "glue" was the enthusiasm and sense of shared interests of the practitioners driving their use. A clear focus, shared goals, support and mediation seem crucial to the success of SC projects. Analyzing the collaborative use of online tools on the design of aerospace systems among senior and graduate engineering students, Cho, Gay, Davidson, and Ingraffea (2007) conclude that both individual and structural factors (i.e., communication styles and preexisting friendship networks) significantly affected the way in which collaborative networks were developed. Furthermore the resultant actor network is influencing use of social computing tools by secondary actors to the extent that more actors are relating to the network.

According to Analysis through the lens of ANT corporate institutions in Kenya are still in the translation stage, this is where common interest are still being derived and therefore most institutions are aligning their

disparate interest. Once these interests are aligned and actors in the network reach a critical mass then the use of social computing applications by corporate institutions will move to the irreversibility stage. So this means although at slow pace which is constant the number of corporate institutions in Kenya which are using social computing technology are increasing both in terms of level of use and new users.

4.9 Revised Schematic Actors in a Multi-level Network

According to findings social computing emerges as the only primary actor, this because this technology is only used where it gives value and therefore a question of how best it is utilized to facilitate institutional process is asked and that is when the initiation process starts. According to findings public institutions do not use social computing technology in their processes and therefore they do not impact the actor network. The technology in concern is synonymous with content or information obtained from them and hence the value of these applications is derived from their capabilities.

The secondary actors in the network comprises of corporate institutions, system builders and users. Use of social computing in corporate institutions is mitigated by common values shared meanings among firms with disparate interest; value is derived through aligning of these interests which grows the network.

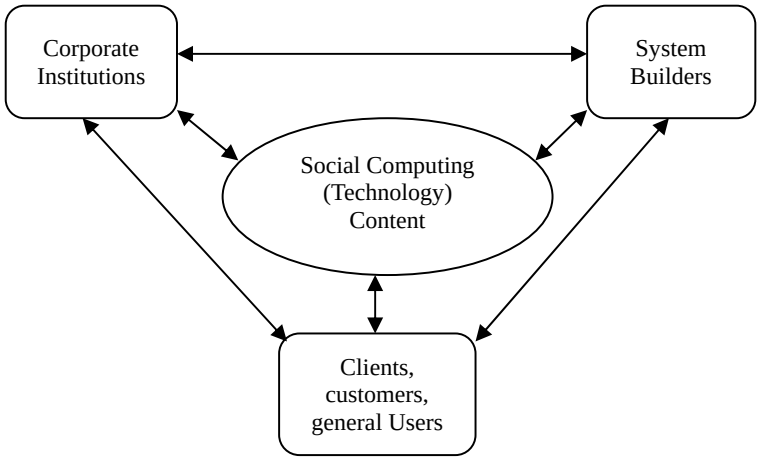

Figure 3 Revised Schematic Actors in a Multi-level Network

Despite the vast number of actors we can accommodate in this network their contribution to using social computing applications is not substantial to hold the relationships in place.

5. Conclusions

Social computing applications exhibit a huge potential for corporate institutions to face the challenges in changing business process and sustain growth in corporate institutions. From an institutional stance, these applications can assist in maintaining a close relation with stakeholders. From an actor network perspective social computing can serve as a means of content creation and dissemination. As far as business process is concerned, social computing application in corporate institutions indicate a significant potential for enhancing institutional process and outcomes. Social computing tools in particular (1) facilitate cost cutting measures through cheaper ways of advertising and marketing products and services. (2) Facilitate communication between stakeholders to achieve operational efficiency.

Generally firms are using these applications for three major purposes communication, marketing and driving

web traffic. Using these tools to conduct business processes has influenced corporate institutions in a several ways this includes: corporate institutions are considered more efficient and effective, i.e., response time has been reduced, costs related to marketing have been cut down, they have expanded their markets etc.

