

**Increasing Vibrancy and Retention of Users in Online Social Networks by
Implementing Usability Features**

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**A thesis submitted in partial fulfillment for the degree of Master of Science
in Software Engineering in Jomo Kenyatta University of Agriculture and
Technology**

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DECLARATION

This Thesis is my original work and has not been presented for a degree or award of any type in any other university.

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DEDICATION

This thesis is dedicated to my family with love.

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LIST OF ABBREVIATIONS AND ACRONYMS

CD-ROM	Compact Disc Read-Only-Memory
CSCW	Computer-Supported Cooperative Work
FAQs	Frequently Asked Questions
GOMS	Goals, Operators, Methods and Selection rules
HCI	Human-Computer Interaction
HIP	Human Information Processing
IP	Internet protocol
MVPs	Most Valuable Professionals
PC	Personal Computer
PHP	Hypertext Preprocessor
SNSs	Social Networking Sites
SPSS	Statistical Package for Social Sciences
UCD	User-Centered Design
USDP	Unified System Development Process

URL Uniform Resource Locator

UXD User Experience Design

ABSTRACT

Online social networks are multibillion industries that did gain accelerated subscriptions when they initially started since they contributed considerably in information sharing, chatting and generally networking among users. In the recent past there has been clear signs from different research conducted that there is increase in dormancy among the users. This is mainly caused by design features of these sites, lack of content and functionalities to excite these users. Relationships the users of social networks must be initiated based on trust and then carefully cultivated as also organizations identify a sequence of steps to increase a constituent level of involvement and offer a variety of participation options that work to engage different components of their audience. To build a vibrant online community or social network, organizations need more than an individual's donation or membership application. They need ongoing interaction opportunities that will keep a constituent engaged and developing into a lifelong supporter. In addition to defining a set of interactions, goals must be clearly articulated. Organizations should also ask themselves fundamental questions about the nature of the online social network or community that they are building. This research was conducted to identify the possible ways in which the excitement among the users could be aroused to make online sites vibrant. The user interface design was developed that addressed usability features for motivating users to participate, engage and contribute in online sites. A usability evaluation/test was performed by analyzing web clicks, page visits, feedback forms and web traffic to assess the effectiveness of these features. The study found out that individuals using social networks are well distributed in terms of age and gender with most of them having attained tertiary education. However to attain the goals of this project the analysis brought out some features whose emphasis would help increase user activity and

motivation leading to a more vibrant network. These features included: posting of status updates, creating information, finding new friends and awarding user levels depending on the user's level of activity. This can be identified using user badges or star rating, of importance also is the user interface with easy accessibility to such features as login and registration. The design should also be optimized to allow auto-refreshing pages to enhance user experience.

CHAPTER ONE

INTRODUCTION

1.0 Background

Social Networking Sites (SNSs) have become a global phenomenon, with communities such as MySpace, Facebook and Bebo reporting user figures in the hundreds of millions. People, having been invited into or chosen to join these communities, are able to publish multimedia content about themselves, their interests and concerns. They can establish links to existing friends or discover new friendships because the social networking sites help them to identify people who share common interests and pastimes (e.g. people in the same town or with the same hobbies, or who like similar films). Instead of being limited to a network amongst peers within the schoolyard or workplace, social networking sites are increasingly allowing relationships to be built up with people right across the globe and from all walks of life. Inside these networks, people are now actively collaborating, creating new content and finding a global voice for themselves Boyd D & Ellison N.(2007).

Social Networking has its origins in fifteen years of online networking with, for example, Poptel/Geonet bulletin boards, independent conferencing groups, Communities On-Line in the UK, Global Cities Dialogue (French led) and hundreds, if not thousands, of local on-line groups. Web 2.0 technology has now become accessible to the mainstream and people from all over the world have embraced this new revolution in the generation and sharing of content. The small online communities were the pioneers in the establishment of social networking sites and are in part responsible for their extraordinary growth Jacob G. (2009).

According to Card, Moran & Newell (1983), Usability is a measure of the interactive user experience associated with a user interface, such as website or software application is easy-to-learn, supports users' tasks and goals efficiently and effectively, and is satisfying and engaging to use.

An interface level of usability can be measured by inviting intended users of the system to participate in a usability testing session. During a usability test session, a user is given a series of tasks to complete by using the system in question, without any assistance from the researcher. The researcher records user behaviors, emotional reactions, and the user's performance as the he attempts to accomplish each task. The researcher takes note of any moments of confusion or frustration that the user experienced while trying to complete a task, and also tracks whether or not the user was able to satisfactorily complete each task. Hill et al. (1998), Analysis of data from several users provides User Experience Engineers a means of recommending how and where to re-design the interface in order to improve its level of usability and thus, the user experience in general.

1.0.1 What makes a website or piece of software usable?

Usability depends on a number of factors including how well the functionality fits user needs, how well the flow through the application fits user tasks, and how well the response of the application fits user expectations. We can learn to be better user interface designers by learning design principles and design guidelines. But even the most insightful designer can only create a highly-usable system through a process that involves getting information from people who actually use the system (Iriberry et al.(2009). Usability is the quality of a system

that makes it easy to learn, easy to use, easy to remember, error tolerant, and subjectively pleasing.

1.0.2 Importance of Usability

From the user's perspective, usability is important because it can make the difference between performing a task accurately and completely or not, and enjoying the process or being frustrated. From the developer's perspective, usability is important because it can mean the difference between the success and failure of a system Wellman (2001). From a management point of view, software with poor usability can reduce the productivity of the workforce to a level of performance worse than without the system. In all cases, lack of usability can cost time and effort and can greatly determine the success or failure of a system. Given a choice, people tend to buy systems that are more user-friendly.

1.0.3 How to Achieve a High Level of Usability

Wellman (2001) indicates that the key principle for maximizing usability is to employ iterative design, which progressively refines the design through evaluation from the early stages of design. The evaluation steps enable the designers and developers to incorporate user and client feedback until the system reaches an acceptable level of usability.

The preferred method for ensuring usability is to test actual users on a working system. Achieving a high level of usability requires focusing design efforts on the intended end-user of the system. There are many ways to determine who the primary users are, how they work, and what tasks they must accomplish. However, clients' schedules and budgets can

sometimes prevent this ideal approach. Some alternative methods include user testing on system prototypes, a usability audit conducted by experts, and cognitive modeling.

1.0.4 Where is Usability Applied

Usability is one of the focuses of the fields of Human Factors Psychology and Human-Computer Interaction. As the name suggests, usability has to do with bridging the gap between people and machines. A user interface (or human-computer interface) refers to the parts of a hardware and/or software system that allow a person to communicate with it (Agarwal et al. (2008)). This includes output devices (the way the computer talks to a user) and input devices (the way a user talks to the computer). Typical “output devices” include computer monitors and the operating systems that run on them, and also include speakers and other devices that provide feedback. “Input devices” include peripherals like keyboards, mice, and joysticks, and also include microphones and eye movement devices. Each of these interface components have devices corresponding to the visual (sight), aural (sound), and haptic (touch) channels of the brain. Usability engineering studies these elements of the user’s experience.

1.0.5 Vibrancy

The researcher defines Vibrancy as members who are full of life, energy and enthusiasm and attachment of members’ affective connection or feelings towards an online Community in which they become involved e.g., Prentice et al.,(1994). The construct more or less overlaps with constructs such as commitment, identification, loyalty, obligation, attraction, all of which connote a significant connection with a group or a community. Commitment and identification are the two most closely related to attachment, and the three are often regarded

and used interchangeably Ellemers, Spears, and Doosje(1997). Organizational scholars define commitment as emotional attachment to, identification with, and involvement in an organization e.g., Allen and Meyer (1990); Dunham et al,(1994) and identification as cognitive awareness of and emotional investment in group membership with value connotations e.g., Ashforth et al, (2008). Because this research's theoretical underpinning comes from the social psychological literature, the researcher uses the term attachment in this research and occasionally, use commitment and identification when referring to the organizational commitment and identification literature.

1.0.6 HCI Design Approaches

Eberts (1994), describes four Human-Computer Interaction (HCI) design approaches that may be applied to user interface designs to develop user-friendly, efficient, and intuitive user experiences for humans. These four approaches include the Anthropomorphic Approach, the Cognitive Approach, the Predictive Modeling Approach, and the Empirical Approach. One or more of these approaches may be used in a single user interface design.

1.1 The Problem Statement

Online communities are large, persistent collections of individuals with common or complementary interests whose primary method of communication is the Internet. These communities are increasingly important for both businesses and the general public. They provide businesses new channels to connect with customers, employees, and business partners Dellarocas(2006); Majchrzak et al. (2006); Wagner,(2007), sources of product innovation and customer support El Sawy and Bowles (1997); Ogawa and Piller(2006); Wasko et al,(2005), and platforms for new business models Verona et al,(2006). For the general public, online

communities provide useful information Duan et al. (2008); Gu et al(2007), emotional support Maloney-Krichmar et al,(2005), venues for political and social discussion Hill et al.1998), and ways to meet new people and maintain social networks Wellman,(2001).Despite their importance and the success of some high profile communities, many others fail.

Online communities fail often because many community designers have attempted to create them with little knowledge of how to make them successful. Simply adding social or group features to a company's website does not guarantee a vibrant community. Online communities need to be carefully designed, and member attachment to a community need to be carefully cultivated by connecting members with topics of their interest or like-minded others.

The online social networks have become a goldmine with acceleration of development of infrastructure, enacting laws favoring online collaboration and generally a wave of change in businesses in the name of cost cutting and increase of efficiency.

Therefore the main problem is dormancy among online social networks which has been brought about by poorly designed sites without considering Usability features

1.2 Justification

Online Social Communities or sites are not created; they evolve. The growth of an online community takes time and effort.

User relationships must be initiated based on trust, and then carefully cultivated.

Organizations must identify a sequence of steps to increase a constituent's level of involvement and offer a variety of participation options that work to engage different components of their audience. To build a vibrant online community or social network,

organizations need more than an individual's donation or membership application. They need ongoing interaction opportunities that will keep a constituent engaged and developing into a lifelong supporter. In addition to defining a set of interactions, goals must be clearly articulated. Organizations must ask themselves fundamental questions about the nature of the online social network or community that they are building.

User vibrancy refers to the excitement of users in participating in the activities of a site as motivated by usability features incorporated in the user interface.

In this research, we proposed to conduct research on usability features that inform the development of online social communities that attract users and maintain to increase vibrancy, attraction and retention of users.

1.3 Research Objectives

This research had the following objectives:

1. To identify the reasons for initial steady growth and later decline of online social networking sites.
2. To research on the usability features/techniques that can be implemented to increase vibrancy and retention in online social networks.
3. To perform a usability evaluation/test to assess the effectiveness of features/techniques that increase user vibrancy, attachment and retention.
4. To suggest recommendations from the research on how to increase vibrancy and retention in online social networks.

1.4 Research Questions

1. What the reasons for initial steady growth and later decline of online social networking?
2. What features and functionalities can be incorporated to social networks sites to help rejuvenate the online vibrancy, attachment and retention of users?
3. What are techniques exist for measuring vibrancy, attachment and retention in online social networks.
4. Which recommendations can be put forward to the designers of social networking to build vibrant sites?

1.5 Scope

Since factors such as technology, infrastructure, cultural values, and so forth, across continents are different, the implication of this research may vary in countries accordingly. Therefore, the research targeted at a geographical area, Kenya a developing country where individuals share a similar background within standardized infrastructure specifically the research was based in Nairobi.

CHAPTER TWO

THE LITERATURE REVIEW

2.0 The Introduction

Online communities have shown to have a great importance in the business world today. They are one of the fastest growing segments and offer unprecedented opportunities for companies especially for such marketing activities as consumer segmentation, advertising and communication. Many companies are investing in this new form of communication creating new communities, advertising in non-traditional media and creating new services.

One of the biggest challenges is how to keep users active and contributing. This is especially important in online communities because of their interactive and participative nature. In fact, they are alive and thrive out of the voluntary contribution of their members. When a community (a so called “identity-based community”) is centered on the interest of the participants in sharing information about a specific topic, it is difficult to maintain alive the community in the long term.

Ewing (2008) shows how in a community the initial interest in the topic evolves with time into social motivations, as users become acquainted with each other and they enjoy their company.

This shift of attitude causes a reduction of the quality and quantity of insightful content.

Maintaining an active interest is therefore especially important in online communities: without sustained motivation to continue to contribute, the community dies.

Offering a great design and up-to-date content are ways to maintain interest and participation.

But community members are not just users of a product that is produced by a company; members have an active role in the creation of the contents that support the community, and the community, after its initial startup, continues to exist because of its members' active participation.

How can online communities remain alive and avoid decline? What sustains participation and involvement of the users in the community, after their initial joining? What is important to users?

Since members have such a primary role in content creation, how should they be involved to keep their community alive? What do they value most, and what can motivate their involvement?

The literature on online communities offers many different views on these issues, each providing significant understanding of some of the above issues. Iriberry and Leroy(2009) contribute to the subject by organizing previous researches in life-cycle stages.

2.0.1 Social Networks

Danah and Nicole (2007) define Social Networks as web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. The nature and nomenclature of these connections may vary from site to site.

These social networks have evolved due to usability improvements in design, interactivity and generally human computer interaction mechanisms. There are many concepts which have been developed, however, the users have continued to mutate in terms of requirements.

Social Networking has its origins in fifteen years of online networking with, for example, Poptel/Geonet bulletin boards, independent conferencing groups, Communities On-Line in the UK, Global Cities Dialogue (French led) and hundreds, if not thousands, of local on-line groups. Web 2.0 technology has now become accessible to the mainstream and people from all over the world has embraced this new revolution in the generation and sharing of content Boyd, D, Ellison, N. (2007). The small online communities were the pioneers in the establishment of social networking sites and are in part responsible for their extraordinary growth.

Facebook has been dynamically adopting strategies that enhance vibrancy of the users on its site like chat, pokes, boxes, tabs, attachment of notes. According to Neil V.(2010) they are the least used since most users do not really understand how they ought to be used and on other hand for Twitter which is mainly driven because of content though there is slightly more vibrancy among the users of the site. Jacob G (2009) proposes some features that can really enhance the effectiveness and by extension vibrancy and retention, they include grouping of followers, auto complete in tweets, hyperlinked tweets, tweet threading, group tweet, metadata through tweet hovering, mentioning of usernames, emphasizing important users and de-emphasizing less important users in feeds and finally shortening URLs(Uniform Resource Locator) facility within Twitter.

