

**IMPACT OF WEB BASED INTERACTIONS IN ORGANIZATION' S
ECOSYSTEM IN KENYA'S FINANCIAL TECHNOLOGY SECTOR
SMALL AND MEDIUM ENTERPRISES**

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DECLARATION

This research project is my original work and has never been submitted for an award in any other university.

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This research project has been submitted with my approval as the University Supervisor.

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DEDICATION

This paper is dedicated to my family for their overwhelming support and encouragement, without which, this project would not have been possible.

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LIST OF ABBREVIATIONS

SMES	Small and Medium Enterprises
HTTP	Hypertext Transfer Protocol
MSME	Micro Small and Medium Enterprises
KSH	Kenya Shilling
GDP	Gross Domestic Product
AJAX	Asynchronous JavaScript and XML
JSON	JavaScript Object Notation
XML	Extensible Markup Language
REST	Representational State Transfer
HTML	Hypertext Markup Language
RBV	Resource Based View Theory
RSS	Really Simple Syndicate
API	Application Programming Interface
BYOD	Bring Your Own Device
SEO	Search Engine Optimization
B2C	Business to Consumer
XSS	Cross-site Scripting
SNSs	Social Networking Sites

ABSTRACT

Web 2.0 is one of the rapidly growing web applications. Financial technology enterprises are leveraging these platforms to access customers using social technologies and gain competitive advantage. Due to the recent growth in use and adoption of Web 2.0 in organizations and the need to gain increased understanding of web based interactions in ecosystems, this research sought to investigate the impact of web based interactions in organizations' ecosystem in small and medium financial technology enterprises in Nairobi. The study was guided by the research objectives, these are: To determine the frequently used web based interaction technologies, to establish the impact of web based interactions in organization's ecosystems, systems and strategic directions and lastly to assess whether the use of web based interactions in small and medium enterprises result in increased value in organizations. The study used descriptive cross sectional research design and structured questionnaires as primary data collection tools that were administered to the study population. Descriptive statistics and regression analysis was used to analyze the study findings. The findings of the study indicated that use of web based interaction media in small and medium financial technology firms in Kenya lead to positive impact in organizations, increased business value such as increased market reach, better customer management, increased efficiency, increased information flow and better networked organizations. The research also indicated a positive correlation between extent of use and supporting organization policies, structure and culture and also a positive correlation between business value and extent of use indicating increased business value as extent of use increases. There are emerging factors that come up as a result of use of social technologies such as need for quality content and cyber security risks. Challenges that come up as a result of using interaction technologies must be addressed by small and medium FinTech organizations in order for continued benefits and value to prevail in the organization and the ecosystem. The study recommends organizational changes that support use of Web 2.0 in the organization should be implemented and supported by management as well as the alignment of the digital strategy to the business strategy to ensure that the organization is able to benefit from long term competitive advantage. Organizations should also invest in other social interaction platforms in order to gain benefits of the emerging Web 2.0 that is current and more innovative.

CHAPTER ONE

INTRODUCTION

1.1 Background

The wide adoption and use of the internet in today's economy has enabled many organizations to use web based interaction technologies as platforms to disseminate information to key organization's players such as suppliers, customers, and other stakeholders. Web based interactions connect firms' ecosystems resulting to reduced cost, increased efficiency, increased transparency, mitigated risks of disruption, and enhanced customer interactions. These platforms have enhanced organizations' growth and increased the ability to reach global markets both economically and socially. Intensified global competitiveness has led to a shift in the way most companies operate and the internet has enabled organizations to be more information and customer centric.

Jagongo and Kinyua (2013) state that the low barrier in the use of web based interaction platforms can result to SMEs being able to make use of web based technologies in the same way as large enterprises, without the need for large investments. The research asserts that the use of web based interactions enables organizations to acquire resources that would otherwise not be available to them. SMEs play a key role in the economic development of Kenya's economy and contribute to about 90% of the national economic output (Wielicki & Arendit, 2010). Interactions platforms have altered the way organizations manage their businesses and daily operations as these technologies have dissolved the distinction between professional and personal life. World Economic Forum

(2015) reveals that emergent web platforms drive value creation and economic growth in unforeseen ways reinventing market growth and business models.

Organizations are able to form global relationships, networks, foster innovation, efficiency and growth due to use of social networking technologies. Web based platforms provide SMEs with an opportunity to narrow the information gap (Jagongo & Kinyua, 2013). Consistency in the interaction of various social media platform is important for small and medium enterprises in order to allow global, unified and consistent view of business objective and synergy of processes, and also make explicit emergent knowledge, which has considerable added value for the organization (Youcef, 2002).

This research focused on the impact of web based interactions in SMEs located in Nairobi County, Kenya, and zeroed in on Financial Technology enterprises. The study involved the use of social network theory, transaction cost economics theory and resource based view theory.

1.1.1 Web Based Interactions

Web based interactions refers to the use of Web 2.0 technologies and social networking platforms to connect, communicate and collaborate with other users. Web 2.0 refers to technologies shifting the web into a participatory platform such as Wikipedia, social networking sites (SNSs), weblogs, podcasts, microblogs, Really Simple Syndication (RSS), social bookmarking, YouTube and virtual communities (Darwish & Lakhtaria, 2011; Muegge, 2013). Tim O' Relly one of the founders of Web 2.0 defines Web 2.0 technologies as the understanding of network as the platform also referred to as web as a platform where users add value. He states that organizations need to be able to create and use platforms that have value as more people use them (O'Relly, 2009). Interaction

platforms can be used by groups, organizations and companies to engage with others and build a virtual community (Derham, Cragg & Morrish, 2011).

Web based media operate and function on a user's web browser and run on a remote hardware maintained by the owner. They require internet connections and do not require installation other than logging in. Web 2.0 depend on web browser and web protocols such as HTTP to provide the user interface in the form of web pages, delivered and connected to the rest of the application (Zhao, Kearney & Gioiosa, n.d.). Social media is often considered as a platform that facilitates information sharing and participation (Steenkamp & Hyde-Clarke, 2014). Boyd and Ellison (2007) define social networking sites as, "web based services that allow individuals to construct a public or semi-public profile with a bounded system, articulate a list of other users with whom you share connections and view and traverse their list of connections and those made by others within the system".

Interaction platforms range from communication and marketing platforms such as Facebook, websites, Pinterest and Twitter, information platform such as Wikipedia and Google, recruitment platforms such as LinkedIn, funding platforms such as Crowd funder and Start next. The wide use of the internet has resulted to a myriad of online information and reference services such as Google maps, Google earth and Wikipedia. These are a combination of commercial services usually advertising funded and online collaborations that may attract advertising revenues, solicit donations or draw on voluntary funding (Bezweek & Egbu, 2009). With increased number of internet user, real time web based interactions have also started to emerge such as the internet chat as a mode of communication. According to Ford et al., (2003) internet chatting refers to the act of

talking to other people who are using the internet at the same time and may be located in different locations. Chats are sometimes hosted by web sites.

1.1.2 Organization Ecosystem

Companies do not exist in isolation; they rely on networking in order to achieve success and increased performance. In today's economy, technology is enhancing interconnectedness and companies need to take advantage of this by using and investing in the right web based platforms in order to gain competitive advantage. Interaction platforms benefit from network externalities as more and more people sign up for them the more an organization is able to gain from these platforms. Iansit and levien (2004) define business ecosystem as "loose networks of suppliers, distributors, outsourcing firms, makers of related products or services, technology providers and a host of other organizations, affecting, and are affected by, the creation and delivery of a company's own offerings." Whereas Moore (2006) defines a business ecosystems as "intentional communities of economic actors whose individual business activities share to a large extent the fate of the whole community".

Each individual business in a business ecosystem shares the fate of the entire network despite member's business strength. Web based interactions create value in a business ecosystem when they are easily shared across the business network a concept referred to as operating leverage in a company's ecosystem. Risk plays a key role in interaction technologies and organizations need to be able to analyze risks involved in order to ascertain the direction of a web based interaction in the business ecosystem. Muegge (2013) states that a networked ecosystem, anchored around shared platforms enables an organization to be able to learn more, achieve more, reach further in terms of customers

and offer products and services that customers wants. Web based interactions are leading organizations into a more collaborative ecosystem resulting to increased value due to rich interactions within the ecosystem.