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Appendices

Appendix I Terms in Social Computing

Form	Description
Blog	Short for web log, an editor-less, chronologically ordered journal of commentary and descriptions of events, written in a conversational tone, sometimes accompanied by other material such as graphics or video, that is frequently updated with permanent links to other sources and contains entries inviting comments.
Chat	Interaction on a website with users adding text items in sequence into the same space at almost the same time.
Crowdsourcing	A compound of crowd and outsourcing, the broadcast by an initiating agent of problems in need of solutions to a group of solvers, with convergent interests and behaviors, in the form of an open call.
Image and video sharing sites	A user-generated website that allows users to upload pictures or videos and view and comment on those of others.
Mashup	An application combining data from two or more external sources into a single integrated tool that performs a new service.
Microblogging	A web service that allows users to write tweets and publish them to be viewed and commented upon by their network.
Podcast	Audio or video "show" made available on the internet, usually through a subscription, for downloading to personal computers or mobile devices.
Social bookmarking	A method enabling users to store, organize, search, and manage bookmarks of websites.
Social Media	Online technologies and practices that users leverage to share concepts, experiences, insights, opinions, and perspectives in social interface.
Social Networking	The process of engaging in online communities, typically through "groups" and "friends lists", that allows users to connect and interact with like-minded parties.
Tweet	A single message or status update of up to 140 characters that can be read by users following individuals on Twitter, a microblogging service, or the act of posting it.
Widget	Also called a gadget, badge, or applet, a piece of self-contained, transportable code, often displayed in a small box, that can be embedded into a website or program to perform a specific function, such as providing weather forecasts or news.
Wiki	Collaborative publishing technology, often taken to mean a collection of webpages that allows users to work on and modify content online with appropriate version control.
Source: (Serrat, 2009)	

Appendix II Sample Interview Guide

Sample Interview Guide I:

Analyzing the influence of social computing in corporate institutions in Kenya: An actor network perspective

Research Interview Guide

The interview is in-depth to enable understanding phenomenon of social computing for corporate institutions in Kenya. Note for the purpose of this study, social computing is defined as "**the computational facilitation of social studies and human social dynamics as well as design and use of information and communication technologies that considers social context**". The elements of social computing considered in the study include blogs, wikis, Tweets, instant messaging, chats, crowdsourcing, mashups, podcast, microblogging, and social networking sites.

(1) Motive of use

(a) An overview on institutional change over time i.e. from what was used before up to now.

(b) How does the company initiate new technology?

(c) Which are the modes of communication that have been used in service delivery over the years?

(d) Any social computing tools being used to deliver services? Adoption to function, are they satisfactory in achieving objectives?

(2) Behavior patterns

(a) What are drivers of change in use of social computing application?

(b) How is social computing transforming business processes?

(c) How is use of social computing aiding process?

(d) Who are the main actors in a network of social computing technology users? What role do they play?

(e) How can social computing give corporate institutions business value?

(f) What are the limitations when implementing new technology like social computing in institutional process?

(3) Influence on service delivery

(a) How can social computing support business process?

(b) How does your organization encourage clients and employees to adopt the use of social computing applications in business process?

(c) How can social computing improve provision of information about product or service?

Sample Interview Guide II

Analyzing the influence of social computing in corporate institutions in Kenya: An actor network perspective

Research Interview Guide

The interview is in-depth to enable understanding phenomenon of social computing for corporate institutions in Kenya. Note for the purpose of this study, social computing is defined as "**the computational facilitation of social studies and human social dynamics as well as design and use of information and communication technologies that considers social context**". The elements of social computing considered in the study include blogs, wikis, Tweets, instant messaging, chats, crowdsourcing, mashups, podcast, microblogging, and social networking sites.

(1) Motive of use

(e) An overview on public institutional change over time e.g. creation of GITS, Egovernment directorate, in public service.

(f) How do ICT projects get approved for implementation?

(g) Which are the modes of communication that have been used in service delivery over the years?

(h) Any social computing tools being used to deliver services? Adoption to function, are they satisfactory in achieving objectives?

(2) Behavior patterns and uptake

(g) What are drivers of change in use of new technology in public service?

(h) How can social computing transform public service delivery?

(i) How is use of new technology initiated in public institutions?

(j) How important are system builders and corporate institutions in implementation of new technology in public service? Their role?

(k) How can social computing reduce unnecessary expenditure in public service?

(l) What are the limitations when implementing new technology in public service?

(3) Influence on service delivery

(a) How can social computing support organizational process?

(b) How can government encourage public service users to adopt use of social computing applications in service acquisition?
(c) How can social computing improve provision of information about product or service?

Acronyms

IEEE -Institute of Electrical and Electronic Engineering
ANT -Actor Network Theory
DI - Digital Inclusion
DVP -Digital Villages Project
ICT -Information and Communication Technology
KTN -Kenya Television Network
NTV - Nation Television
KENET-Kenya Education Network Trust
ISP -Internet Service Provider
TRA -Theory of Reasoned Action
TPB -Theory of Planned Behavior
TTF -Task-Technology Fit