2.0.2 Evolution of Participation in Online Communities

When describing participation in online communities, Ewing (2008) proposes a different approach: he sees them as evolving in time. Over time users' motivations and interests shift from content to relationships in what he describe participation life cycle. This change has an

impact on community development and culture, making threads less discursive and more conversational in tone. “The emergent social culture may have an impact on the quantity of useful content produced, as more of contributors’ energies go towards interaction with other members – but this is balanced by the higher level of engagement socially motivated participants feel with the community” Ewing (2008). Elders are important for the functioning of a community but they can become jaded, uninterested in the content, but still contributing because they enjoy the social elements of the community. This phase can lead into the legacy phase, in which members reduce and terminate their involvement. This phase can be quite long and their contribution is not always helpful here. Keeping a stable level of newcomers is important for the community in order to keep itself focused. Iriberry and Leroy(2009) study the online-community-development process to provide success factors for each phase. Different moments in the community’s life make certain design components most relevant as opposed to others. The authors use a broad literature base to support their analysis covering different disciplines that took part, over the years, in the online community debate: computer science, information systems, psychology, sociology and management. Each discipline offers accordingly a different view of the subject: technology and media mechanisms, development and applications of online communities, relationship and attachment among community members, physical versus virtual community comparisons, and value of user-generated content. They give a valuable understanding of online communities and they identify success factors. Computer science focus on Internet technology; information systems on life cycle, web development, users needs, sociability and usability, privacy and safety; psychology on sense of community, uniqueness and motivation; sociology on identity, physical community, social capital, and collective action; management on customer loyalty, business models, and organizational knowledge. “But little effort has been made to identify when in the life of the

community each component or success factor must be implemented or to what degree to maximize its impact on success” Iriberry et al. (2009).

Iriberry and Leroy (2009) identify five stages of the community life cycle: inception, creation, growth, maturity and death. To each stage corresponds different user’s needs. It is therefore crucial to understand them and identify what users and management will need in each stage to develop the community and encourage participation. At inception, “the idea for an online community emerges because of people’s (members and operators) needs for information, support, recreation, or relationships” Iriberry et al. (2009). A vision of the community begins to form depending on the need the community addresses. Then technological components must be planned according to the needs of the creators and potential members. The second stage, creation, starts when technological components are in place and when the initial group of members can interact. When enough members have joined, a culture and an identity of the community begin to develop; a common vocabulary is created and roles start to appear as well as communication rules. When the community matures, “the need for a more explicit and formal organization with regulations, rewards for contributions, subgroups, and discussion of more or less specific topics is evident”. The community is strengthened; trust and lasting relationships begin to emerge” Iriberry et al. (2009).

Along all the stages new members keep joining while old members, whose needs have been satisfied, leave. When new members join in, the cycle of interaction repeats because new members bring new ideas of discussion and their roles change. Many communities thrive in this stage for a long time, others change course or add new features to keep users interested. Others incur in decline and death, facing “poor participation, lack of quality content, unorganized contributions, and transient membership” Iriberry et al. (2009). Figure 2.1 below

graphically represents the cycle when the community thrives. Iriberry and Leroy (2009) integrate the different success factors identified by previous research in a more integrated system that is organized by the different life cycles.

2.0.3 Online Community Life-cycle

Iriberry & Leroy (2009) use a model consisting of five stages of an online community life-cycle: inception, creation, growth, maturity, and death. Stages are presented in figure 2.1.

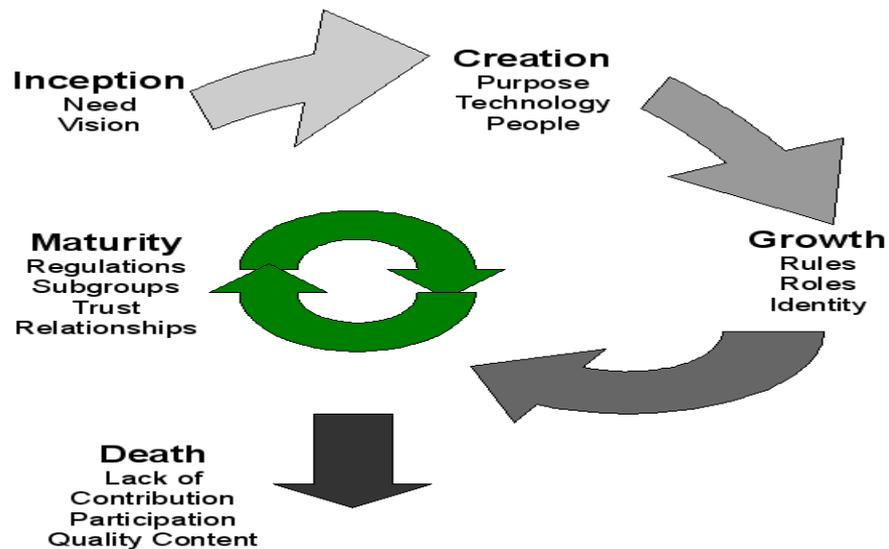


Figure 2.1: Online Community Life-cycle by Iriberry & Leroy (2009)

In an online community, the needs and desires of its users and management evolve along with the life-cycle stages of the community. Community developers need to understand how the community life-cycle works and identify these needs in each stage to develop the community and encourage participation. Iriberry & Leroy (2009).

Iriberry and Leroy (2009) continue by saying that the beginning of an online community life-cycle is the inception where the idea emerges when people have the need for some kind of

information, support, recreation or a relationship. When the vision is clear, there is a need for some basic rules, which help the community to maintain its focus.

The creation phase begins when all the necessary components, like discussion boards, are selected. Also the initial group of members can start interacting with each other and spread the word for the community Iriberry & Leroy (2009).

The growth state starts when enough members have joined and the identity for the community begins to develop. Members select roles for themselves: some of them are going to be leaders, some lurkers; some will contribute information and some will use it Iriberry & Leroy (2009).

According to Iriberry and Leroy (2009), in the mature state an online community gains more members and they are forming subgroups and discussion in the community moves also more off-topic. The community is strengthened; trust and lasting relationships begin to emerge. While new members join in and bring new ideas and discussions, old members may leave the community. The cycle of interaction is formed in this way and provides the "life" in the community.

Some communities are successful, but others might not be. If the community faces poor participation, lacks quality content or has only few contributions, it means death to the community Iriberry & Leroy (2009). Of course, death comes finally to every community.

It takes a lot of work to create and maintain an online community. As Reed (2008a) says, building a community has an easy start, but it is hard to establish a foothold. Reed adds that people fail to see that setting up a community and making it successful are two totally different things. Worthen (2008) writes in his Wallstreet journal blog post that when

companies establish online communities, they should focus on identifying and reaching out to potential community members instead of getting the best software. Another thing that pops out is that 30% of the companies put only one part-time worker in charge of the online community Worthen (2008). There should be more effort to put in member fishing and content creation than just technology building.

2.1 Methods of Increasing Motivation

There are many persuading factors that draw users in to different online communities. Peer-to-peer systems and social networking sites rely heavily on member contribution as stated by Neil V. (2010). Users' underlying motivations to involve themselves in these communities have been linked to different persuasion theories of sociology.

- The Reciprocation Theory infers that a successful online community must provide its users with benefits that compensate for the costs of time, effort and materials members provide. People often join these communities expecting a sort of reward, whether it is physical or psychological.
- The Consistency Theory says that once an individual makes a public commitment to a virtual society, they will often feel obligated to stay consistent with their commitment by continuing contributions.
- The Social Validation Theory explains how people are more likely to join and participate in an online community if it is socially acceptable and popular.

2.2 Increasing Attachment to Online Communities: Designing from Theory

Online communities are large, persistent collections of individuals with common or complementary interests whose primary method of communication is the Internet. These

communities are increasingly important for both businesses and the general public Agarwal et al. (2008). They provide businesses new channels to connect with customers, employees, and business partners Dellarocas(2006); Majchrzak et al. (2006); Wagner (2007) sources of product innovation and customer support El Sawy and Bowles (1997); Ogawa and Piller(2006); Wasko et al. (2005), and platforms for new business models Verona et al. (2006). For the general public, online communities provide useful information Duan et al. (2008); Gu et al. (2007), emotional support Maloney-Krichmar et al. (2005), venues for political and social discussion Hill et al. (1998), and ways to meet new people and maintain social networks Wellman (2001).

Despite their importance and the success of some high profile communities, many others fail. A recent Deloitte survey found that most business efforts to build online communities failed to attract a critical mass of members, even when firms spend over \$1 million in the effort Worthen(2008). Interviews with people who run these communities suggest the greatest obstacles to community success are attracting people to the community and retaining them. Past empirical research in many contexts according to Rodgers and Chen (2005) which shows that the majority of people who visit online communities leave quickly and contribute little to the success of the community. For example, more than two thirds (68%) of newcomers to Usenet groups were never seen again after their first post Arguello et al. (2006), and over half of the developers who registered to participate in the Python open source development projects did not return after their first contribution Ducheneaut (2005).

Online communities fail often because many community designers have attempted to create them with little knowledge of how to make them successful Rodgers and Chen (2005). Simply adding social or group features to a company's website does not guarantee a vibrant

community. Online communities need to be carefully designed, and member attachment to a community needs to be carefully cultivated, by connecting members with topics of their interest or like-minded others. In this research, the researcher demonstrates how insights from decades of social psychology research can inform the design of online communities by creating theory inspired design features that increase member attachment and participation in a real-life online community.

Members who feel a strong sense of attachment to an online community are crucial to community success because they are most likely to provide the content that others value, such as answers to others' questions in technical and health support groups Blanchard and Markus (2004); Fisher et al. (2006); Rodgers and Chen (2005), code in open source projects (Mockus et al. (2002), or edits in Wikipedia Kittur et al. (2007). They also help enforce norms of appropriate behavior Smith et al. (1997), police the community, sanction deviant behaviors Chua et al, (2007) and perform behind the scenes work to help maintain the community Butler et al. (2007).

Managers and designers can identify ways to increase member attachment to an online community from many sources, for example, by copying best practices from other sites, using creative designs, or through trial and error. Many books, websites, and university courses provide advice about how to design features that increase member attachment or the "stickiness" of a site for instance Kim (2000); Preece(2000); Crumlis and Malone (2009). While useful, these sources often fall short in providing the rationale for their recommendations or the contingencies in applying the principles to communities organized around different purposes. For instance, Kim, (2000) recommends that all online communities provide opportunities for participants to exchange personal information so that they can build

personal relationships. Contrary to this advice, some practitioners seem to have anticipated that personal information can undermine a shared community identity (e.g., Postmes et al, 2005). For example, Joblo's Movie Club (2005) emphatically states, "Our board is for MOVIE TALK only. If you bring personal issues up on our board, you will be banned. If you discuss your ex-girlfriend, you will be banned. If you announce your comings and goings or gossip about so-and-so, you will be banned. ... This is ... not a place for you to discuss your personal life or boo-hoo about how your lover just broke up with you". In practice, community designers face many similar decisions in what to do to better serve their members so that they keep coming back to the community.

Few community managers or designers or even researchers use empirically validated principles in designing online communities (for exceptions, see Kollock 1998 and Ling et al. 2005). Organizational scholars have often bemoaned the failure of managers to use good evidence to make important business decision, too often relying upon what (Pfeffer and Sutton, 2006) claim is "strategic snake oil: discredited nostrums, partial remedies or untested management miracle cures" (see also Rousseau, 2006). The researcher claims the same problems exist in the design of online communities.

2.3 Increasing Commitment to Online Communities by Designing for Social Presence

The social dimension of the Internet is clearly a major part of its attractiveness and success. According to Alexa.com, six of the top 10 sites in the world have a substantial social component, offering user generated content (e.g., YouTube or Wikipedia) or supporting direct interaction among users (e.g., FaceBook or QQ). Despite their popularity, social sites experience high turnover, with most visitors coming only once and leaving after a short period.

Building commitment is a challenge even in the most successful online communities, such as Wikipedia, with more than three million articles and 1.5 million editors. Despite their success, users do not stick around. The modal number of edits on Wikipedia is one, and 60% of editors never re- turn after the first day of membership. The Wikimedia foundation, the non-profit organization that runs Wikipedia, identified flagging commitment from editors and, more generally, “The health of the editing community as a major risk area for the Wikimedia movement.

The existence and survival of online communities and their ability to provide resources to users depends upon the commitment level of their members. Lack of commitment can lead to conflict, lack of cooperation, decreased contribution and information sharing, higher rates of turnover and poor performance. Participants who feel greater commitment to an online community are more likely to provide the content that others value such as code in open source projects, or edits in Wikipedia. Committed members care about and enforce norms of appropriate behavior.

They are the ones who maintain the community and perform behind the scenes work to keep the online community going. The challenge is that in virtual settings, people have difficulty developing commitment to the group or attachment to other members.

2.4 Building Commitment

In this research, the researcher was principally interested in the behavioral commitment of group members towards their group. According to social psychological research, people can become committed to a group or community in two distinct ways by Jacob G. (2009)

1. Through group members' internalization of certain characteristics of the group as an entity (e.g., common interests, ethnicity, group history, norms and stereotypes, and/or competition without groups), which is the foundation for commitment to common identity groups, or
2. Through interpersonal attractions among individual group members, this is the foundation for commitment to common bond groups.

In principle, communities can be designed to enhance members' identity-based commitment or bond-based commitment supporting the representation of groups or individuals onscreen. For example, Wikipedia emphasizes common identity. It defines itself as "an online community of people interested in building a high-quality encyclopedia". It has policies that discourage interpersonal ties, a user interface that makes direct, private exchanges between community members difficult, and subgroups known as WikiProjects defined around common interests and interdependent tasks. In contrast, Facebook is more oriented towards common bonds. It promotes interpersonal ties among individuals and is based on interactions, news feeds and exchange of pictures among Facebook "friends." However, Facebook also layers

common identities via Facebook groups that are designed to connect users with a common interest.

Prior research by Ewing(2008) in social psychology suggests that bond based and identity based attachments have distinct antecedents. Bond based attachment is rooted in interpersonal relations among individual group members. This form of attachment is driven by factors that increase interpersonal attraction such as interpersonal similarity, repeated exposure, communication and reciprocal self disclosure. In contrast, identity-based commitment is derived from a connection to the group as an entity. People are more likely to identify with a group if it comprises a well-defined unit with common attributes and clear boundaries, is given a common label, insignia or purpose, highlights homogeneity among members, suppresses information showing members as idiosyncratic individuals, and competes with out-groups. Social psychological research also suggests that groups founded on common bonds and common identities may both elicit strong commitments, although not necessarily in identical ways. Specifically, common bond groups should display higher levels of interest in the individual group members and in within-group communications. In contrast, those in common identity groups should tend to treat individual group members as relatively interchangeable. Preserving homogeneity is a prerequisite for maintaining unity in such groups.

For this reason, social psychological research by Ewing (2008) often assumes that these two types of groups are antagonistic and cannot be combined with each other. It is argued that highlighting the presence of individuals should erode the common identity and highlighting the presence of the group as an entity should erode common bonds.