1.1.3 Financial Technology Small and Medium Enterprises in Nairobi

Kenya's national legislature, MSME bill 2009, defines small enterprises as enterprises with more than 10 employees and less than 50 employees and a turnover of between KSH. 500,000 and KSH 5 million while medium enterprises are organizations with more than 50 employees and less than 100 employees and an annual turnover of between KSH 5 million and KSH 800 million. SMEs play a critical role in economic development, mainly because they are the main source of employment and growth. Kenya's small and medium enterprises are grouped into agri-business, trade, manufacturing and provisional services with most of them focusing on agri-business and provisional services. (MSME Act 2012, 2017)

Financial technology refers to technology innovations in the finance service sector and it is an intersection between finance and technology. It involves the use of digital tools to deliver financial services to the consumer by various companies in an economic industry. FinTech firms have adopted a new business model different from tradition financial institutions enhancing accountability, speed and efficiency. They operate in a wide range of domains that includes; Crowd funding, asset management, capital management, peer to peer leading, insurance, payment, stock trading, currency exchange and digital currency (Deloitte 2017). In Kenya, the early adopters of technology in the financial sector are the small companies and start-ups, this is mainly because the big companies such as banks are used to a certain culture that they find difficult to change.

Small and medium enterprises are important in Kenya due to the role they play in economic development, increased innovation and reduction in poverty. According to Kenya Private Sector Alliance (KEPSA), (2015), 18.4% of GDP in Kenya is contributed by SMEs. The high rate of innovation, start-ups and the influx of young people venturing into entrepreneurship in Nairobi plays a vital role in increase in SMEs offering opportunities such as employment. SMEs that operate as an ecosystem are often seen as business clusters that boost the competitiveness of a region due to the networks that they form leading to learning from each other, better technology and business strategy implementation and the ability to take advantage of economies of scale (Tan & Macaulay, 2011).

A research by Mckinsey Global Institute (2011) states that SMEs that utilize Web 2.0 technologies created twice as many jobs and revenue than those that didn't use Web 2.0 technologies in retail and manufacturing industries. The research continues to state that, use of these technologies is a great lever as it enables small and medium enterprises to compete globally just as large organizations would reducing the digital divide between small and medium enterprises and large enterprises especially in developing economies. Use of social media provide a wide range of services for FinTech such as improved customer care, use of data to enable clients to open bank accounts, access to loan and credit, improving efficiencies and offering competitive advantage especially due to increased competition in the financial services industry.

1.2 Research Problem

The rise of social networking sites can be attributed to the growing population of young, urban and tech-savvy population and it is often seen as a fad or technology hype by

managers and senior business people. Increase in the individual use of these technologies have attributed to increased adoption of Web 2.0 by business due to wide use and applicability in business and social life. Small and medium financial technology organizations are able to leverage the use of Web 2.0 because they are early adopters of technology. Interaction technologies such as Facebook are effective tools for advertising and marketing however there is a long journey between a 'like' and sales. A study by Culnan et al.(2010) on how organizations use social media to gain business value, state that despite the wide use of web based media, many organizations have yet to obtain measurable benefits from their use, either when used internally or within a business ecosystem. Value comes from how a particular web based interaction platform is used as any given web based interaction platform can be used for a variety of reasons. According to Ashworth (2011), use of social media platforms by SMEs in the fashion e-retail industry in England is motivated by benefits such as better relationships with customers and customer intelligence data obtained. The researcher however indicates that SMEs are faced with inhibitors such as lack of the right workforce skills and knowledge to implement social media strategies and the awareness of the potential that these web based interaction platforms have on the organization's performance.

Use of web based media in Kenya has changed approach to business management for SMEs in Nairobi causing them to change and evolve quickly. SMEs that engage in web based interactions are able to benefit from increased interconnectedness and information flow enhancing better decision making and better use of resources. A study by Veronese et al.(2014) on the role of social media in penetration to international markets by SMEs in Nairobi indicate that, use of web based media enables 62.8% of SMEs in Nairobi to reach

international markets. Despite the potential that social media use has on sharing information and generation of ideas, SMEs in Nairobi have not been able to use social networking sites for innovation and therefore lacked the opportunity to improve their processes and develop new products for their customers (Jagongo & Kinyua, 2013).

A study by Nyambu (2013) on the influence of social media marketing on performance of telecommunication firms in Kenya found that web based interactions improved organization's performance because their use provide organizations with a platform for advertising with little or no cost incurred. A research on factors influencing adoption of social media advertising on growth of SMEs by Kabue (2013) established that there is a positive relationship between the use of web based platforms in organizations and corporate performance of firms in Kenya. Kumar et al. (2006), however, ascertains that a huge number of followers on social interaction sites in itself does not equal success, but the influence they wield. Influence is much more difficult and time consuming to obtain and require active participation and posting quality content. Similarly, a study by Jagongo and Kinyua (2013), on social media and entrepreneurship growth indicates that SMEs in Nairobi have not fully understood the potential of web based interaction platforms, as a result these tools are not optimally utilized and only selected tools are used due to limitation of technical and infrastructure resources.

The research gaps identified in this study included: Slow adoption and use of web based interactions platforms in SMEs in Kenya, limited research indicating the value of use of web based interactions in companies in Kenya and the impact this technology has on the organizations. Other areas needing attention include lack of research addressing the monetary quantification of web based interactions and empirical research on how to

choose the best web based platforms, with greater value for the organizations given their increased diversification and security threats associated with web based platforms. Although businesses have adopted social networking technologies, actual use that is linked to business value is lacking in SMEs (Devaraj & Kholi, 2003).

This research therefore sought to answer the following research question: Which are the commonly used web based platforms, their impact in organization's ecosystems, systems and strategic directions and assess whether they lead to increased value in the organizations?

1.3 Research Objectives

- I. To determine the frequently used web based interactions platforms and the reasons why in small and medium enterprises
- II. To establish the impact of web based interactions in organization's ecosystems, systems and strategic directions.
- III. To assess whether the use of web based interactions in small and medium enterprises result to increased value in the organization.

1.4 Value of the Study

This research will create value to researchers in research organizations and institutions of higher learning by acting as a reference point and enabling increased understanding on the impact of web based interactions in organizations, the future direction of their use and prompting further research on other related research topics.

The government agencies will be able to understand the policies needed to ensure enhanced privacy and security is upheld by both enterprises and individuals interacting and using web based interactions for business and social use.

It will result to better economic policy setting as web based media ensure globalizations and improved trade amongst different people in different countries in the world. Web based interactions also enables virtual co-working and access to global market information and other resources.

Companies will be able to understand the changes that may result from the use of web based interactions such as the changes in the organization structure as well as the value they create to the organization, enhancing better decision making for the organizations

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter focuses on theories of web based interactions, a broad overview of the impact of web based interactions in SMEs, web based interactions and business value, summary of literature review and research gap and the conceptual framework.

2.2 Theoretical Literature Review

Below are theories that form the foundation and explain the impact of web based interaction technologies in organizations and the role of ecosystem and networking to the success of the application of these technologies in SMEs.

2.2.1 Social Network Theory

In social network theory, persons, organizations, groups, companies or communities are represented as nodes in a graph while relationships are represented as ties and are an indication of the flow of resources (Lin, 2001). Social network theory explains the relationships around an organization and their behavior. It requires an understanding of an independent organization and how the organization interacts and affects others. Social network theory implies that the nodes representing independent actors are embedded in the ties affecting their actions and performance (Wu, Wu & Ling, 2009). Social networks enables exchanges to take place amongst the organizations in the network and are supported by norms such as trustworthiness instilled in different processes (Grabner, 2010).

Social networks are created by organization with common interest and goals they intend to achieve. Social network theory is a significant foundation in the link between the performance of an organization and the use of Web 2.0 technologies. This is because web based interactions enables an organization to strengthen its inter-organization and intra-organization connections enabling higher performance. Based on a research by Wu et al. (2009) use of web based interaction technologies increases an organization's internal networks closure and external network centrality which results to greater performance.

2.2.2 Transaction Cost Economics Theory

Transaction cost economics theory was developed by Oliver Williamson and is commonly used for the analysis of a wide range of a firm's strategic and organization issues with the main assumption being that the use of technology reduces the inefficiencies in economic systems in information systems context (Ghoshal & Moran, 1996). A transaction cost refers to a cost incurred by an organization while searching for and processing information and cost incurred during production. Transaction cost theory focuses on the allocation of transactions across the organization therefore emphasizing on better governance across the ecosystem in order to have and maintain efficient organization's structure (Richter, Riemer & Brockem, 2010). Web based media creates networks and interdependencies which may result to a reduction of the transaction cost incurred or creation of new transaction costs in an organization's ecosystem.