Much of the research on identity-based and bond-based commitment has used laboratory experiments to test predictions about the consequences of different types of group commitment. Because of the controlled nature of the psychological laboratory, it is not clear whether methods used to induce identity based and bond-based commitment would be powerful enough to have behavioral effects in natural environments. Moreover, most social psychological experiments lack adequate measures of long-term behavioral commitment and focus instead on short-term psychological variables such as self-reported attachment and social influence.

2.5 Natural Methods for increasing Vibrancy and Retention

2.5.1 Engagement initiatives

As they are applied in leading organizations, share a common goal; to attract and retain a workforce willing and able to stay in a business relationship and to provide their discretionary effort. The aim of engagement initiatives is to create the right set of work and employment conditions so that talented people are encouraged to stay, develop their abilities and perform at high levels.

Drivers of engagement are associated with change in an individual employee's level of emotional and rational engagement. In turn, engagement is associated with the application of discretionary effort which then shapes performance and retention outcomes.

Retention is also subject to 'external factors'. These 'factors', broadly defined as connection, fit and value/loss proposition (sacrifice) are associated with Job Embeddedness, and invoke the need to adopt a broader consideration of retention, beyond the bounds of internally focused workplace practices.

2.5.2 Employee Engagement

The very strong interest in employee engagement stems from the intuitive proposition that engaged employees are more likely to apply higher levels of discretionary effort – a willingness to go above and beyond the call of duty. This might include helping others with heavy workloads, volunteering for additional duties, and looking for ways to perform their jobs more effectively.

Employee Engagement reflects:

- The extent to which individual employees commit to something or someone in their organization, how hard they work and how long they stay as a result of that commitment.
- An employee's attitudinal attachment to his or her job and company, intention to act in the best interests of the company, and a willingness to invest discretionary effort in achieving business goals (Towers Perrin. 2003).

2.6 How Is Engagement Different From Commitment And Satisfaction?

Engagement is more than satisfaction. The major differences between engagement and satisfaction are:

- Engagement is doing something different and not just doing more of something (Macey and Schneider, 2008).
- Engagement is about discretionary, not prescribed behaviors that go beyond preserving the status quo.

- Engagement focuses on the extent to which employees put discretionary effort into their work, in the form of extra time, brainpower and energy (Towers Perrin, 2003).

The notion of extra effort is a compelling one in that it implies that employees possess a reservoir of energy from which they can draw upon should they so choose. Highly engaged employees exemplify behavior that is both qualitatively and quantitatively different from those who are less engaged.

- Organizations that learn how to harness the potential of employee engagement will likely enjoy distinct competitive advantages.

2.6.1 Emotional and Rational Commitment

Employee Engagement is a product of an employee's emotional and rational commitment to the organization and is reflected in his/her subsequent willingness to stay and provide discretionary effort (behaviors) (Towers Perrin, 2003).

2.6.2 Reward and Recognition

Reward and recognition drivers predominately impact on an employee's rational engagement and form the basis of an employee's judgment about the personal benefits they derive from the organization Towers Perrin(2003).

The reward and recognition category contains three drivers:

- Pay satisfaction
- Career opportunities
- Performance management

2.6.3 Pay Satisfaction

Individuals form judgments regarding their ‘pay satisfaction’ based on a comparison with others: If an employee perceives his or her pay and benefits as competitive and adequate in the context of their job and market rates, other things — notably advancement, talented co-workers and the overall work environment — matter far more when deciding whether to stay with or leave a company Towers Perrin (2003).

- If pay or benefits are seen as inadequate then this negative perception will become a major factor in pushing people to look for other opportunities.
- It is important to note that what matters when seeking to influence pay satisfaction levels is employee perceptions, not just actual pay levels. Organizations therefore have the opportunity to shape these perceptions by highlighting the benefits that individual employees derive from working with them.

The ‘Will’ and the ‘Way’ ...“Employees need the Will: the sense of mission, passion and pride that motivates them to give that all-important discretionary effort. And they need the Way: the resources, support and tools from the organization to act on their sense of mission and passion Towers Perrin (2003).

2.7 Collaborative Software

Collaborative software, or groupware, is technology designed to facilitate the work of groups. This technology may be used to communicate, cooperate, coordinate, solve problems, compete, or negotiate. While traditional technologies like the telephone qualify as groupware,

the term is ordinarily used to refer to a specific class of technologies relying on modern computer networks, such as email, newsgroups, videophones, or chat.

Groupware technologies are typically categorized along two primary dimensions:

1. Whether users of the groupware are working together at the same time (“realtime” or “synchronous” groupware) or different times (“asynchronous” groupware), and
2. Whether users are working together in the same place (“colocated” or “face-to-face”) or in different places (“non-colocated” or “distance”).

2.7.1 Computer-Supported Cooperative Work

CSCW (Computer-Supported Cooperative Work) refers to the field of study which examines the design, adoption, and use of groupware. Despite the name, this field of study is not restricted to issues of “cooperation” or “work” but also examines competition, socialization, and play. The field typically attracts those interested in software design and social and organizational behavior, including business people, computer scientists, organizational psychologists, communications researchers, and anthropologists, among other specialties.

2.7.2 How is Collaborative Software Design Different from Traditional User Interface Design?

Groupware design involves understanding groups and how people behave in groups. It also involves having a good understanding of networking technology and how aspects of that technology (for instance, delays in synchronizing views) affect a user’s experience. All the issues related to traditional user interface design remain relevant, since the technology still involves people.

However, many aspects of groups require special consideration. For instance, not only do million-person groups behave differently from 5-person groups, but the performance parameters of the technologies to support different groups vary. Ease-of-use must be better for groupware than for single-user systems because the pace of use of an application is often driven by the pace of a conversation. System responsiveness and reliability become more significant issues. Designers must have an understanding of the degree of homogeneity of users, of the possible roles people play in cooperative work, and of who key decision-makers are and what influences them.

Why is collaborative software design worth paying attention to in the first place?

Collaborative software offers significant advantages over single-user systems. Here are some of the most common reasons people want to use collaborative software:

- to facilitate communication: make it faster, clearer, and more persuasive
- to enable communication where it wouldn't otherwise be possible
- to enable telecommuting
- to cut down on travel costs
- to bring together multiple perspectives and expertise
- to form groups with common interests where it wouldn't be possible to gather a sufficient number of people face-to-face
- to save time and cost in coordinating group work
- to facilitate group problem-solving
- to enable new modes of communication, such as anonymous interchanges or structured interactions

In addition to the benefits of groupware, another good reason to study usability and design issues in groupware is to avoid a failed design. Groupware is significantly more difficult to get right than traditional software. Typically, a groupware system can't succeed unless most or the entire target group is willing to adopt the system. In contrast, a single-user system can be successful even if only a fraction of the target market adopts it.

2.8 The Reader-to-Leader Framework

People typically start using their web and mobile devices to join a discussion group, read a blog, or tag a photo. Many decide that one look is enough to satisfy their curiosity, but a few decide to return to an application a second or third time, and some even start to contribute (Forte and Bruckman (2008a)). Usually, new users begin by doing simple things—they may edit an incorrectly spelled word or agree with someone else's comment—that do not take much effort or require them to expose themselves. Metaphorically, they dip their toe in. A few of these people return and begin participate more actively.

The successive levels of social participation that we are concerned with can roughly be categorized as reading, contributing, collaborating, and leading. These are not perfect or complete descriptions, and users do not always progress from one to another, but this simple framework is a useful basis to describe what many users do (Figure 2.2) by Shneiderman B, (2008).

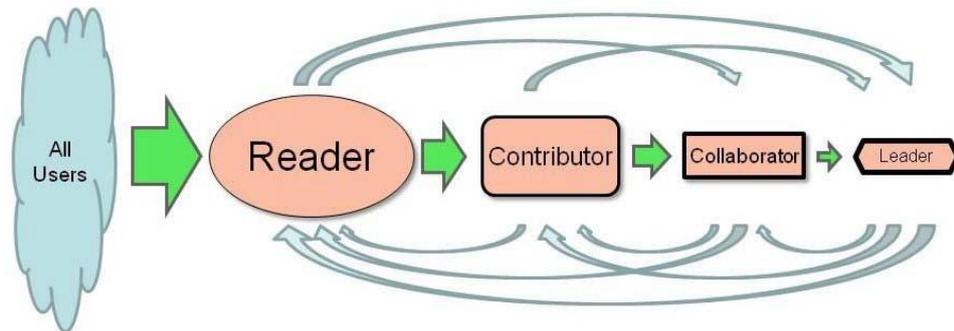


Figure 2.2: The Reader-to-Leader Framework: Motivating Technology-Mediated Social Participation

The thickness of the green arrows and smaller shapes indicate the decreasing number of people who move from one form of participation to another. The thin grey arrows indicate how people can also move in a non-linear fashion to participate in different ways. In addition to making these transitions to greater participation, many people terminate their participation for a variety of reasons, which is not shown explicitly in Figure 2.2. There is also a time dimension within the four activities. For each activity, there are the uncertain first steps, sometimes followed by repeat visits that can mature into a growing sense of confidence and increased activity as a reader, contributor, collaborator, or leader. There are at least two paths to maturation: participants may become more active within one stage or may move on to begin another stage.

2.8.1 Reader: Venturing in, reading, browsing, searching, returning

Creating awareness of social media can be done with an expensive advertising campaign, but an attractive alternative is word of mouth, amplified by word of blog, online reviews, testimonials from celebrities, and links from popular portals Porter (2008). Another important source of novice participants is from search engine results and media stories, especially in prominent media Porter (2008); Li and Bernoff (2008); Fogg (2002). Spreading the word about novel social media is a skill that must be mastered to draw in potential readers to try

something new. For some people, overcoming their resistance to novelty may require strong encouragement from a trusted friend or respected authority Fogg (2002), while others embrace new experiences. But in a world of many choices, designers will do better if they create interesting, attractive, and relevant content Kim (2000). This may seem obvious, but getting it right is more difficult than it sounds. Rogers (2003) points out, for example, that innovation is more likely to be accepted if the value of the material is clear to potential users. Good userinterface design produces accessible and universally usable applications that enable solitary reading or social interactions that meet the needs of diverse user populations Rainie and Tancer (2007). For example, children between the ages of seven and nine tend to have a limited vocabulary, and many do not like to read a lot, so interfaces that contain pictures and encourage them to draw tend to be popular Komlodi et al. (2007). Similarly, software designed for early teens such as Habbohotel.com must appeal to that user group Both age and gender tend to influence what children like to do in online social spaces Komlodi et al.(2007).

Good interface design should facilitate discovery of relevant content by browsing and by search, with easy mechanisms to bookmark, print, email, tag, privately annotate, and publicly comment on interesting items Fischer (2007). Support mechanisms for readers include a summary of the intended audience, the purpose of the site, important policies such as privacy protection, and flexible tools that support the community in developing its own governance structures, as in some wikis Butler et al. (2008). Other helpful content includes contact information for site managers, a statement of ownership, a list of with well-written answers Hansen et al. (2007), indicators of new material, lists of popular items, and easy facilities for contacting friends Porter(2008). A major managerial decision is whether to require login for reading, which may be seen as a nuisance by some and a valid protection by others Preece et

al. (2004). Charging a fee for reading is rare, but for services that provide valuable information, this can be the major source of revenue.

To summarize, the factors discussed above can be grouped according to whether they influence usability or sociability. Usability factors are of most interest to designers, and sociability factors are of interest to community participants, site owners, and managers. Some usability and sociability factors Preece (2001) that motivate readers for technology-mediated social participation are included in Table 2.1 below.

Table 2.1: Usability and sociability factors that may influence reading

Usability	Sociability
Interesting and relevant content presented in attractive, well-organized layouts	Encouragement by friends, family, respected authorities, advertising
Frequently updated content with highlighting to encourage return visits	Repeated visibility in online, print, television and other media
Support for newcomers through tutorials, animated demos, FAQs, help, mentors, contacts	Understandable and clear norms or policies
Clear navigation paths so that users have a sense of mastery and control	A sense of belonging based on recognition of familiar people and activities
Universal usability to support novice/expert, small/large display, slow/fast network, multilingual, and users with disabilities	Charismatic leaders with visionary goals
Interface design features to support reading, browsing, searching, and sharing	Safety and privacy

2.8.2 Contributor: Rating, tagging, reviewing, posting, uploading

Curiosity is a wonderful human trait. People venture into online social media spaces looking for something – information, support, content, company or excitement. But it is challenging to get them to return a second, third, or fourth time and eventually to become a contributor. A contribution is an individual act that adds to a larger communal effort--for example, adding a picture or a comment to a website when there may be no intention of collaborating, communicating, or forming a relationship. Contributors often start by making a correction on a wiki, tagging a photograph, or rating a film. This approach of modest first steps has been observed in open source software development, where people report bugs Ye and Kishida, (2003), and in Wikipedia, where people make small edits Schroer and Hertel (2009); Bryant et al. (2005); Forte and Bruckman (2008a), (2008b). In this way, people move from legitimate peripheral participation in which they hover on the sidelines reading content, watching others, to gradually making small contributions that become larger and more frequent as their confidence grows and they feel empowered and appreciated Lave and Wenger (1991); Wenger (1998).

A design feature that promotes contributions is visibility to the author and community, possibly with the contributor being identified by a login name. This visibility offers contributors recognition that adds to their social presence online, which has been observed to motivate tagging in Flickr Ames and Naaman (2007); Nov et al.(2008) and to increase editing contributions in Wikipedia Nov (2007), in turn, creating a growing reputation Farzan et al.(2008).

Some applications keep track of the most prolific contributors so that they can be seen and appreciated Viégas and Smith(2004) but quantity is only one virtue; quality of contribution can be even more important. For instance, Wikipedians who specialize in a certain topic become distinguished from those who make numerous small fixes. In their world, writing an article that gets chosen to be the daily featured article is among the highest achievements. Microsoft Discussion Groups cover hundreds of technical topics related to Microsoft products in dozens of languages.

User-to-user assistance is a virtue in itself, but Microsoft recognizes the value to its customers by rewarding hundreds of Most Valuable Professionals (MVPs) each year with professional recognition that includes invitations to a face-to-face event and free Microsoft products. This recognition also benefits the MVPs, since their visibility may get them consulting contracts. Microsoft describes its review process:

In order to receive the Microsoft MVP Award, MVP nominees undergo a rigorous review process. Technical community members, current MVPs, and Microsoft personnel may nominate candidates. A panel that includes MVP team members and product group teams evaluate each nominee's technical expertise and voluntary community contributions for the past year. The panel considers the quality, quantity, and level of impact of the MVP nominee's contributions. Active MVPs receive the same level of scrutiny as other candidates each year.