With increased use of and advancing of technologies such as emergence of Web 2.0 and Web 3.0, has resulted to increased information flow into the organizations from various users and activities both internally and externally. With the information growing at an exponential rate there is need for the organization to be able to survive, by being able to

implement proper information flow systems to make use of the vast amounts of data. Transaction cost economics theory is used to explain the success of the use of web based interactions in organizations by analyzing the use of social interactions executed by web based media. Social transactions enabled by use of web based media structures implemented in an organization results to social capital which is the value of social networks and the relationship in the achievement of goals (Richter et al., 2010). Social transactions used in businesses such as the use of LinkedIn to recruit, information gathering through social searching and social grooming creates a point of transaction and value for the organization.

2.2.3 Resource Based View Theory

Resource based view theory (RBV) explains that a firm's performance is determined by the resources that it owns. The theory states that the investment in information systems leads to benefits and competitive advantage enabling the firm to compete and succeed. In order to offer value, the resources in an organization must be rare, valuable, inimitable and non-substitutable (Philips et al., 2014). A firm's resources are further classified into tangible assets, intangible assets, heterogeneous and immobile assets. Organization's resources include assets, capabilities, organization knowledge, information and business processes. Information technology is viewed as an organization resource and this model investigates the relationship between the use of resources and a firm's performance (Philips et al., 2014).

Based on a study by Liang, You and Liu, (2010) there is need to align the organization digital strategy to the business strategy in order to succeed. Use of web interactions platforms enables an organization to enhance innovation and knowledge management

therefore enhancing the capabilities of a firm through better resource management and as a result enabling sustained competitive advantage (Amith, 2011). Research by Amith (2011) states that social media platforms on their own do not offer value for the organization and there is need to enhance capabilities such as human resources in order to gain value from the use of web based interaction in organizations. It is imperative for firms to better organize knowledge derived from web based interaction in order to enable collaboration. Web based interactions create external capabilities such as better relationships with customers, better market responsiveness, strategic fitness and the flexibility to adjust to the external environment (Ling et al., 2010; Philips et al., 2014).

The three theories were applied in this research each applicable in different perspective of the research. Use of social network theory focuses on the social connection and its role in enhancing the success of social media use. Transaction cost economics theory seeks to determine the benefits enjoyed as a result of better governance of web based interaction platforms and structures implemented in the organization. Resource based view seeks to evaluate whether the use of web based interaction leads to increased performance in the organization as well as sustainable competitive advantage.

2.3 Web Based Interactions

Use of web based interaction technology is changing the way organizations, individuals and economies interact, connect and collaborate. Digital media has resulted in democratization of knowledge, reduced geographical barriers in businesses and communication as well as the creation of virtual economies and ecosystems leading to increased efficiency and flexibility in organizations (World Economic Forum, 2016). Web based interaction is facilitated by Web 2.0 tools, this include; social tagging,

YouTube, weblogs, wikis, Facebook, Twitter, Instagram and Wikipedia. Web 2.0 technologies can facilitate interactions on the web, collaboration, user-centered design and the ability to facilitate knowledge management in a dynamic way than the previous communication tools. Based on a study by Darwish and Lakhtaria (2011) the phrase Web 2.0 was first used in 2004 referring to web based technologies that emphasized on online collaboration and sharing. The common technologies, techniques and web standards used by web based interaction to support social computing include AJAX, JSON, XML, REST, and HTML (Kim et al., 2009). Social networking platforms are part of the Web 2.0 however they are more interactive as compared to tools such as you-tube.

A research by Kim, Yue, Hall & Gates (2009) indicate that the utilization of web based interaction tools has led to new business models such as video sharing on YouTube, however the underlying support for most of the business models is advertising. Different organization's business models are affected to some extent by the emergence of web based interaction media especially because most of these technologies are open source. Social computing tools such as wikis can be used by SMEs to brainstorm business ideas, prepare project proposals, reports and manage information storage. Adoption of web based interactions tools within an organization can lead to better employee relationships, innovations, improved business processes and teamwork while when used within a business ecosystem can lead to improved business relationships, innovations and identification of new products and markets.

2.3 Impact of Web Based Interactions in Organizations

Web based interaction has affected societies' current way of life leading to changes in culture and business paradigms. The concept of virtual workplace is common today as

people who use web based media are able to work independently due to the availability of information. Employees do not have to be tied in the office to do their jobs (Jenner 1994). This changes the supervision role, employees have more autonomy and tasks are more goal oriented because face to face interactions is no longer a requirement. According to Jenner (1994), the trend toward a highly mobile, flexible, dynamic, informed and networked workforce is growing exponentially.

Organizations are faced with more and more employees who use web based platforms for their own personal goals where they end up wasting companies time on recreational web surfing which has a negative effect on a company's bottom-line. There is, therefore, the need to be able to setup boundaries, controls and policies between personal usage and organization usage of these web based platforms especially with the ubiquitous nature of the internet and BYOD trends being seen in most organizations. Constant monitoring and control of usage of this web based interactions is important for any organization to ensure long term success. A research by Kim et al (2011) investigating the use of social media on 100 SMEs in USA indicate that SMEs need to increase their efforts in customer engagement in order to be competitive and to increase their performance.

Web based interactions have an influence on organization structure and management resulting to flatter organization structure as they lead to centralization or decentralization of decision due to change in line of command. According to Niewenhuzen and Rossouw (2008), organization structure is the arrangement of workflow, communication and authority relationships within an organization. Decreasing the layers of control increases communication and the flow of information across departments and groups, while also

making the organizations more complex, differentiated and decentralized (Laumann, Nadler & O'farrell, 1991).

According to Broughton et al. (2013) Social networking sites are subject to all the standard vulnerabilities such as Denial of service attacks, Cross-site scripting (XSS) exploits ranging from session hijacking to fake login pages for stealing credentials. This becomes a concern to organizations especially those that have sensitive customer information. Utilization of web based interaction in organizations has also posed the question on economic relevance and value of these platforms to the organization. Value can be measured in data received to make decisions. The diversity of social media each containing voluminous, diverse information results in unique challenges pertaining to data extraction (Holsapple, Hsiao & Pakath, 2014). Most of this data occurs in real time, in large volumes and the validity of this data may pose a challenge to the organizations. White et al (2012), in reference to data validity, notes that as much as 50% of Twitter content is estimated to be spam although there is a declining trend.

Nairobi has, in the recent past years, experienced a lot of mushrooming startups and most of them are FinTech firms causing the city to be seen as a FinTech hub (Deloitte, 2017). As competition increases and the demands for the modern consumer keep changing these firms are leveraging the use of social media banking in order to remain competitive. Social media is creating impact such as customer intimacy and organization efficiency but in order to gain maximum value organizations must operate within an ecosystem in order to foster growth and innovation. FinTech organizations use social media to listen to their customers, create social strategies and to gain customer royalty. Web based interactions affect the value chain of an organization and various functional departments,

from research and development, human resource, marketing and finance department as well as external relations (Hanna, Rohm & Crittenden, 2011). Organizations are able to find value proposition from web interactions and get other benefits by using web based media. Indicators of use of web based media in organizations include: Investing in digital media, getting employees with the right digital skills, aligning business strategy to the digital strategy and implementing organization structures and policies that support web based interactions use. Common revenue models brought about by use of web based interactions include; subscription, ecommerce, advertising, virtual currency, transaction cost, indirect revenue model and freemium use (Hanna et al., 2011).

2.4 Web Based Interactions and Business Value

Business value refers to positive impact and benefits that an organization gains as a result of making an investment and having good management that ensures efficiency of its operations and processes. There are different aspects of business value in an organization that ensures the overall success of a firm such as economic value, efficiency value, customer value and employee value. Business value also refers to desirable outcome for organization's stakeholders. Digital interactions enable organizations to gain business value by making it easier for organizations to interact and communicate internally and within an organization ecosystem.