Rating systems capitalize on a trend in popular culture people's desire to stand out in a crowd. Reality shows; talent competitions; YouTube, blog, and microblog revelations of intimate personal details; and Flickr posts of provocative pictures are all manifestations of the need to be noticed. They also fuel and make real the belief that anyone can be famous. Thus,

acknowledging, recognizing, and rewarding contributions and, in so doing, enabling the contributors to stand out Hemetsberger (2001); Kollock (1999); Huffaker, (2007) are techniques used by researchers and designers Kollock (1999); Lampel and Bhalla(2007); Kolbitsch and Maurer (2006) to encourage online contributions. One approach to providing recognition is to encourage others to rate the quantity or quality of contributions. These systems provide a way for people, including peers and complete strangers, to recognize and evaluate another's contribution. Beginning with eBay's popular rating system by which purchasers' rate vendors according to the condition of the goods purchased, the timeliness of delivery, the quality of the purchase, and so on, peer evaluation systems have proliferated Cheng and Vassileva (2005). Variations on this theme involve people's ratings Cialdini (2001), rewarding contributions with money Hars and Qu(2002); Hemetsberger(2001);Kollock (1999), Hummel et al., (2005), and awarding points in learning systems Vassileva, (2003).

In scientific communities, recognition as a reviewer, author, organizer, or mentor is essential to professional advancement and university promotion. In creative communities, the rewards might include winning art jury prizes or simply gaining a strong reputation that comes with a high number of YouTube downloads Fischer and Giaccardi (2006); Shneiderman, (2007). Outstanding contributors may receive much publicity in web-based, mobile, or traditional media. Rating systems supported by credible information about those being rated can also be helpful. Relative rankings of contributions strongly motivate contributions to informationrepositories Cheshire and Antin(2008).

Table 2.2: Usability and Sociability Factors that may Influence Contributing

Usability	Sociability
Low threshold interfaces for easily making small contributions, e.g., no login	Support for legitimate peripheral participation so that readers can gradually edge into contributing
High ceiling interfaces that allow large and frequent contributions	A chance to build their reputation over time while performing satisfying tasks
Visibility for users' contributions and frequency of views; aggregated over time	Recognition for the highest quality and quantity of contributions
Visibility of ratings and comments by community Members	Recognition of a person's specific expertise
Tools to undo vandalism, limit malicious users, control pornography and libel	Policies and norms for appropriate contributions

Acknowledging and celebrating status brings value to the community as well as to the individual. The biologist E.O. Wilson, who acquired funding from the MacArthur Foundation to create The Encyclopedia of Life, is a world-renown scientist. Including pictures of him on

the website might help to persuade scientists and citizens that the site has scientific integrity. It might also help to persuade skeptics that developing 1.8 million pages of taxonomic descriptions is an achievable goal. Many of the factors that motivate readers are also important to contributors as they gain confidence: for example, a sense of belonging, a welcoming environment, safety, support for newcomers, and contacts to ask questions. Additional factors that contributors look for include ease of making small contributions, visibility for their contributions, recognition of quality and quantity of contributions, rewards, etc.

To summarize, Shneiderman B, (2008) suggests some usability and sociability factors that motivate technology-mediated contributing which are included in Table 2.2 above.

2.8.3 Collaborator: Developing relationships, working together and setting goals

Revisiting social media spaces a second, third, or more times is an important step toward becoming a committed, regular contributor and possibly a collaborator. Collaboration involves two or more contributors discussing, cooperating, and working together to create something or share information Denning and Yaholkovsky(2008). An essential element in this process is the development of common ground – that is, mutual understanding, shared beliefs and assumptions Convertino et al. (2008). Common ground facilitates communication and collaboration as collaborators work together to develop a Wikipedia article or discuss a medical problem in an online patient support community. Close coordination in the early stages of a project is especially important to laying the foundation for a successful outcome Kittur and Kraut (2008).

Collaborations can be lightweight for example, an agreement between two people lasting only minutes--or durable; for example, a group effort by hundreds of people lasting years. Some

collaborations are handled democratically with no hierarchical structure, while others may require engaging a well-structured corporate unit to deliver on repeated milestones. Other collaborations may occur in structured environments such as those provided by panel discussions Daugherty et al.(2005) or purpose-built, large-scale co-laboratories for facilitating scientific data sharing Bos et al.(2007); Zimmerman and Finholt (2007).

Sometimes people shift quickly from contribution to collaboration and back again. For example, an ornithologist contributor to Wikipedia bird articles may be closely collaborating with a group of bird watchers in making sure that an entry about Greater Scaups on the Chesapeake Bay is correct. But she gets distracted by a friend's email to read an entry about a café in London, whose address is listed as "Upper Road" in Islington, so she corrects it to "Upper Street." In the first instance, she is involved in a collaboration in which she learns who has a deep knowledge about wildlife on the Bay. In the second instance, she merely contributes the correct address but does not interact with anyone.

A satisfying discussion that holds one's interest often triggers a contribution that may turn into collaboration Sharratt and Usoro (2003); Schroer and Hertel, (2008). Another ingredient for successful collaboration is social capital – the social investments that are the foundation for thriving communities. Social capital is the social equivalent of financial capital. Instead of money, social contributions provide the glue that holds people together. Examples of acts that increase social capital include donating one's time and skills, doing neighborly good deeds, and organizing social events Putnam(2000); Vassileva(2003). By contrast, those who take without giving back – the "free riders" Kollock (1999) do not contribute social capital and may strain the good will of others. Encouraging people to contribute is achieved in the many

ways discussed above, especially by making contributions visible, which may lead to exchanges that can develop into collaborations.

Trust and empathy also play a large role in encouraging people to work and play together online just as they do offline Preece(1999; Maloney-Krichmar and Preece(2005). People who trust each other often do so because they see similarities between themselves and the other people Torrey et al. (2008), so they encourage each other to participate. Wu and Tsang, (2008). Designers of the patient support community Patientslikeme.com have explicitly used this knowledge in their site design. They make it easy for patients to find others like them in terms of gender, age, medical problems, and so forth. Everyone can find a picture on the homepage that helps them to find similar others, which can lead to collaborations on stories and exchanges of helpful tips for dealing with a health problem.

Altruism has also been identified as a major motivator for encouraging contribution and collaboration Maloney-Krichmar and Preece(2005); Vassileva (2003), as is the desire to give back, that is, “reciprocity” Axelrod (2006); Hemetsberger (2001); Kollok(1999); Lampel and Bhalla, (2007). Generalized reciprocity, a process in which an individual gives back to the community, rather than directly to the person from whom the contribution was received, has also been observed online Wellman and Gulia (1999); Wasko and Faraj(2000). For example, older people are often motivated to mentor younger people online and in face-to-face situations Huffaker and Lai (2007); Hars and Qu (2002). In addition to altruism, Batson et al. (2002) describe a variant of reciprocity that they call “collectivism,” which refers to the belief in helping members of a person’s community. Their theory argues that the more well-defined and narrow the community, the more likely users are to contribute and collaborate – a characteristic that has been observed in online patient support communities, hate groups, and

other communities. They also argue about the importance of “principlism,” that is, users who have been taught principles such as “do unto others, as you would have them do unto you” often act on these principles. Benkler and Nissenbaum’s (2006) concept of “virtuous behavior,” discussed earlier, and how this can impact and influence others, is similar.

Table 2.3: Usability and Sociability Factors that may Influence Collaborating

Usability	Sociability
Ways to locate relevant and competent individuals to form collaborations	An atmosphere of empathy and trust that promotes belonging to the community and willingness to work within groups to produce something larger
Tools to collaborate: communicate within groups, schedule projects, assign tasks, share work products, request assistance	Altruism: a desire to support the community, desire to give back, willingness to reciprocate
Visible recognition and rewards for collaborators, e.g., authorship, citations, links, acknowledgements	The desire to develop a reputation for themselves and their collaborators, their group or community; the need to develop and maintain one’s status within the group
Ways to resolve differences (e.g., voting), mediate disputes, and deal with unhelpful collaborators	Respect for one’s status within the community

Many of the usability and sociability factors that motivate readers and contributors are also desired by collaborators.

In addition, Shneiderman B (2008) includes some specific motivators for technology-mediated collaborators in Table 2.3 above.

2.8.4 Leader: Promoting participation, mentoring novices, setting and upholding policies

Wellman and Gulia (1999) and others claim that just about everything that happens in face-to-face interactions also happens online -- it just happens differently. Even leadership manifests differently online. The business community is particularly eager to find out how leaders emerge online, what motivates them, what rewards they expect, and how online leadership differs from leadership in face-to-face situations Tapscott and Williams (2007).

While individual contributions and group collaborations are the most visible aspects of social media participation, every social system must have some way of establishing community norms and explicit policies if it is to survive Butler et al. (2008); Burke and Kraut (2008). Setting longer range goals, defining the desired audiences, and enforcing policies are a few of the other roles of community leaders.

Some common characteristics of online leaders are that they typically contribute the largest number of comments and are the most active Yoo&Alavi (2004); Cassell et al. (2006); Huffaker(2007); Ortega et al.(2008). In Slashdot.org, fewer than 10 percent of participants contribute 90 percent of the comments online Ortega et al., 2008). A study of emerging leaders in Wikipedia further reveals that leaders typically use multiple discourse channels to broadcast themselves and their messages Forte and Bruckman(2008a).

Leaders also tend to be synthesizers. They synthesize discussions and arguments that they then articulate for others Cassell et al. (2006). What is more, leaders tend to be passionate and to show both positive and negative emotions Huffaker (2007). They are not afraid to reveal their identity and, typically, they have a coherent online identity, which usually matches their real identity Joyce and Kraut(2006). Credibility also contributes to leadership, which can be seen in the editing histories of Wikipedia Forte and Bruckman, (2008a), shown in Figure 6. These characteristics make leaders noticed, and they tend to like this recognition Kim(2000). Systems that are designed to support the characteristics listed above, such as good editing and synthesis tools, will help effective leaders emerge Butler et al.(2002). For example, Burke and Kraut (2008) describe self-evaluation tools that Wikipedia editors can use to evaluate their skills and potential for becoming an admin – a person with administrative responsibilities in Wikipedia. Selecting good administrator is essential for maintaining the quality, reputation, and positive community spirit in Wikipedia, especially with the influx of so many authors over the last couple of years.

Support for easy posting of pictures, personal descriptions, and links to home pages enables participants to reveal their identity online and their credibility to be checked. Most leaders look for acknowledgment of a job well done, so making it easy for others to show their appreciation is helpful, especially as people often assume that leaders are prominent people who don't need to be acknowledged.

Leadership also involves taking responsibility when problems occur, mediating disputes among contributors, and dealing with threats from troubling participants. Vigorous real-world conflicts over controversial topics, such as abortion, can also be seen in Wikipedia. Therefore, leaders may have to lock pages or block access on certain topics.

Leadership is a higher calling to which only a small fraction of readers, contributors, and collaborators aspire.

Leaders may be motivated to improve the community, to prevent abuses that they have experienced, or to mentor newcomers. Leaders are typically able to synthesize and communicate ideas more efficiently and effectively than others. They usually enjoy the challenge and chance to lead others, and, in exchange, seek power, honor, or respect. They want to contribute to something meaningful that goes beyond their personal gain. To summarize, Shneiderman B. (2008) includes some usability and sociability factors that motivate technology-mediated leadership in Table 2.4.

Table 2.4: Usability and Sociability Factors that may Influence Collaborating

Usability	Sociability
Leaders are given higher visibility, and their efforts are highlighted, sometimes with historical narratives, special tributes, or rewards	Leadership is valued and given an honored position and expected to meet expectations
Leaders are given special powers, e.g., to promote agendas, expend resources, or limit malicious users	Respect is offered for helping others and dealing with problems
Mentorship efforts are visibly celebrated, e.g., with comments from mentees	Mentors are cultivated and encouraged

So exactly why have these sites become so popular? What has driven millions of previously novice users to participate in the most recent digital paradigm shift? I suggest that there are two factors at play here, both significant. Firstly, the networking factor itself, the ability to form different networks with people who share such things as location, political views, aspirations, hobbies and so on. Secondly, the supposition that Internet users want to freely create and share their own content without having to undergo the sometimes mundane task of setting up and managing their own websites. User generated content is thus empowering millions of people to express their views, ideology and moods with the Internet world and to learn about the views, ideas and moods of others. Users of online social networking sites are now liberated to do exactly as they wish including creating any relationships that they choose.

However, what do we believe to be the true value of these online relationships? How do they fit into a spectrum of human experiences and how do they relate to physical proximity-based relationships and real world communities? Are online communities actually an impoverished facsimile of what community is or can they provide real added value? Do online communities actually and paradoxically encourage isolation as people replace traditional friendships with online activity or might online communities simply provide an additional channel for people to communicate with one another? The question which this paper seeks to address is ‘can social networks support digital equality by drawing people who are otherwise disengaged or excluded into capturing the benefits from the online world?’ If so, what are the barriers to the use of social networks by those with little or no online experience? These questions are of crucial importance if social networking is to be considered a route to achieving greater vibrancy, attachment and retention.

Online social networks are increasingly drawing people into the online world; providing the

motivation and purpose to engage in a medium which hitherto held little attraction.

Applications such as Face-book and Friends Reunited appeal to very large audiences and appeal to the inherent inquisitiveness we have about other people and what they are doing with their lives. This desire to learn about and connect with others (whether we know them or not) can be harnessed to strengthen other offline activity. For example, a group of carers may come together in a workshop to talk about issues and concerns they have in common. They may have a desire and need to continue their conversations at any time. The use of an online social network then becomes a way of sustaining communication and continued sharing of experience and learning.

Online social networks can provide a lifeline to those who are isolated and disengaged from family, friends and communities. Networks exist to support hundreds of subjects from a desire to stop smoking, to coming to terms with a death in the family, to cultivating mushrooms. Whatever the topic, there is generally user generated content on the Internet which can inform, engage and connect like minds.

In the context of digital equality, it is therefore important to understand the various catalysts and hooks which attract people into taking advantage of online social networks. Social networks also open up the possibility of engaging with public services and organisations in a very different way, and have the potential to engage those who may currently find the public sector distant and impenetrable. Hitwise and Experian (2007).

2.9 The Role of Social Networking

The rise of SNSs has resulted in significant changes to the way in which many of us interact with others and how we distribute content across the Internet. However, when we talk about social networks we are talking about social relations between people who have some type of relationship or affiliation. In this sense, social networking technologies merely provide the infrastructure to do this in different ways. Prior technologies including the multitude of applications on the Internet (such as chat rooms and online games), mobile phones, and landline based telephones all continue to facilitate social networking. However, it is the range of features and capabilities of social networking sites that have captured the public's imagination and have led to them being marked as different and new.