Based on a research by Cray (2012), use of social media allows businesses to share information about products and the organization. Social web based platforms that offer location based services enables organization to target demographics and psychographics data analysis while advertising their businesses as well as locating their customers for potential sales. Use of social media information improves the organization success by

enhancing customer satisfaction and management which improves the management of the value chain, increases demand, reduces operation cost and enables mass customization and personalization of services and products (Tucker, 2010). Organizations that harvest, mine, analyze data on web based technologies and make use of techniques such as SEO, Google analytics, geo-targeting, geo-fencing, customer profiling, social media APIs and sentiment analysis are able improve performance and decision making capabilities. Constant monitoring of the web based technologies for mentions and responding quickly to customers' needs and demands leads to increased competitive advantage for a firm through improved business value and customer value.

Web based interactions creates value for the organizations. This includes lower prices due to increased suppliers competition brought about by information availability, price transparency and reduced barriers to entry for suppliers especially because of easier supply across a wide geographical region (Oxera, 2015). Organizations are able to overcome geographical barriers while using platforms such as crowd funding platforms and therefore being able to attract a wide range of buyers and sellers. This also enables divisibility of risks as businesses are able to aggregate small funds over a large market. Web based interactions enables organizations to easily get reviews and complaints and therefore improving customer engagements. According to Curran, Hara and O'brien (2011), there are many features in web based interaction sites that can be used to promote a business such as the ability to post a video, links, pictures, use of fan pages, groups and even ads on some social networking platforms.

Early adopters of Web 2.0 are able to benefits from first mover's advantage as they are able to claim a huge territory of market share through a variety of lock in strategies. B2C

are the main beneficiaries of social interaction platforms. These are mostly service industries and SMEs that deal directly with the consumer. Digital business ecosystems offers a protected open innovation environment, enhances a greater inclusion for SMEs in the emerging knowledge economy resulting to sustainable economic growth and the ability to form loose and dynamic business partnerships in response to changing market economy (Dini et al., 2008).

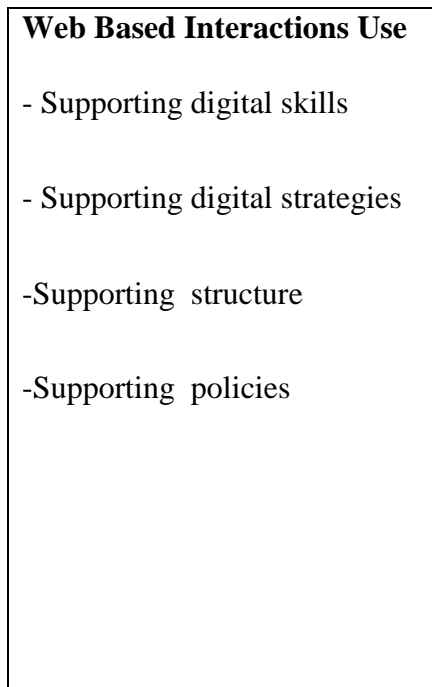
2.5 Summary of Literature Review and Research Gap

Social media is proliferating very fast and managers are hoping that the adoption of web based technologies will lead to improved business processes in organizations. There is however limited empirical research on utilization and understanding of Web 2.0 technologies. The adoption of Web 2.0 technologies in organization is outpacing the research and the use resulting to limited empirical studies on the impact of web based interactions in organizations (Treem & Leonardi, 2012). Organizations lack the necessary technical know how to implement digital strategy aligned to the needs of the organization and as competition in financial technology sector increases there is need for these firms to invest in web based interactions in order to remain competitive. Web based interactions enable business ecosystems to gain greater value by enabling mutuality and orchestration of communication, processes and collaboration. Digital ecosystems created as a result of web based interactions enables FinTech enterprises to interact with industries, customers and other organizations and enhance organization values such as offering better finance advice to customers as well as improved bottom line.

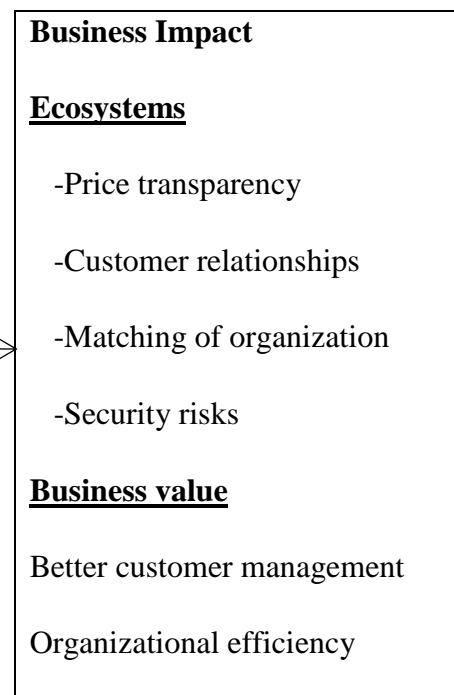
2.6 Conceptual Framework

A conceptual framework refers to a blueprint of how a researcher plans to carry out a study. It is a guiding tool for the research and shows a researcher's position on the problem. Miles and Huberman (1994) define a conceptual framework as a graphical or narrative tool that explains concepts and variables to be studied and the existing relationship between the variables. This research investigated the relationship between use of web based interaction tools in SMEs and the impact created as a result of their use.

Independent Variables



Dependent Variables



H1

Figure 2.1 Conceptual Model

H₁: Use of web based interaction platforms leads to positive impact in organizations

H₀: Use of web based interaction platforms does not lead to positive impact in organizations

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter focuses on the methodology of the research used in realizing the objective of the study. It consists of the research design, population and sampling, data collection and data analysis.

3.2 Research Design

The study made use of descriptive, cross-sectional research design. A description research design gives a pictorial representative of facts of a population and aims to describe the state of affairs as they are at a particular time (Kothari, 2004). The study consisted of structured questionnaires as a form of data collection tool that was administered to the population's respondents. According to Owens (2002) use of structured questionnaires enables the study findings to be consistent and reliable as it makes use of standardize questions enabling generalizability of the findings. Use of descriptive, cross sectional design enabled the study to depict the impact of web based interactions in SMEs in Nairobi.

3.3 Population and Sampling

The population of this study compromised of small and medium enterprises in financial technology service sector in Nairobi, Kenya. Based on a research by Disrupt Africa, on exploring Africa FinTech Ecosystem 2016 report, there are 56 FinTech firms in Kenya. Out of this only 28 are in Nairobi and fall under SMEs, the research therefore adopted a census survey of the 28 firms in order to get representative data.

3.4 Data Collection

This research utilized primary data that was collected in the form of close ended questionnaire. Close ended questionnaire enable a high respondent rate and easier analysis of findings. The questionnaire was administered to digital media strategist or IT specialists specializing on the use of web based interaction technologies in the organization. The questionnaire was divided into five sections, section one had general information on the organization, section two consisted information on web based interaction technologies used, section three involved questions about the impact of web based interactions in the organization, section four gathered data about business ecosystem and section five involved value of web based interactions in small and medium enterprises.

3.5 Data Analysis

According to Creswell (2009) data analysis is defined as the process of cleansing, transform, codifying and applying statistical techniques to messy and raw data in order to bring order, meaning, validity and reliability to the findings. The study ensured data was edited and cleaned to ascertain uniformity and validity. Data was analyzed as follows:

Table: 3.1: Data Analysis Methodology

Research Objective	Data Collection Methodology	Data Analysis Methodology
To determine the frequently used web based interaction platforms and the reasons why in small and medium enterprises	Use of questionnaires for primary data collection	Descriptive statistics
To establish the impact of web based interactions in organization's ecosystems, systems and strategic directions.	Use of questionnaires for primary data collection	Descriptive statistics and regression analysis
To assess whether the use of web based interactions in small and medium enterprises result to increased value in the organization.	Use of questionnaires primary data collection	Descriptive statistics and regression analysis

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION OF FINDINGS

4.1 Introduction

This chapter presents findings, analysis, interpretations and discussions of the study. The purpose of the study was to establish whether the use of web based interaction technologies lead to positive impact in the organization. This research presents and analyzes the results of the study objectives which are: Determining the frequently used web based interaction technologies, establishing the impact of web based interactions in organization's ecosystems, systems and strategic directions and assessing whether the use of social technologies result to increased value in small and medium enterprises in Kenya. Use of regression analysis and descriptive statistics such as mean, standard deviation and graphs was used to analyze the research findings. Data was cleaned, edited and entered into SPSS and excel for analysis.

4.2 Demographic Information

In order to capture the general information of the study the questionnaire sought to get data on the number of years the respondent has been working for the organization, the number of years the organization has been operational and the level of education of the respondent. The study used closed ended questionnaire as a form of data collection tool that was administered to the targeted 28 financial technology SMEs based in Nairobi out of which 22 responded. This resulted to a 78.6% response rate. Based on Pinsonneault and Kraemer (1994) response rate that is greater than 50% is considered adequate for analysis, interpretation and generalizability of findings in social sciences.

4.2.1 Job Title of the Respondents

Based on the findings of the research study 14 of the respondent were IT and digital specialists while 8 respondents were from other fields such as marketing, communications and content strategists therefore indicating that the questionnaires were answered by informed respondents on digital technologies use. The summary of research findings are summarized in table 4.1 below;

Table 4.1: Job Title of the Respondents

Job Title	Frequency	Percentage
IT/ Digital Strategist	14	63.6%
Others	8	36.4%

4.2.2 Level of Education

The research sought to investigate the level of education of the respondents and the study revealed that (17 respondents) 77.3% had an undergraduate degree while (4 respondents) 18.1% had a diploma and (1 respondent) 4.5 % had a Master's degree. The findings were analyzed as shown in table 4.2 below:

Table 4.2: Level of Education

Level of education	Frequency	Percentage
High school education	0	0%
Diploma	4	18.2%
Bachelor's degree	17	77.3%
Master's degree	1	4.5%
Doctorate degree	0	0%

4.2.3 Years the Respondents Have Worked for the Organization

The study investigated the number of years the respondents have worked for the organization. The research detected that 27.3% of the respondents had worked for the organization for less than two years, 63.6% had worked for the organization for a period between three and five years, 9.1% had worked for the organization for a period between six and eight years. Majority of the respondents had worked for the organization for three to five years indicating that they were well familiar with the organizations' digital policies and practices as well as the impact and value created. The research also indicated that none of the respondents had more than nine years of experience which resonates with the few FinTech SMEs that have been operational for more than nine years.

Table 4.3: Years Worked in the Organization

Number of Years	Frequency	Percentage
0-2	6	27.3%
3-5	14	63.6%
6-8	2	9.1%
Over 9 Years	0	0

4.2.4 Years of Organizational Operations

Analysis of the research findings indicated that 18.2% of financial technology organizations were founded within the last two years, 54.5% have been in operation for a period between three and five years, 13.6% of FinTech organizations have been in operation for six to eight years, 4.5% have been operational for nine to ten years while 9.1% have been in existence for more than ten years. The research indicates that majority of the small and medium enterprises in financial technology sector were founded between 2012 and 2014. The table 4.4 indicates a summary of the research findings.

Table 4.4: Years of Organizational Operations

Number of Years	Frequency	Percentage
0-2	4	18.2%
3-5	12	54.5%
6-8	3	13.6%
9-10	1	4.5%
>10 Years	2	9.1%

4.3 Web Based Media Used

The research sought to find out some of the commonly used interaction platforms. This section contains analysis of the research findings on the web based interactions used in small and medium financial technology enterprises and extent of use in the organizations as well as the main uses and roles in the organization.

4.3.1 Commonly Used Web Based Media.

The respondents were required to indicate the interaction platforms that they use and based on the research findings, 95.5% of the respondents use Facebook as a social media platform making it the most widely used interaction tool amongst the SMEs in financial technology sector, 81.8% make use of twitter, 77.3% of the respondent use WhatsApp while 72.7% make use of LinkedIn and web conferencing technologies, 68.2 % make use of YouTube, 50% make use of Yammer, 45.5% make use of podcasts, Instagram and wikis, 36.4% make use of weblogs, 31.2% make use of Google+, 22.7% make use of social tagging and funding platform, 13.4% make use of Pinterest and none of the respondents make use of Myspace making it the least used social technology tool. Most of the SMEs use more than one form of interaction technology to communicate or collaborate and on average each organization use at least three social media technologies.

This is because FinTech organizations focus on engaging the public via social networks into the private world of finances through listening to the consumer and trying to understand what they need. Based on the research findings SNSs are most commonly used as compared to wikis, weblogs and yammer which is in line with a research by Meske and Stieglitz (2013) on adoption and use of social media in small and medium-sized enterprises which indicate that social media tools are mentioned as the most value adding and most intensively used amongst SMEs. Figure 4.1 below summarizes the research findings.

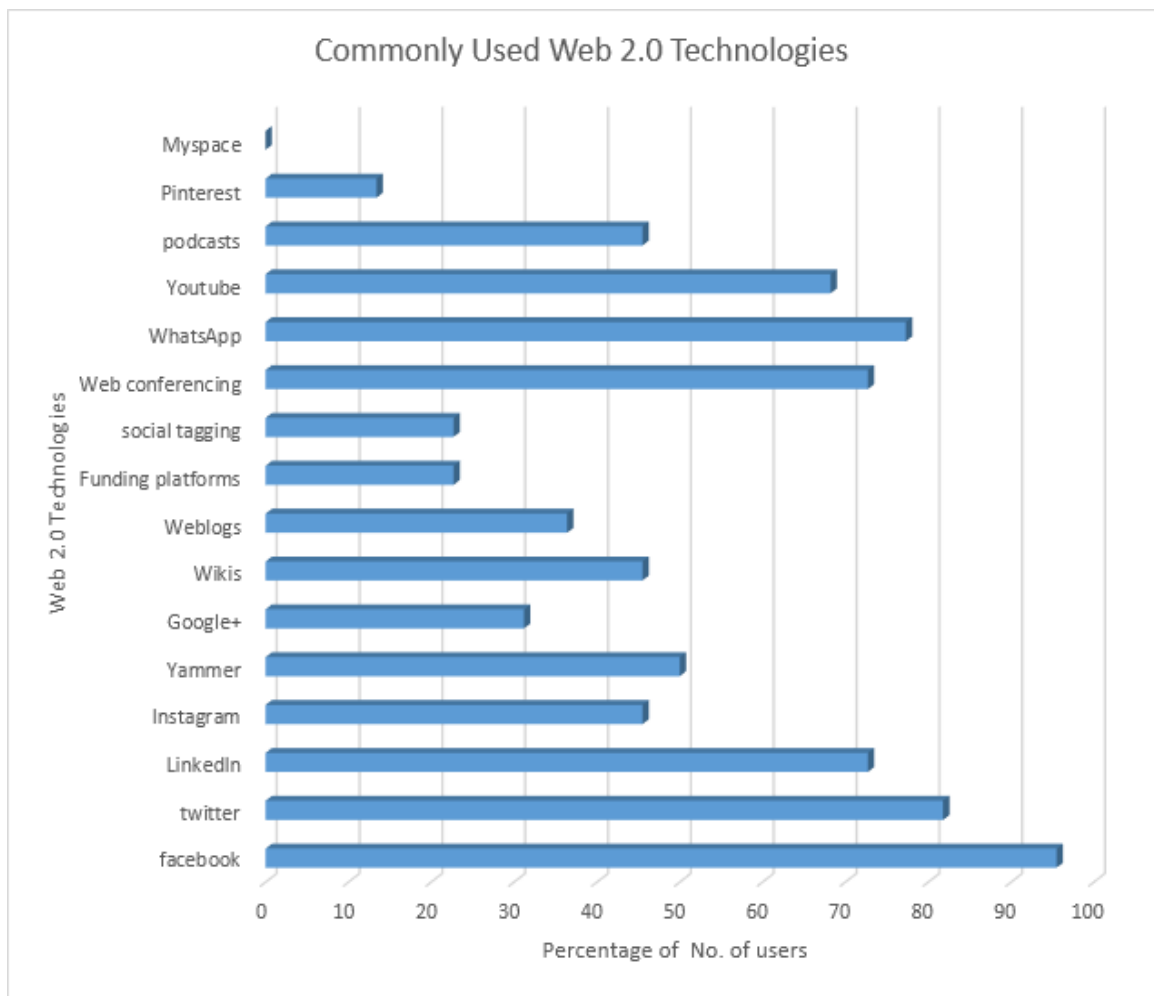


Figure 4.1: Commonly used Web 2.0 Technologies

4.3.2 Extent of Use

The research sought to investigate the extent of use of various interaction platforms. The respondents were required to indicate the extent of use of various web interaction technologies using a likert scale. The research findings indicate that on average Facebook is the most frequently used followed by WhatsApp, web conferencing platforms and Twitter while Myspace, Pinterest, Google+ and funding platforms are the least used web conferencing platforms. The research also indicates that Instagram and You Tube have a standard deviation of 1.7 and 1.6 respectively showing that the number of users are widely spread while Pinterest and Google+ have lower standard deviation indicating that the extent of use is close to the mean therefore users are concentrated around the mean. Table 4.5 below gives a summary on the extent of use of the various web technologies.