In a few years, SNSs have found a place in many people's daily lives, whether they are at home, in the office or on the move. This along with the development of Web 2.0 technology has led to a situation where the individual has much more control over content creation and the ability to manipulate websites. The opportunity now exists not just to view information or just simply to buy some goods over the Internet, but to fully participate with others through sharing or creating content, or collaborating with those who share common interests. As a result, we are seeing both the rise of totally new online networks of people with no links to the offline world and those that provide support and added value to existing social networks. The strength, value and longevity of these networks can vary enormously. A group of people who have reviewed a book on Amazon, or contributed to feedback on an Amazon re-seller are loosely associated; representing disparate views to the benefit of the wider community. A group of people using SNSs to design an open source car have a significantly stronger relationship with much more interaction and common purpose.

The growth in user numbers for social networking sites has been phenomenal. Research, from Nielsen Online, indicates that Facebook, YouTube and Second Life are the fastest growing sites in terms of total UK minutes. Still, there are many, even amongst Internet users who have not yet used SNSs. A recent Ofcom (2008) report stated that only 22 per cent of UK based Internet users over 16 are members of one of the major social networks such as Facebook and Bebo.

The capabilities of social networking sites have increased significantly, most notably by allowing third parties to develop their own applications for use on these sites. In addition, the increasing ability to access these sites using mobile phones and TV offers the potential for even wider use. This provides an opportunity to address digital equality by enabling anytime/anywhere (ubiquitous) access using different and affordable devices. SNSs have not just become popular with the young and tech-aware of our society. Many other groups are now actively taking advantage on what's on offer. One of the fastest growing social networks this year has been SagaZone for the over 50s. This type of growth supports the belief that SNSs can be used to support digital equality if appropriate and relevant uses are identified and can effectively be used as an 'icebreaker' for people to enter the digital world and to subsequently accrue the wider social and economic benefits of digital citizenship. There are many examples where people's first contact with online technology has been through joining a social network. These include:

- family/friends in contact with someone who is seriously ill
- local societies e.g. history group
- networking with other individuals in your profession (e.g. carers) keeping in touch with people who have moved away supporting a cause or joining a protest

Table 2.5: Barriers

Barrier	Response
1. Perception of the Value of Joining a Social Network	Requires positive promotion of value and local encouragement. Highlighting of effective use, sufficient content by public sector.
2. Fear of losing information/identity, or meeting the 'wrong' type of person	Public information about the benefits and pitfalls. Possibly some form of codes of conduct that are self accredited.
3. Lack of Access to Technology in the appropriate place	Links to wider issues about home access, but needs to also ensure that there is wide as possible access in public/work places.
4. Lack of skills/confidence	Local community based initiatives to guide and support. 'Social Network' for non users.
5. Intellectual Rejection	Look for catalysts that can open the door.

Identifying and encouraging such 'icebreakers' would be a positive way of enabling further direct digital engagement, vibrancy and retention. Barriers to Use

According to Hitwise and Experian (2007). The main barriers to people engaging with social networks and potential solutions are listed below:

2.10 Gaps Identified

Online Social networks or sites are not created; they evolve and the growth of an online community takes time and effort.

The research found out that online communities fail often because many community designers have attempted to create them with little knowledge of how to make them successful. Simply adding social or group features to a company's website does not guarantee a vibrant community. Online communities need to be carefully designed, and member attachment to a community need to be carefully cultivated by connecting members with topics of their interest or like-minded others. To build a vibrant online community or social network, organizations need more than an individual's donation or membership application. They need ongoing interaction opportunities that will keep a constituent engaged and developing into a lifelong supporter. User relationships must be initiated based on trust, and then carefully cultivated. Organizations must identify a sequence of steps to increase a constituent's level of involvement and offer a variety of participation options that work to engage different components of their audience.

2.11 Suggested Solutions

To fill this gap that causes failure of online communities, this study came up with solutions that can be used to build a vibrant online community or social network and increase motivation, vibrancy and user retention.

The system design should incorporate techniques and features for motivating users to participate, engage, and contribute thus creating attachment which in turn increase vibrancy in online social networks.

CHAPTER THREE

THE METHODOLOGY

3.1 Introduction

Social networking sites rely heavily on member contribution. People typically start using their web and mobile devices to join a discussion group, read a blog, or tag a photo. According to the Reader-to-Leader Framework by Shneiderman Ben (2008), as users become aware of

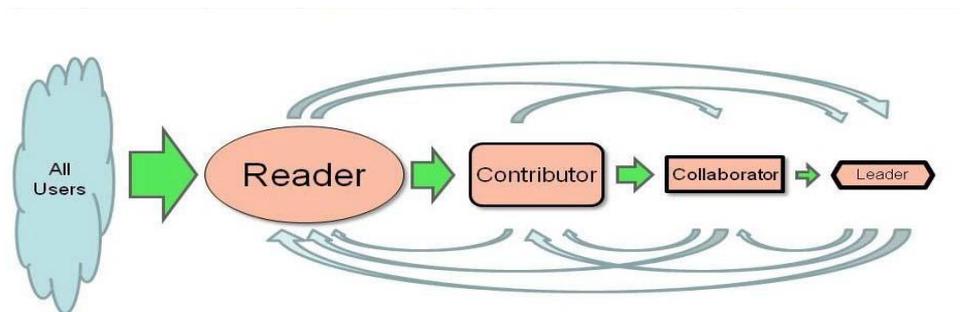


Figure 3.1: The Reader-to-Leader Framework by Ben Shneiderman social media they become readers, some will become contributors, then collaborators, and possibly leaders.

Once the system has been setup users can then join and use the community. First they must register, and after successfully registering, they will be required to login. After login, the user will be able to access the many features of the social network. The users can from that point connect with other members in the network and build relationships based on trust, and then carefully cultivated. Members need ongoing interaction opportunities that will keep a constituent engaged and developing into a lifelong supporter.

3.2 The Research Design Designs

This research used both qualitative and quantitative techniques (Kumar, 2005) for better analysis of user requirements in the development of the user interface. These requirements were collected from the stakeholders, primarily the users and administrator. Besides the researcher used USDP (Unified System Development Process) in the implementation of research findings since it is user centered, iterative and incremental which leads to implementation of acceptable product.

3.2.1 Methodology Phases

3.2.1.1 Inception

During the inception phase, the researcher established the business case for the system and delimited the project scope. To accomplish this, the researcher identified all external entities with which the system interacts (actors) and defined the nature of this interaction at a high-level. This involved identifying all use cases and describing a few significant ones.

3.2.1.2 Elaboration

The purpose of the elaboration phase was to analyze the problem domain, establish a sound architectural foundation, develop the project plan, and eliminate the highest risk elements of the project. To accomplish these objectives, the researcher must have a deep understanding of the system (user interface to be developed). Architectural decisions were made with an understanding of the whole system: its scope, major functionality and nonfunctional requirements such as performance requirements. Here use case diagrams are refined, by use of

activity diagrams, sequence diagrams, analysis class diagrams and finally design class diagrams. Arguably, this is the most important phase.

3.2.1.3 Construction

Here, the design class diagrams were translated to PHP and Dreamweaver code that will build up the entire interface. During the construction phase, all remaining components and application features were developed and integrated into the product, and all features were thoroughly tested. The construction phase is, in one sense, a manufacturing process where emphasis is placed on managing resources and controlling operations to optimize costs, schedules, and quality. In this sense, the management mindset undergoes a transition from the development of intellectual property during inception and elaboration, to the development of deployable products during construction and transition.

3.2.1.4 Transition

The purpose of the transition phase was to move the final interface product to the user community. Once the product has been given to the end user, issues usually might arise that require the researcher to develop new releases, correct some problems, or finish the features that were postponed.

The transition phase is entered when a baseline is mature enough to be deployed in the end-user domain. This typically requires that some usable subset of the interface have been completed to an acceptable level of quality and that user documentation is available so that the transition to the user will provide positive results for all parties.

This includes:

- Beta testing to validate the new system against user expectations
- Parallel operation with a legacy system that it is replacing
- Conversion of operational databases
- Training of users and maintainers
- Roll-out the product to the marketing, distribution, and sales teams

3.2.2 Method of Data Collection

The researcher used questionnaires, observation, interviews and document reviews to ascertain the feel of the online social network users, case studies around the world and the features they would like to be included in the social networks to enable them become vibrant. This data was elicited from stakeholders, primarily, from students and other users of social networks.

3.2.3 Data Analysis and Finding

The researcher analyzed the collected data using SPSS, a computer package used mainly for data processing and analysis which helped in drawing conclusions and requirement analysis document.

3.2.4 Target Respondents

The respondents targeted were 100 frequent users of social networks. Frequent in the sense that these members belong to more than one social media and are very active in using these networks on a daily basis.

3.3 Evaluation and Monitoring

After the data collection, analysis and design of the features based on the requirements, the researcher performed a usability evaluation/test to assess the effectiveness of these features by analyzing page visits and web traffic. This would also allow for continual improvement and maintenance as well as guide any future work. Evaluation was done by performing a usability test on the features/techniques for increasing user vibrancy, attachment and retention. In this case retention referred to consistency and frequency of users visiting the Pals vibe interface.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the research findings to investigate the Social networks usability in Kenya. The study was conducted on 100 respondents. Content analysis and descriptive analysis was used to analyze the data. The questionnaire in the (Appendix 1) was intended to collect data on features or attributes that when incorporated in the existing social networks would increase vibrancy.

4.2 Data Analysis

Table 4.1: Respondents' Level of Education

Level of education	Frequency	Percentage
Primary	11	11.0
Secondary	36	36.0
Tertiary	54	54.0
Total	100	100.0

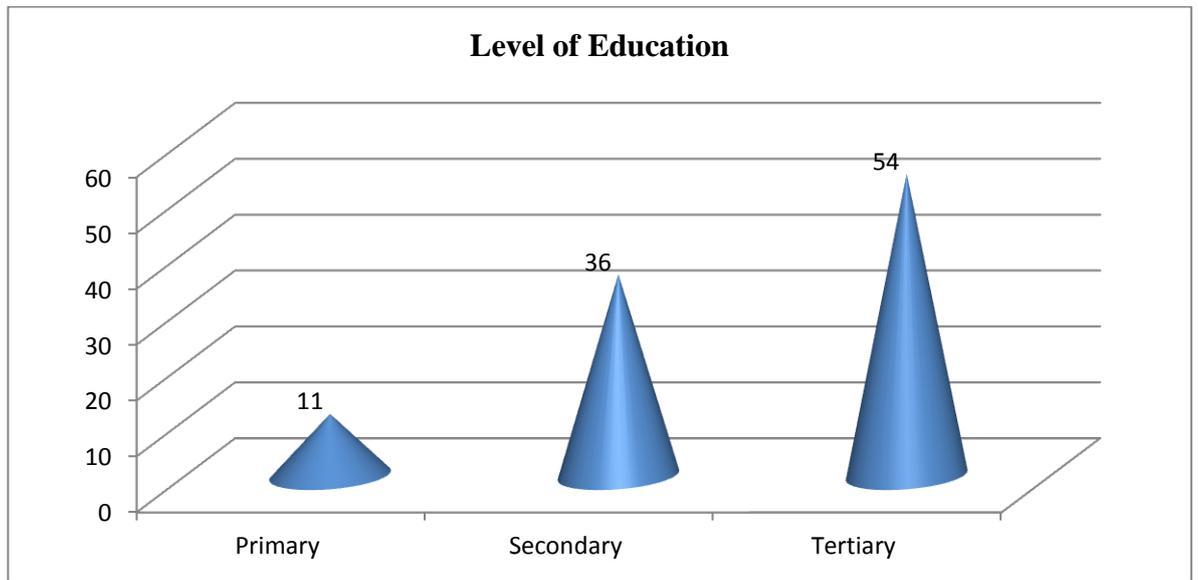


Figure 4.1: Representation of Respondents Level of Education

From the findings on the respondents level of education (Figure4.1), the study found that majority of the respondents as shown by 54% had attained tertiary level of education, 36% of the respondents indicated that they had attained secondary level of education whereas 11% indicated that they attained primary level of education, this is an indication that most of the respondents had reached secondary level of education.

4.2.1 Gender of the Respondents

Table 4.2: Respondents' Gender

Gender	Frequency	Percent
Male	52	52.0
Female	48	48.0
Total	100	100.0

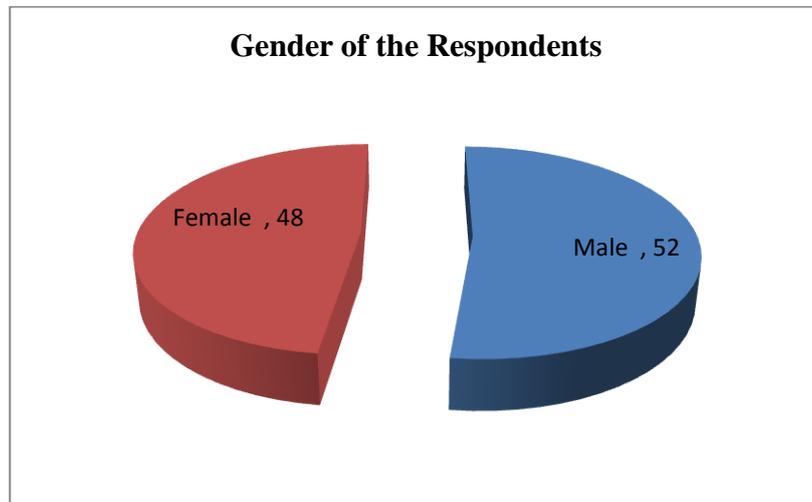


Figure 4.2: Respondents' Gender

From the findings on the gender of the respondents (Figure4.2), the study found that majority of the respondents as shown by 52% was male whereas 48% of the respondents were females an indication that both gender were included in this study in almost equal proportion.

4.2.2 Distribution of the Respondents by Age

Table 4.3: Distribution of the Respondents by Age

Age	Frequency	Percentage
18 to 24	36	36.0
25 to 35	28	28.0
36 to 45	20	20.0
46 to 55	16	16.0
Total	100	100.0

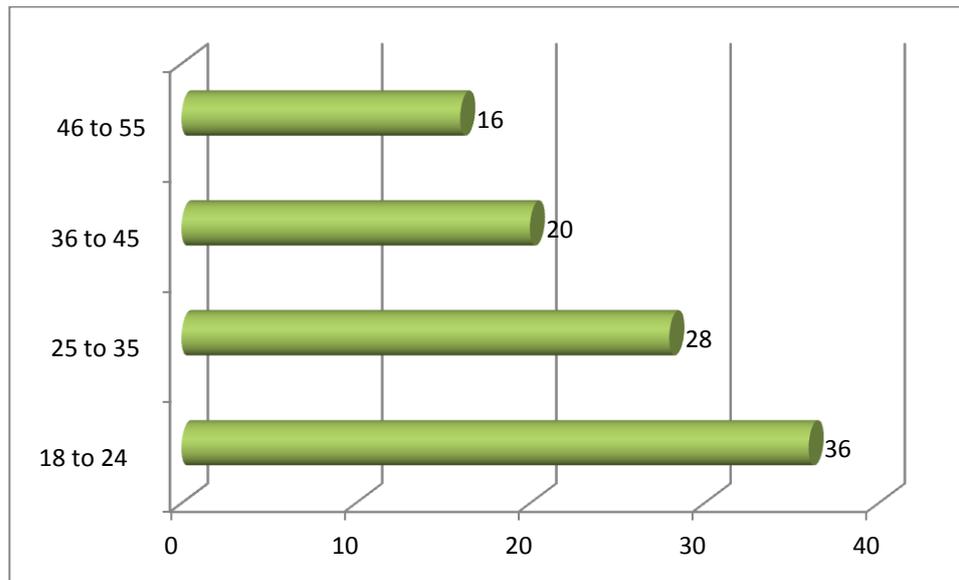


Figure 4.3: Distribution of the Respondents by Age

On the distribution of respondents by age in (Figure4.3), the study found that 36% of the respondents were aged between 18 to 24 years, 28% of the respondents indicated that they were aged between 25 to 35 years, 20% of the respondents indicated that they were aged between 36 to 45 years whereas 16% indicated that they were aged between 46 to 55 years, this is an indication that respondents were well distributed in term of their age.

4.2.3 Distribution of the Respondents their Marital Status

Table 4.4: Distribution of the Respondents their Marital Status

Marital status	Frequency	Percentage
Single never married	28	28.0
Married	48	48.0
Separated	18	18.0
Divorced	6	6.0
Total	100	100.0

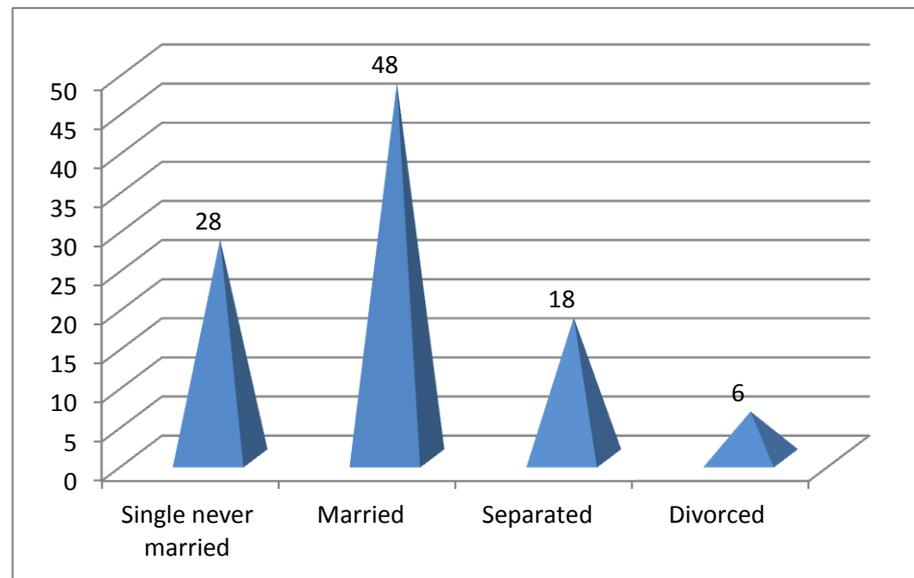


Figure 4.4: Distribution of the Respondents their Marital Status

From the findings on the marital of the respondents (Figure 4.4), the study found that 48% of the respondents were married, 28% of the respondents indicated that they were single and never married, 18% of the respondents indicated separated whereas 6% of the

respondents indicated that they were divorced an indication respondents were well distributed in term of their marital status.

4.2.4 Current Usage of Social Networks

Table 4.5: Respondents' Usage of Social Networks

Opinion	Frequency	Percentage
Yes	73	73.0
No	27	27.0
Total	100	100.0

From the finding on whether the respondents make use of social networking websites (Table 4.5), the study found that 73% of the respondents were making use of social networking websites whereas 27% of the respondents indicated that they did not use social networking sites an indication that majority of the respondents were making use of social networking sites.

Table 4.6: Respondents' Usage of Specific Social Networking Websites

Website	Percent
Google+	41.0
Facebook	87.0
MySpace	10.0
Twitter	67.0
Hi5	31.0

From the findings on the social networking sites respondents are a member of (Table 4.6), the study found that 87% of the respondents were using facebook, 67% of the respondents indicated they were using Twitter, 41% of the respondents indicated that they were using Google +, 31% of the respondents were using Hi5 whereas 10% of the respondents were using MySpace, this is an indication that respondents were using various social networking sites. Those who indicated that they were not using social networking site the reason were lack of time, lack of phone that could help them access Internet, they were not interested and lack of knowhow on usage of these sites

4.3 Member of Interest Groups

Table 4.7: Respondents Participation in Groups

Opinion	Frequency	Percent
Yes	73	73.0
No	27	27.0
Total	100	100.0

From the finding on whether the respondents were members of interest groups (Table 4.7), the study found that 73% of the respondents were members of interest group whereas 27% of the respondents indicated that they were not members of interest groups an indication that majority of the respondents were making use of social networking sites.

4.3.1 Use of Groups

Table 4.8: Usage of Groups by Respondents

Use of groups	Percent
Keeping up with topics of interest to me	81.0
Being told about events of interest to me	87.0
Meeting new people with similar interests	67.0

As shown in Table 4.8 the study found that respondents were using the various group in being told about events of interest to me as shown by 87%, keeping up with topics of interest to me as shown by 81% and meeting new people with similar interests as shown by 67%.

4.3.2 Features Offered in the Social Networks

Table 4.9: Features Offered in the Social Networks

Features offered	Percent
Badges	21.0
Coupons	47.0
Star rating	67.0
Cash prizes	11.0
Premium Features	78.0
Credits	71.0

From the findings on the features offered in the social networks (Table 4.9), these were premium features as shown 78%, credits as shown by 71%, star rating as shown by 67%, coupon as shown by 47%, badges as shown by 21% and cash prizes as shown by 11%, this an indication that there are many features offered in the social network. The study further

revealed that of the social networking sites the most active were Face-book, Twitter and Google+, the study found that various activities had contributed to being more active in the site. These were getting news, professional networking, journaling, shopping, findings new friends, chatting, health information, job seeking, sharing your thoughts with others, making financial transactions ,being part of online communities and Keeping in touch with friends. The study found out that the social networking sites respondents which were least active were in Bebo, Flixster, Hi5, LinkedIn, MySpace,Orkut, Tagged, Google+ and interest.

From the above regression model holding current usage to a constant zero, attraction to social sites would be 1.046, it is established that a unit usage of social network would cause an increase usage of social network by a factor of 0.250. This clearly shows that there is a positive relationship between attraction to social network and current usage in social network. The study further revealed that the P-value were less than 0.05 in all the variables, which shows that data on the variable were statistically significant and thus in position to make conclusion for the study.

4.3.3 User Motivation

A four Likert scale was used to analyze the importance of various factors and features used for social networking sites, those who were considered as very important were awarded a scale of 1 whereas those who were considered as not important were awarded as scale of 4, with the quantum was those considered as important were awarded a scale of 2 and those considered as slightly important were awarded a scale of 3, those statement within a mean close to 1 were regarded as very important, those with mean close to 2 were regarded as

important, those with mean close to 3 were regarded as slightly important and those with mean close of 4 were regarded as not important.

4.3.4 Importance of the Various Features for a Social Networking Site

Table 4.10: Questions and Data on Social Network Features

Features	Mean	Std deviation
The user can post status updates	1.860	.6834
Access to latest news through news feeds	1.992	.7387
Specified number of characters for updates and posts	2.051	.7063
The user can post on other peoples profiles	1.639	.5844
Recommendations on certain groups to join or members to connect with	1.720	.5452
Finding new friends	1.551	.5475
Creation and management of groups	1.511	.6193
Chatting	1.727	.8925
Job seeking	1.864	.9090
Professional networking	2.121	.6341
Online journal	2.113	.8697
Single and multi-player games	2.108	1.0451
User can customize level of details for information viewed	2.356	.9680
Being awarded user levels depending on level of activity	1.682	.6421

Restricted sections for premium users	1.702	.6337
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From the findings on the importance of the various factors and features listed for a social networking site (Table 4.10), the study found that those rated as important were creation and management of groups as shown by mean of 1.511, finding new friends as shown by mean of 1.551, the user can post on other peoples profiles as shown being awarded user levels depending on level of activity as shown by mean of 1.682, restricted sections for premium users as shown by mean of 1.702, recommendations on certain groups to join or members to connect with as shown by mean of 1.720, chatting as shown by mean of 1.727, user can post status updates as shown by mean of 1.860, job seeking as shown by mean of 1.864, access to latest news through news feeds as shown by mean of 1.992, specified number of characters for updates and posts as shown by mean of 2.051, single and multi-player games as shown by mean of 2.108, online journal as shown by mean of 2.113, professional networking as shown by mean of 2.121 and user can customize level of details for information viewed as shown by mean of 2.356.

From the above regression model holding features of social network to a constant zero, attraction to social network would be 1.366, it is established that a unit increase feature of social network would cause an increase attraction to social network by a factor of 0.248. This clearly shows that there is a positive relationship between attraction to social network and features of social network. The study further revealed that the P-value were less than 0.05 in all the variables, which shows that data on the variable were statistically significant and thus in position to make conclusion for the study.

4.3.5 Importance of the Various Aspects of Usability for a Social Networking Site

Table 4.11: Usability Questions and Data

Usability	Mean	Std deviation
Web pages are automatically refresh frequently	1.6544	.84503
Web pages are loaded fast	2.1765	1.13893
Login and registration information on homepage	1.7868	.61239
Login form on homepage	1.5147	.61332

From the finding on the importance of various aspect of usability for social networking site (Table 4.11), the study found majority of the respondents rated the following as important, login form on homepage as shown by mean of 1.5147, web pages are automatically refresh frequently as shown by mean of 1.6544, login and registration information on homepage as shown by mean of 1.7868 and web pages are loaded fast as shown by mean of 2.1765.

4.3.6 Importance of the Various Aspects of Security for a Social Networking Site

Table 4.12: Security Questions and Data

Security	Mean	Std deviation
Allows unrestricted discussion of current issues	1.5478	.70155
Allow profile viewing by users not connected with	2.0515	.75696

On the importance various aspect of security for a social networking site (Table 4.12), the study found that majority of the respondents rated the following as important, allows unrestricted discussion of current issues as shown by mean of 1.5478 and allow profile viewing by users not connected with as shown by mean of 2.0515.

Via regression analysis holding Security for a social networking to a constant zero, attraction to social site would be 0.988, it's established that a unit increase Security for a social networking would cause an increase attraction to social networks by a factor of 0.618. This clearly shows that there is a positive relationship security for a social networking and attraction to social network. The study further revealed that the P-value were less than 0.05 in all the variables, which shows that data on the variable were statistically significant and thus in position to make conclusion for the study.

4.3.7 Importance of the Various Aspects of Notification for a Social Networking Site

Table 4.13: Notifications Questions and Data

Notification	Mean	Std deviation
Being sent notifications via email	2.025	.8821
Being sent notifications via sms	2.205	.8112

On the level of importance of various aspect of notification for a social networking site (Table 4.13), the study found that respondents rated the following as importance, being sent notifications via email as shown by mean of 2.025 and being sent notifications via sms as shown by mean of 2.205.

Holding notification for a social networking to a constant zero, attraction to social network would be 1.241, it is established that a unit increase notification for a social networking would cause an increase attraction to social network by a factor of 0.205. This clearly shows that there is a positive relationship between notification for a social networking and attraction to social network. The study further revealed that the P-value were less than 0.05 in all the

variables, which shows that data on the variable were statistically significant and thus in position to make conclusion for the study.

4.4 Proposed Features for Increasing Vibrancy

The intent of this project was to conduct a study on the possible ways in which the excitement among the users can be aroused to make these sites vibrant. Guided by the information obtained from the gathered and analyzed data, the system requirements and design details should incorporate techniques and features for motivating users to participate, engage, and contribute thus creating attachment which in turn increase vibrancy in online social networks.

4.4.1 Functional Requirements

- i. The system allows users:
 - a) To create accounts and login.
 - b) To post material, contribute and subscribe to various topics posted by other users.

This will mainly be of importance to members in the ‘Reader’ level who are Venturing in to the network, reading, browsing, searching, returning to check on other comments on the subscribed posts. The contributors can also follow up on started topics and gather views from other members in the network increasing attachment to the network as a whole.
 - c) To form groups which can be open to others or restricted to people as specified by the group creator. The groups will be formed based on members’ topics of interest as well as established connections with individuals with similar interests. For members who have been part of the network for a considerable amount of time, the rights to create and manage groups would place them in the Leader level, tasking

them with promoting participation, mentoring novices, setting and upholding policies

- ii. The system records user activity and participation in the social network. Each action the user performs is awarded points and the more active a user is, the higher the number of points. This allows for rewards to the most active users and awarding user levels depending on individual activity e.g. user badges as indicated in table 4.14 below.
- iii. The system allows for real time analysis of member activity to determine effectiveness in user retention motivation.
- iv. The system should recommend certain groups and users based on their interests and activity in the groups already joined.
- v. The system should allow for backend administration. This will be accessible to administrators only who will monitor user activity.

Table 4.14: Reward System

Points awarded in the Reward System	
Points for making another member a friend	5
Points for posting a blog entry	10
Points for posting a comment	1
Points for posting to the wire	2
Points for starting a group	10
Points for posting a group topic	3
Points for editing profile	5

Figure 4.5 gives the symbols chosen to represent levels in Table 4.15.

4.5 User Levels Awarded Depending On User Activity

Table 4.15: User Levels

NOVICE	Level awarded to all new users. This is the lowest and default level on registration
AMATEUR	Level awarded when a user attains 500 points
PROFESSIONAL	Level awarded when a user attains 1000 points
EXPERT	Level awarded when a user attains 2500 points
LEADER	Level awarded when a user attains 5000 points
MASTER	Level awarded when a user attains 10000points



Figure 4.5: Badges

4.5.1 Non-Functional Requirements

- i. Usability and User Friendliness: a lot of focus on the user interface to ensure usability of all proposed features and functionalities of the system.
- ii. Scalability: highly scalable system in that it should be able to accommodate the growing number of users that shall be using the system in the near future.
- iii. Performance: acceptable response time for the requests sent by the user. The database and code execution is optimized to ensure user motivation.
- iv. Reliability: the system should be able to provide reliable service to its users. The downtime of the system in case it occurs should be low in that it doesn't affect the users activities.
- v. Security:
 - Strong passwords for user accounts, of at least six characters to ensure user data and profile information is kept safe.
 - Logging of user login data (time and location) to help detect cases of account hacking.