Table 4.5: Descriptive Statistics on Web 2.0 Extent of Use

Web 2.0	Mean	Std. Deviation
Facebook	4.09	0.971
WhatsApp	3.32	1.585
Twitter	2.91	1.269
Web conferencing	2.91	1.411
YouTube	2.77	1.602
LinkedIn	2.64	1.255
Instagram	2.36	1.706
Yammer	2.09	1.411
social tagging	1.82	1.563
Wikis	1.68	0.839
Weblogs	1.68	0.995
Podcasts	1.68	0.839
Google+	1.45	0.739
Funding platforms	1.45	0.858
Pinterest	1.18	0.501
Myspace	1.00	.000

4.3.3 Usage of the Web Based Interaction Technologies

The respondents were required to indicate the role of web based interaction used to the organization and based on the analysis of research findings 95.5% of SMEs indicated that they use web based interactions for advertising. This is the highest type of use that makes FinTech SMEs make use of Web 2.0 technologies. 90.9% of the respondent indicated that they use Web 2.0 to manage customer relationships, 72.7% for finding information on customer, 63.6% for communicating internally and within the organization ecosystems, 40.9% use Web 2.0 for comparison of products and 22.7% for collaboration making it the least type of use. The research findings indicate that use of web based technologies are seen as tools to enhance customer interactions, increased reach, interconnectedness and increasing customer intimacy by implementing highly tailored problem solving strategies and adapting products to the customer needs. Most of the social networking sites are open source, widely used and limited technical knowledge is needed to make them work for the organization and this is one of the factors that has enabled SMEs to use them for advertising and customer management roles.

Use of the social technologies is based on the organization context however most of them are influenced by noise to value ratio paradoxes especially among the use of microblogging technologies adoption among SMEs. This research concurs with Stockdale et al. (2002) on identifying value from the use of social media that indicates that business value of web based media lies in customer engagement. Meske and Stieglitz (2013) however disagrees indicating that wikis and weblogs are the commonly used and adopted Web 2.0 tools in SMEs at an average of 81.25% and 61% and are mainly used for internal communication and collaboration. The research also indicates

that the main reasons for Web 2.0 adoption and use are IT trends in the industry as compared to the value created by their use.

Table 4.6: Type of Use

Type of use	Percentage Mean
Advertisement	95.50%
Customer Relationship Management	90.90%
Finding information (customer intelligence and analytics)	72.70%
Communication (internal and external)	63.60%
Comparison (find, compare and review)	40.90%
Collaboration (e.g. working on a project)	22.70%

4.4. Impact of Web Based Interactions in the Organization

In order to find out information about the impact of web based interactions in the organization the respondents answered questions on the extent to which the use of Web 2.0 influence organizations' factors such as policies, processes, culture and structure, cyber security risks faced by the organization, organization changes brought about by the use of web based interactions such as security concerns and need for digital skills and the relationship between Web 2.0 use and extent of use.

4.4.1 Relationship between Use of Web 2.0 and Organization's Policies and Practices

The research sought to investigate whether there is any relationship between the extent of Web 2.0 use and organizations' policies and practices in small and medium enterprise in Nairobi using multiple regression analysis. The regression model was as follows;

$$Y=A + B1X1+ \epsilon \quad \text{Where:}$$

Y= Dependent variable: Extent of Web 2.0 use in organizations

A=Constant

B1= Coefficient

X1= Independent variable: Web 2.0 practices in the organization. (Indicators involve, investment in web based technologies, employees with the right skills, digital strategies, supporting organization's structures and policies)

ϵ = Error

Regression analysis was used to establish the relationship between variables as shown by the summary table 4.7 below that indicate the level at which organization practices and policies affect the extent of use based on a likert scale. The research findings indicate that investment in Web 2.0 has the highest effect on extent of use with a mean of 3.86 while supporting organization policies, supporting organization culture, supporting organization structure, employees with digital skills and digital strategy have mean of 3.77, 3.64, 3.55, 3.50, 3.41 respectively.

Table 4.7: Organization Practices

Organization practices and policies on Web 2.0 use	Mean	Std. Dev.
Investment in Web 2.0	3.86	1.207
Supporting policies	3.77	1.193
Supporting organization culture	3.64	1.293
Supporting organization structure	3.55	1.299
Employees with digital skills	3.50	0.913
Digital strategy	3.41	1.436

Table 4. 8: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.955 ^a	.912	.877	.1063464

- a. Predictors: (Constant), Supporting policies, Investment in web 2.0, Digital strategy, Supporting organization Structure, Employees with Digital skills, supporting organization Culture
- b. Dependent Variable: Average extent of Use

The summarized table above shows the correlation between the independent and dependent variable. R^2 of 0.912 indicates the variance in dependent variable is explained by the model. This means 91.2% of the variation in extent of web based use is explained by the independent variables identified in the model. The model has an adjusted r^2 of 87.7%, this is more accurate because the r^2 has been adjusted for numbers of predictors and it only increases when a new variable increases the value of the model.

Table 4.9: ANOVA^a

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.756	6	.293	25.877	.000 ^b
	Residual	.170	15	.011		
	Total	1.926	21			

- a. Dependent Variable: Average extent of Use
- b. Predictors: (Constant), Supporting policies, Supporting organization culture, Employees with Digital skills, Supporting organization Structure, Digital strategy, Investment in Web 2.0_b

Analysis of Variance explains how significant the model is. Our findings indicate that the model is statistically significant with a P value of 0.000 that is less than 0.05. This means the model explains the variation in the dependent variable and therefore there is a relationship between the variables. This implies that we can reject the null hypothesis, that is Web 2.0 practices and policies do not affect the extent of average level of use in organizations. Based on the coefficient table on the research findings five of the variables have a P value less than 0.05 and are therefore statistically significant while two of the predictor variables have a P value greater than 0.05 and are therefore not statistically significant. The unstandardized coefficients indicate that an increase by 1 unit of supporting organization structure, supporting organization culture, digital strategy, employees digital skills, investment in Web 2.0, supporting organization policies lead to an increased average extent of use by 0.67, 0.041, 0.078, 0.129 ,0.040, 0.039 respectively.

The established multiple regression becomes:

$$Y=0.782 + 0.67 (\text{Organization structure}) + 0.041 (\text{supporting organization culture}) + 0.078 (\text{Digital strategy}) + 0.129 (\text{Employees with digital skills}) + \epsilon$$

Table 4. 10: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.782	.126		6.192	.000
	Supporting organization Structure	.067	.023	.289	2.936	.010
	Supporting organization culture	.041	.019	.176	2.172	.046
	Digital strategy	.078	.020	.369	3.816	.002
	Employees with Digital skills	.129	.028	.388	4.549	.000
	Investment in web 2.0	.040	.028	.161	1.459	.165
	Supporting policies	.039	.027	.155	1.476	.161

a. Dependent Variable: Average extent of Use

4.4.2 Emerging Factors

The respondents were required to indicate the factors brought about by the use of web based interactions in the organizations using a likert scale. The findings indicated various factors faced by the organization as a result of use of web technologies. The highest mean indicated by this research was 4.45, being the need for quality content by SMEs in FinTech industry which is explained by the likert scale as large extent. This agrees with the research literature review that indicates the importance of quality content. The standard deviation was used to explain the distribution of various SMEs around the mean of various factors. A small standard deviation such as 0.658 on diversity decision indicated that the distribution of the respondents was close to the mean therefore most the

respondents indicated no extent on the likert scale. While a high standard deviation indicated that the respondents were widely distributed in all levels of the likert scale. Other emerging factors' mean scores are privacy and security concerns with a mean of 2.23, increased need for digital skills with a mean of 3.59, cyber slacking with a mean of 3.41, diversity decision with a mean of 1.64 and global connections with a mean of 2.95.