4.6 Framework Design

In this design modeling the researcher designed the system through the use of use case, activity diagrams, sequence diagram, class diagram, package diagram and robust analysis diagram. The design model helps to represent the general functionality of the system for it to be implemented.

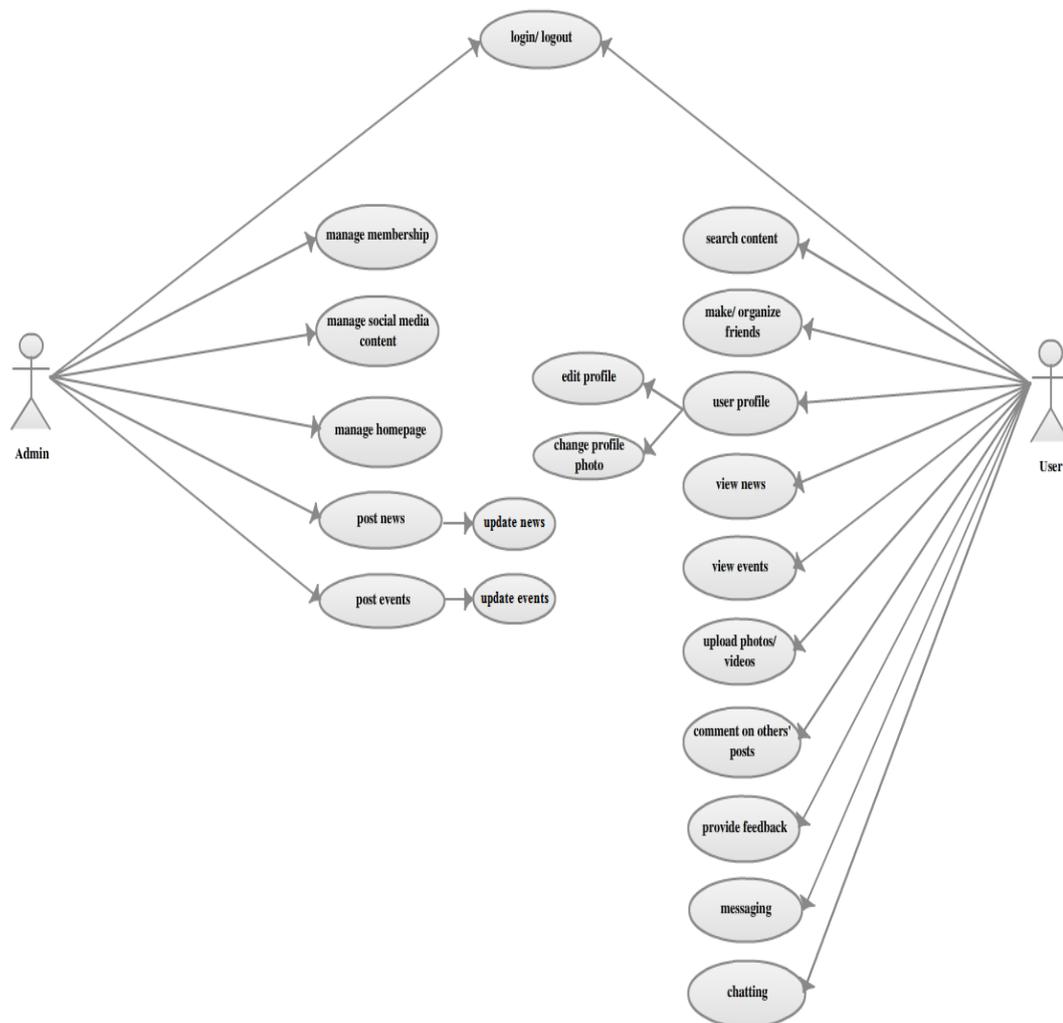


Figure 4.6: General System Use Case diagram

In this diagram, we can see that there is the user and the administrator. Both parties have to login so as to carry out the designed functionalities (as shown in Figure 4.6) The user carries out functions such as searching, organizing friends, messaging, viewing news and events, uploading photos and videos etc.

The administrator has more permission such as managing memberships, social media content, posting news and events. Just like the user, the administrator also must login.

4.6.2 User Screen Flow

Figure 4.8 depicts the user screen flow; first of all in order to be a user, one has to register. After registering, the user uses the registration details to login to the system and is directed to his homepage. Here the user is able to search for message boards and join a board which he is

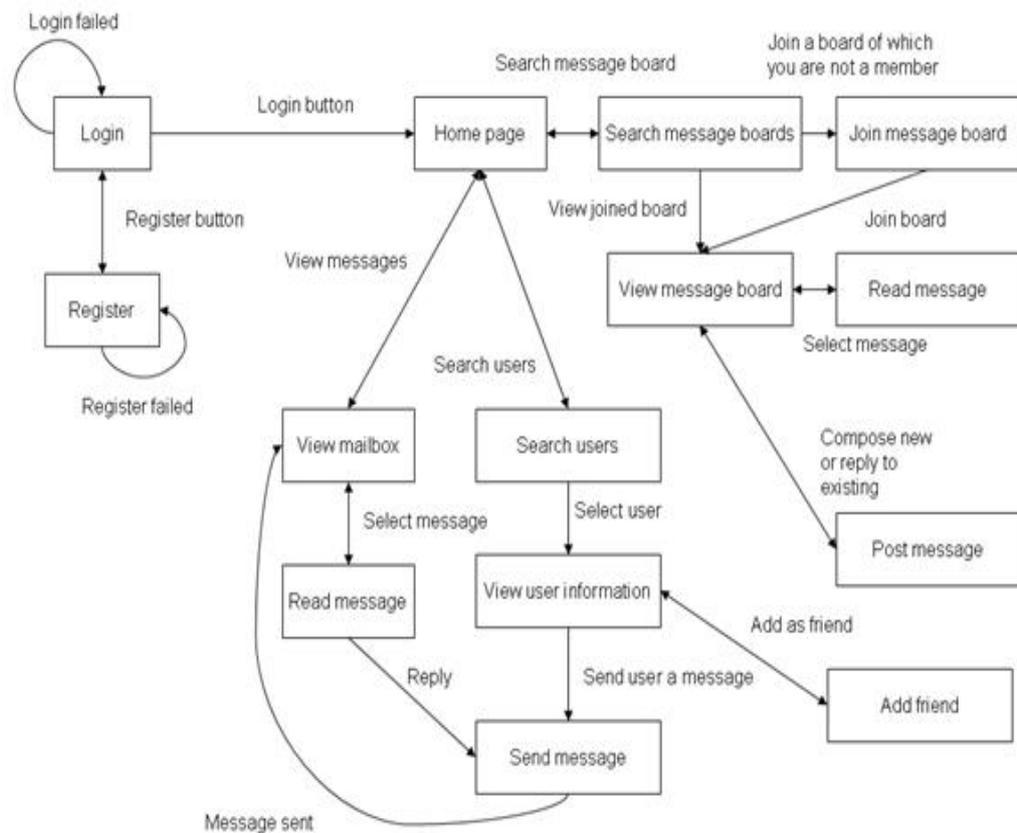


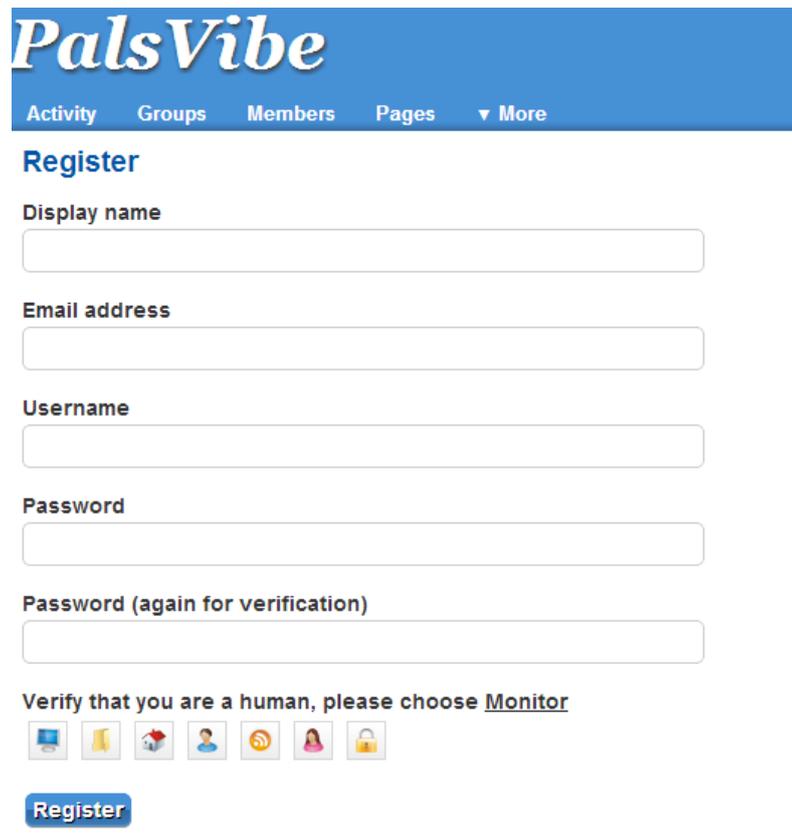
Figure 4.8: User Screen Flow

not a member. He also can view his messages, view mailbox, read the messages and reply to the read messages. He can also search users, view their information and add them if they are not friends. On the other hand, if the user joins a message board, he can view the messages, reply to them by posting the boards wall.

4.7 System Design Details

4.7.1 Registration form

Pals-vibe has been designed to be simple, easy to learn and use which also contributes to increasing vibrancy in online social networks. When a user logs on to palsvibe website, he/she is required to register by filling in details in a simple form. The registration form is designed to have minimum fields required to enter the details. It is simple such that the user does not get bored while using the system.



The image shows a screenshot of the PalsVibe website's registration form. At the top, there is a blue header with the 'PalsVibe' logo in white. Below the logo, there is a navigation menu with links for 'Activity', 'Groups', 'Members', 'Pages', and 'More'. The main content area is titled 'Register' in blue. Below this title, there are five input fields: 'Display name', 'Email address', 'Username', 'Password', and 'Password (again for verification)'. Each field is a simple white box with a thin border. Below the password fields, there is a text prompt: 'Verify that you are a human, please choose Monitor'. Underneath this prompt is a row of seven small icons: a computer monitor, a document, a globe, a person, a gear, a woman, and a padlock. At the bottom of the form is a blue 'Register' button with white text.

Figure 4.9: Registration Form

4.7.2 Login Form

After registering into the system, the next step is to login as a user. The user is only asked for the username and the password. In most of the social sites the user is required to enter the email address as the login and password. This is very tiresome since the email is at times very long and users feel uncomfortable. In Pals vibe, the user logs in with a username which he/she chose.

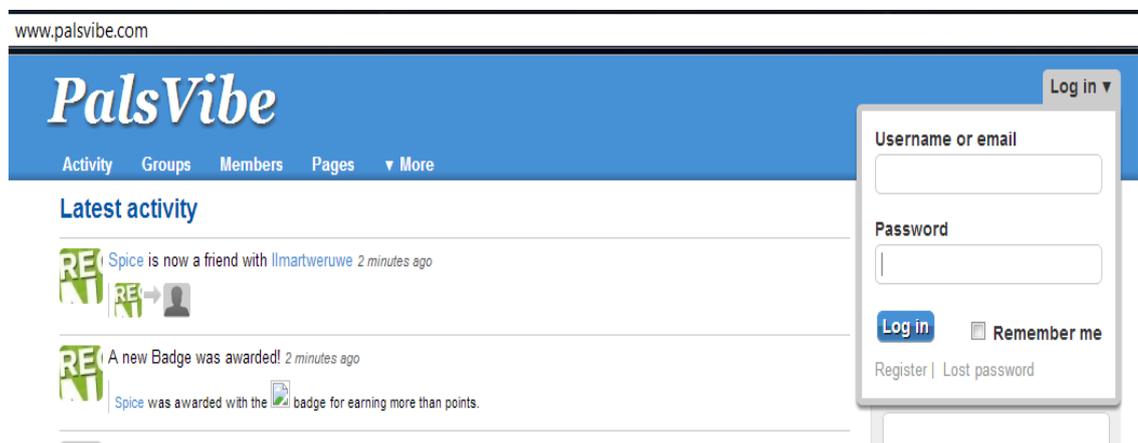


Figure 4.10: Login Form

4.7.3 User Profile

After the user logs in, he/she is expected to create a profile with details like skills, interests, gender etc



Figure 4.11: User Profile Page

4.7.4 User Home Page

This is the page where a user views all the activities posted by their friends. Pals-vibe provides a method where a user can carry out most activities such as adding friends while still on the homepage.