Table 4.11: Descriptive Statistics on Emerging Factors

Impact	Mean	Std. Deviation
Quality content	4.45	0.671
Increased need for digital skills	3.59	0.959
Cyber slacking	3.41	1.182
Global connections	2.95	1.133
Privacy and security concerns	2.23	1.066
Diversity decisions	1.64	0.658

4.4.2 Organization Changes as a Result of Web 2.0

The respondents were required to indicate the impact of web based interactions in the organizations using a likert scale. The findings indicated various forms of organization changes brought about by the use of web technologies. The changes are: Organization policies, organization culture, organization structure, operational efficiency, reduced costs, job description, market reach, and business strategy with mean values of: 3.59, 3.73, 2.00, 2.95, 3.59, 1.82, 2.68, and 1.86 respectively

Table 4.12: Descriptive Statistics on Organizational Changes

Impact	Mean	Std. Deviation
Organization culture	3.73	1.453
Increased market reach	3.68	0.839
Organization policies	3.59	0.959
Reduced costs	3.59	1.221
operational efficiency	2.95	1.588
Organization structure	2	0.976
Business strategy	1.86	0.889
Job description	1.82	0.795

This research indicates that in order for the implementation of Web 2.0 to succeed there is need for supportive culture, as one of the factors affected by Web 2.0. Use of Web 2.0 also leads to reduced costs, increased market reach and changes of organization policies. Business strategy and job description are the least factors affected by Web 2.0 in the organizations this can be explained by technology being seen as an enabler used in organizations to improve processes and provide competitive advantage.

4.4.2 Cyber Security Risks Faced as a Result of Web 2.0

The research sought to find out the cyber security risks faced by small and medium FinTech enterprises in Nairobi. Based on the findings the risks faced by organizations are: Cross site request forgery at 77.3% , Cross site scripting at 68.2%, phishing, malware and viruses at 45.5%, SQL injection at 31.8%, social engineering and spoofing at 22.7%, insufficient authentication controls and eavesdropping at 18. 2% and password security at 27.3%. The research indicates that cross site request forgery and cross site scripting were the highest cyber security risks faced by organizations. These findings are in line with the

literature review that indicates XSS as one of the common attacks associated with Web 2.0 usage. Table 4.13 below gives a summary of the findings.

Table 4.13: The Main Cyber Security Risks

Main Cyber Security Risks	Frequency	Percentage Mean
Cross site request forgery	17	77.3
Cross site scripting	15	68.2
Phishing	10	45.5
Malware	10	45.5
Viruses	10	45.5
SQL injection	7	31.8
Social engineering	5	22.7
Spoofing	5	22.7
Eavesdropping	4	18.2
Insufficient authentication controls	4	18.2
Password security	4	27.3

Webroot (2010) research survey on small and medium businesses, indicate that 24% of small and medium businesses had been compromised by use of social media by employees, while Waxer (2010) found out that malware and disclosure of sensitive information are some of the security risks faced by users of social media and also the main reasons some organization do not use social media.

Cross site scripting is an attack where the user's browser is induced with malicious code that may steal the victim's personal information or impersonate the user while cross site request forgery (CSRF) is an attack that causes the users browser to execute actions of the attacker's choosing such as embedding a link in a web page or even attacking a third

party such as a co-worker resulting to compromised end user data, operations or even an entire network and servers. In 2009 Facebook API feel victim of SCRF attack where personal information were forwarded to the attacker (Timm & Perez, 2010). Use of social media creates vulnerabilities to the organizations and there is need to create control, policies such as safe web browsing practices measures in order to be secure. Some of the policies an organization can put in place include; firewalls, web content filters, network intrusion prevention systems, web content filters and application layer filters, end user training., frequently updating software and installing antivirus software (Chi, 2011).

4.5 Business Ecosystems

The research sought to investigate the influence of business ecosystem on Web 2.0 and the extent to which they influence each other. The respondents therefore answered questions on: Extent to which networks are created as a result of Web 2.0, the extent to which business ecosystem influence an organization to adopt social software and efficiency of operating as an ecosystem.

4.5.1. Networks Created as a Result of Web 2.0

The respondents were asked to indicate the networks created by the organization in the business ecosystem as a result of using Web 2.0 in the organization based on a likert scale. The table 4.14 below summarizes the research findings on networks created by the organization with other organizations, employees, the government and customers. Based on the finding the use of Web 2.0 helps organization create connections with customer with a mean of 4.55, suppliers with 3.18, competitors with 2.86, financial institutions with 4.14, potential employees with 3.59, government with 1.68 and business associates with 3.23. This average score is based on the likert scale. The findings indicate that the

small and medium FinTech enterprises use Web 2.0 to connect with customers and other financial institutions and this gives a percentage mean of 91% and 82.3% respectively. The least used connections are government with a mean of 1.68 and a percentage mean 33.6% this can be explained by the low level of adoption of web 2.0 usage by the government.

Table 4.14: Networks Created

Networks formed	Mean	Std. Dev.	Percent of Mean
Customers	4.55	0.722	91
Financial Institutions	4.14	0.967	82.8
Potential Employees	3.59	1.073	71.8
Business Associates	3.23	1.312	64.6
Suppliers	3.18	0.936	63.6
Competitors	2.86	1.254	57.2
Government	1.68	0.762	33.6

Enterprise 2.0 has increased connection and ecosystem interactions as stated by Gallagher and Ransbotham's 3-M framework that indicate that previous to social media the relationship between a firm and customers included; firm to customer, customer to firm and customer to customer that have now intensified as a result of social media creating customer insight and market intelligence and better communication (Kaske, Kugler, & Smolkin, 2012).

4.5.2 Influence to Adopt Social Technology

The respondents were asked to indicate the extent to which business ecosystem influence the organization to adopt web based technology platforms based on a likert scale. Figure 4.2 below gives a summary of the findings;

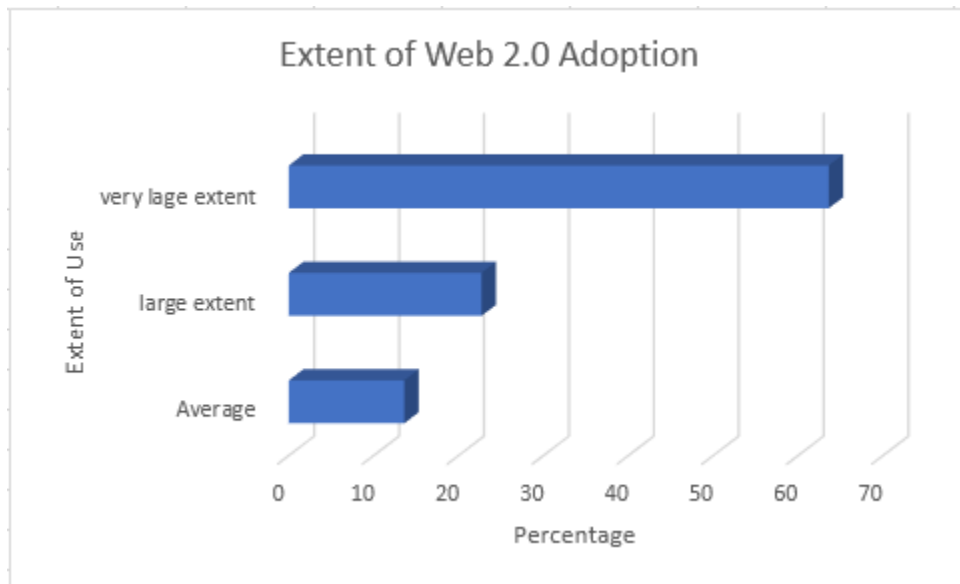


Figure 4.2: Extent of Web 2.0 Adoption

Based on the research findings 63.6 % of the respondents indicated that adopting of web based interaction technology was influenced by the business ecosystem to a very large extent, 22.7% at large extent and 13.6% at average extent. These findings indicate that most small and medium enterprises are influenced by other organizations to adopt and use Web 2.0. This may be as a result of competition and to increase and enhance connection as well as reach out to more customers.