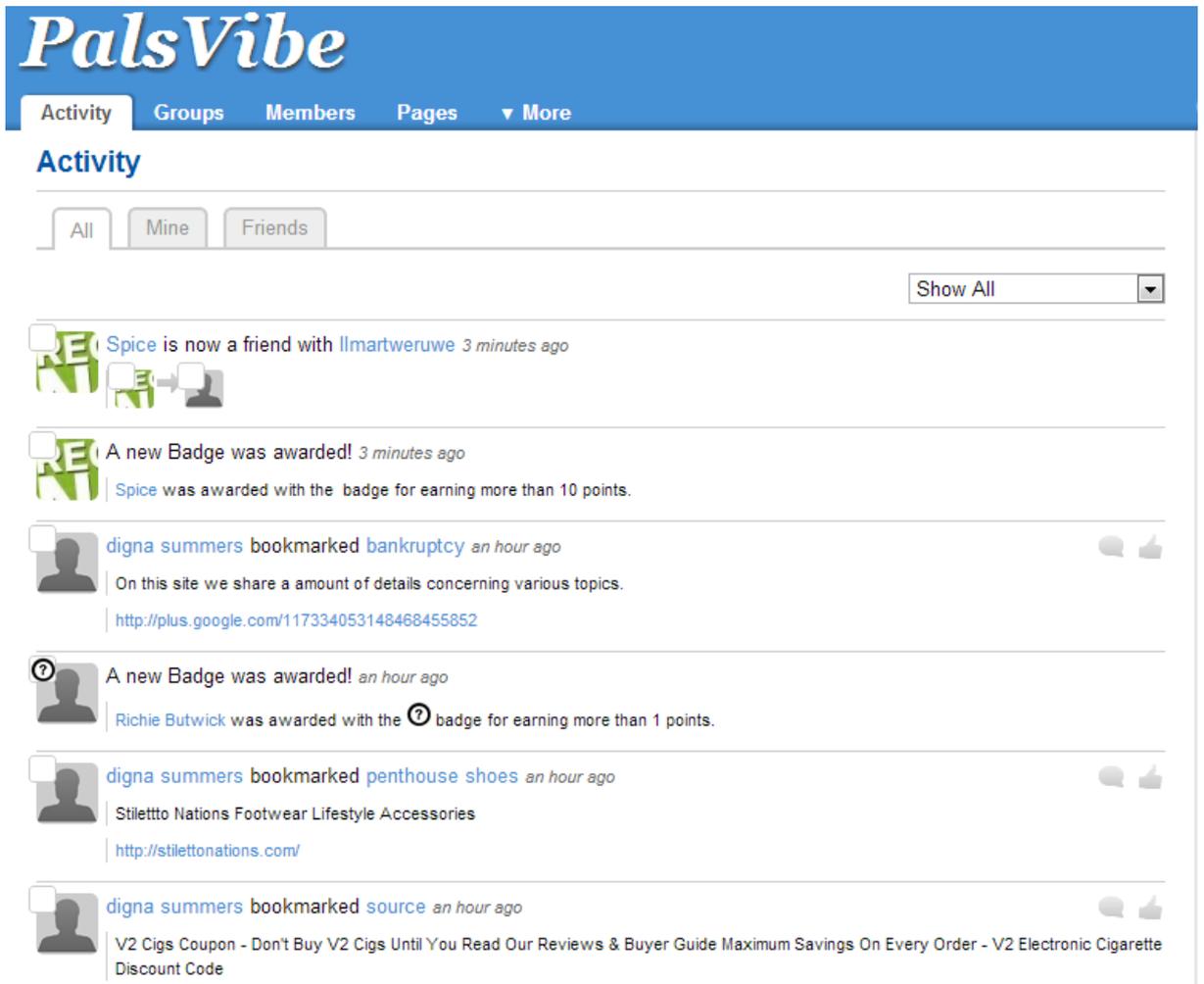


Figure 4.12: User Home Page

The page provides a good interface that allows the user to view badges and comment to other people's posts.

4.7.5 Messaging

The system provides functionality for sending and receiving messages among the users. The functionality is secured in a manner that the inbox is only for the logged-in user. The interface here is also very easy to use.

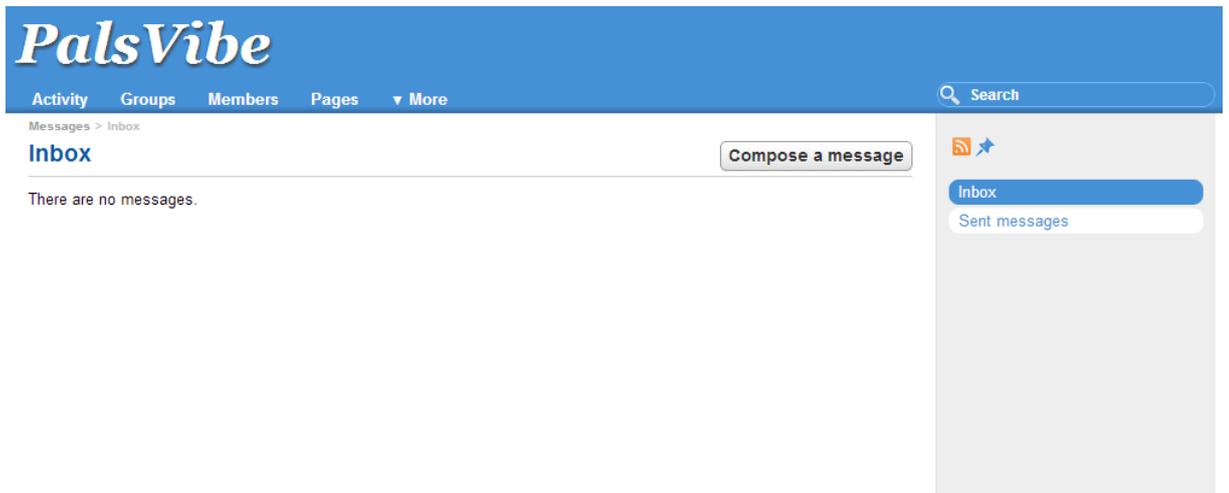


Figure 4.13: Inbox

4.7.5 Groups

Also as a way to increase vibrancy, the site has got a facility to support groups. These are platforms where several users can share information whether serious or for fun. One must be a registered user of the site so as to join a particular group.

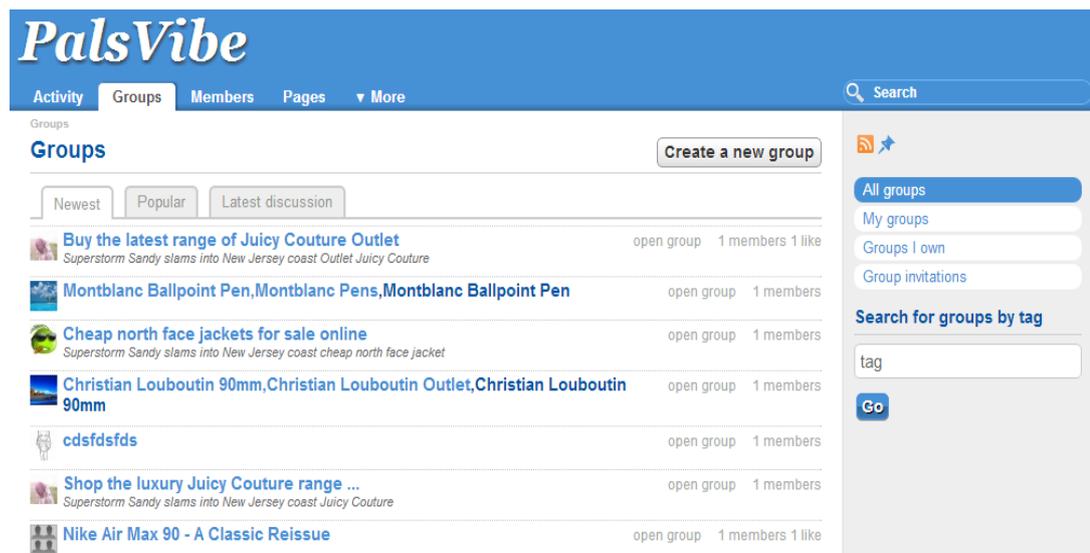


Figure 4.14: Groups

4.7.6 User Retention Monitoring

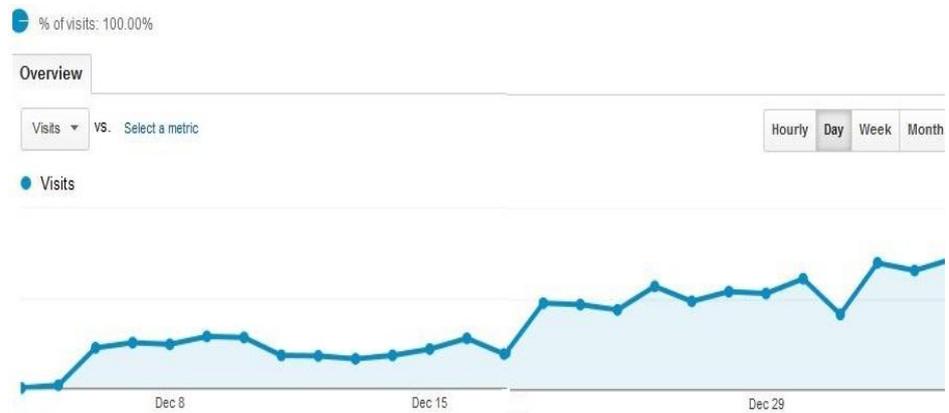


Figure 4.15: User Activity During the Testing Period

As shown in figure 4.15 user activity increased steadily over the period of monitoring. The monitoring was conducted over the period of one month using Google Analytics to monitor the participants' activity. Google Analytics is a service offered by Google that generates statistics about the visits to a website. It tracks visitors through the site and also tracks of the performance any campaigns set.

This was an indication that new users were visiting the website thereby resulting in increased traffic. As shown in figure 4.16 existing users returning to the website were also monitored.

For this instance 80% of the visitors were new users while 20% were existing users.

Overview



Figure 4.16: Realtime User Activity

Username	Update Posts	Friends Added	Comments Posted	Groups Started	Group Topics	Profile Completion	Total Points	User Level
Stevee	1020	125	735	210	415	5	2510	Expert
Martham	670	55	363	20	15	5	1128	Professional
Jaymok	520	45	475	10	9	5	1064	Professional
Chris	440	50	329	10	18	5	852	Amateur
Joana	460	45	320	10	9	5	849	Amateur
Jose	320	30	288	0	12	5	655	Amateur
Nancym	300	50	205	0	30	5	590	Amateur
Maish	310	30	68	0	15	5	428	Novice
Richie	190	25	35	0	9	5	264	Novice
Julie	60	15	66	0	6	5	152	Novice
Daniel	10	25	6	0	3	5	49	Novice
Ricky	30	10	7	0	3	5	55	Novice

Figure 4.177: Summary of Points Awarded for User Activity

Figure 4.17 shows the summary of the points awarded to users based on their activity over the testing period. Posting of updates (which included new blog entries and activity updates) as well as commenting on friends posts generated the highest number of points for the users and was noted to be the easiest way to enhance user activity. It also encouraged interaction between individuals involved. The points were awarded as outlined in table 4.14.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

This research provides Usability features in online social networks that are used to motivate, increase user participation, engagement, attachment and retention thereby increasing vibrancy. From the data gathered, a social network interface called pals-vibe was developed that incorporated these features/techniques for instance giving users levels depending on their contributions/ participation and content of interest was generated through use of interested groups in that users who belonged to a specific group were able to access information of interest which led to increased retention and attachment.

The research also brought out features whose emphasis would help increase user activity and motivation leading to a more vibrant network. These features included posting of status updates, creating information, finding new friends and users were awarded levels depending on their level of activity. This was identified using user badges/ star rating. Vibrancy was increased through use of ratings which made every user to be very active to change their status for instance from being a amateur to a novice all the way to becoming an expert which was affirmed by performing a usability evaluation/test that assessed the effectiveness of these features by analyzing page visits.

The study found out that individuals using social networks are well distributed in terms of age and gender with most of them having attained tertiary education. However provided the

system provides an interactive user experience associated with a user interface which is easy-to-learn, supports users' tasks and goals efficiently and effectively, and is satisfying and engaging to use contributes to their retention and increased usage of the social network.

5.2 Recommendations

We believe that theoretical insights in this research supported by empirical evidence are powerful tools that designers and managers could leverage to build vibrant online communities. They will still need to make important choices to customize the design features to fit the technology being used, the class of members, and other particulars that may shape member experience. As Greif (1991) stated, "When it comes to design, there are often no correct answers, only wise tradeoffs among alternatives." However, our theory-inspired approach should help designers and managers constrain and navigate the design space they need to explore.

By incorporating relevant content of interest, redesigning the sites and increasing functionalities of social sites, we can raise the vibrancy and retention of online social network users which will lead to better collaboration globally among citizens.

The design should also be optimized to allow auto-refreshing pages to enhance user experience. Of importance also in the user interface is enhanced accessibility to features such as login and registration.

5.3 Future Research

This study also revealed that usability features alone are not adequate to ensure increased vibrancy and user retention. Additional issues of Learnability and Accessibility of Human Computer Interface need to be addressed in future research for instance:

Having an increased sense of community where majority of people learn by example and often follow others especially when it comes to participation. Individuals are reserved about contributing to an online community for many reasons including but not limited to a fear of criticism or inaccuracy. Users may withhold information that they do not believe is particularly interesting, relevant, or truthful. In order to challenge these contribution barriers, producers of these sites are responsible for developing knowledge-based and foundation-based trust among the community.

Persuasion of a potential user: in order to facilitate the potential user's decision to enter a community, i.e. to register, the community web-site should clearly show its benefits to a visitor.

Encouraging users to invite friends: any network implicitly or explicitly fosters the competition on the number of one's friends: the more connections you have, the more weight you have in the community.

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APPENDICES

Appendix 1: Questionnaire

Section one

General Information

1. Education level?

Primary

Secondary

Tertiary/university/college

2. Gender?

Male

Female

3. Age

18 – 24

25 – 35

36 – 45

46 – 55

56 – 65

65 +

4. What is the highest level of education you have completed?

High school

College

Masters

Doctor

Professor

Other

5. What is your current marital status?

Single, Never Married

Married

Separated

Divorced

Widowed

Section two

Current Usage

6. Do you make use of social networking websites?

Yes

No

7. If yes, which of the following social networking sites are you a member of?

Bebo

Facebook

Flixster

H

LinkedIn

MySpace

Orkut

Tagged

Google+

Twitter

Pinterest

Other (please specify) _____

8. If no, why?

9. Are you a member of any interest groups within the networking sites selected in 7 above?

Yes

No

10. If yes, how do you use these groups:

Keeping up with topics of interest to me

Being told about events of interest to me

Meeting new people with similar interests

Other (please specify)

11. Are any of the following features offered in the social networks you are a member of?

- | | | |
|------------------|------------------------------|-----------------------------|
| Badges | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| Coupons | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| Star rating | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| Cash prizes | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| Premium Features | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| Credits | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

If not which one of the above features would you like included in social networks?

12. Of the social networking sites you are a member of, which one are you most active in?

13. Have any of the features in no. 11 contributed to your being more active in the site in no. 12 above?

Yes No

14. If yes, which one(s)?

15. If no, please list the factors that have contributed to your increased activity.

16. Which of the social networking sites are you least active in?

17. Why?

Section 3

User Motivation

Features	Very Important	Somewhat Important	Not Important
The user can post status updates			
Access to latest news through news feeds			
Specified number of characters for updates and posts			
The user can post on other peoples profiles			
Recommendations on certain groups to join or members to connect with.			
Finding new friends			
Creation and management of groups			
Chatting			
Job seeking			
Professional networking			
Online journal			
Single and multi-player games			
User can customize level of details for			

information viewed			
Being awarded user levels depending on level of activity			
Restricted sections for premium users			

Usability

Web pages are automatically refresh frequently			
Web pages are loaded fast			
Login and registration information on homepage			
Login form on homepage			
Registration form on homepage			

Security

Allows unrestricted discussion of current issues			
Allow profile viewing by users not connected with			

Notifications

Being sent notifications via email			
Being sent notifications via sms			

18. Please indicate the importance of the various factors and features listed for a social networking site.