4.5.3 Efficiency of Operating as an Ecosystem

The respondents were asked to indicate the extent to which operating as a business ecosystem lead to increased efficiency in the operations of the organization based on a likert scale. Figure 4.8 below gives a summary of the research findings;

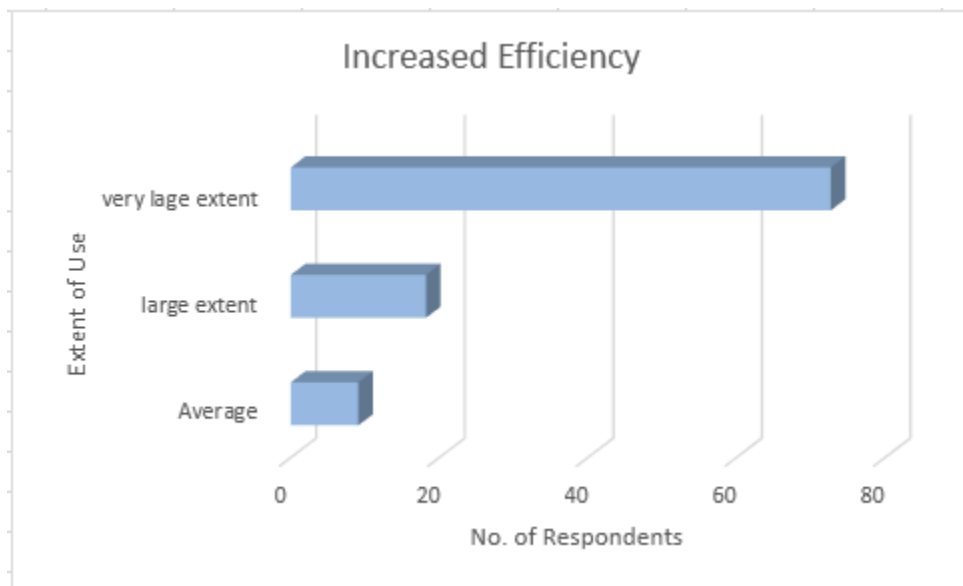


Figure 4.3: Increased Efficiency

72.7% of the respondents indicated that operating in a business ecosystem lead to increased efficiency in the organization's operations at a very large extent, 18.2% at a large extent and 9.1% at an average extent. These findings indicate that small and medium enterprises experience efficiency in their operations by being able to connect with the members of an ecosystem. Use of Web 2.0 enhances these connections and therefore increases performance and organization efficiency as there is ease of information flow and collaboration in the ecosystem.

4.6 Value of Web Based Interactions

The research sought to find out the value of web based interaction in organization. The respondents answered questions on the extent to which web based interaction lead to value and digital media strategy used to measure value in the organization. The respondents were asked to indicate the value gained by the organization as a result of using Web 2.0 in the organization based on a likert scale. The table below gives a summary of the findings.

Table 4.15: Value Added in the Organization

Value	Mean	Percentage Mean	Std. Dev.
Price/ information transparency	2.73	54.6	1.162
Better matching of organization and customer	2.55	51	1.299
Improved customer care and engagement	2.41	48.2	1.43
Time saved in organizations processes	2.27	45.4	0.883
Problem solving	2.18	43.6	1.053
Increased employee autonomy	1.5	30	0.913
New business model	1.23	24.6	0.528

Based on the findings of the research the respondents indicated the value gained by the organization as a result of Web 2.0 use to have the following values as mean; better matching of organization and customer had a mean of 2.55, time saved in organizations processes had 2.27, price/ information transparency had 2.73, problem solving had 2.18, new business model had 1.23 increased employee autonomy had 1.5 and improved customer care and engagement had 2.41. Whereas all the respondents agreed that the

listed factors were the benefits of use of Web 2.0 in the organization, price/ information transparency got the highest value while business model got the lowest extent of use on the likert scale. Enterprise 2.0 has brought about a lot of value for small businesses especially because most of them are open source and therefore enables organization to serve customers better.

4.6.1 Value Strategy Used

The research sought to find the digital strategy used to measure value by SMEs and the summary of the findings is indicated by the figure 4.4 below.



Figure 4.4: Value Measurement Strategy

Based on the research findings majority of SMEs measure their value through increased traffic, this refers to the attention created on social media prompting likes and shares by

customers. This however involves knowing the customer and creating quality content. 63.6% of respondents indicated that they use increased traffic as a measure of value, 54.4% use analytics, 45.5% indicate that a high customer retention rate is an indicator of value, 40.9% use customer engagement rate while 31.8% use social benchmarking.

4.7 Relationship Between Extent of Use and Business Value

The research sought to investigate the relationship between the extent of web based interaction technology use and the business value created. Based on the findings of the regression analysis, an R square of 0.313 was generated indicating that 31.3% of variability in extent of use is explained by the variability in business value created. Analysis of variance table indicate that the model has a P value of 0.007 indicating that the model is statistically significant therefore there is enough evidence to reject the null hypothesis.

Table 4.16: Model Summary

Model	R	R Square	Adjusted R Square	Standard Error of Estimates
1	.559 ^a	.313	.278	.25507

Predictors: (Constant), Average extent of use(x) ^a

Dependent Variable: Average value(y) ^b

Table 4.17: ANOVA ^a

Model	Sum of Squares	Df	Mean Square	F	Sig
Regression	.592	1	.592	9.101	.007 ^b
Residual	1.301	20	.065		
Total	1.893	21			

a. Dependent Variable: Average value(y)

c. Predictors: (Constant), Average extent of use(x)

Table 4.18: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.908	.406		2.234	.037	.060	1.756
	Average extent of use(x)	.555	.184	.559	3.017	.007	.171	.938

a Dependent Variable: Average Value(y)

The regression model shows a constant coefficient of .908 and the average extent of use coefficient of .555 as shown in the table above. This points out that for every 1 unit increase in extent of use the business value increases by .555. The P values of .037 and .007 are less than 0.05 stipulating that both the constant and average extent of use are statistically significant therefore we reject the null hypothesis and accept that increased extent of web 2.0 use lead to business value.

The formula of the model is: $Y = 0.5548X + 0.9081$ as indicated in figure 4.5 below.

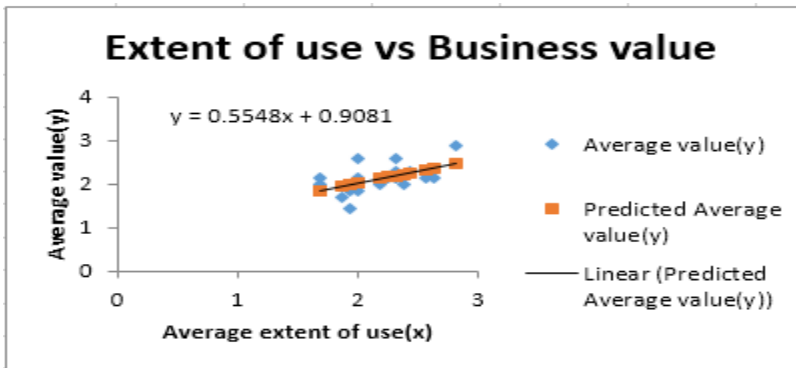


Figure 4.5: Relationship between Extent of Use and Business Value

4.8 Discussion of Findings

This section presents a summary and discussion of research findings based on the objectives of the research. These are; determining the frequently used web based interaction technologies, establishing the impact of web based interactions in organization's ecosystems, systems and strategic directions and assessing the relationship between web based interactions and business value.

4.8.1 The Frequently Used Web Based Interactions

Based on the research findings Facebook and Twitter are the commonly and frequently used Web 2.0 technologies at 95.5% and 81.8% respectively as compared to other web based interaction technologies. Social media is an important platform with opportunities that range from providing real time updates, addressing complaints, spreading information and influencing organization's customer base. Many FinTech startups are using social media to revolutionize traditional business models that have made other large financial institutions lag behind in adoption of social technology. As customers continue to expect real time response rate, many financial technology enterprises are integrating social media into their customer relationship management systems. Some of the FinTech enterprises are also creating mobile application that are integrated with social media that send and share payment details or even prompts the user to say what the payment is for such as "Lunch at Dominos" or "Brunch at Sankara Nairobi" which is visible to the public and the user's circle of friends. Social media platforms have opened up to payment platforms such as Facebook messenger that now supports peer to peer transactions via PayPal.

Use of social media is also used in credit analysis to determine potential leaders and mitigate against risks of potential defaulters by getting data from social media for better credit scoring and evaluation. A study by Lim, Lakhoua and Mazzawi (2016) on Africa and global FinTech revolution found out that people spend about 30% of their time on their smartphone using social media apps and FinTech organizations are leveraging the huge networks to offer financial services. Lim et al., (2016) indicate that majority of social media users go to their private community discussion before using or committing to a given financial platform indicating how customers influence each other on social media.

4.8.2 Impact of Web Based Interactions

FinTech organizations make use of web based interaction to connect, mainly with customers in the business ecosystems and create global connections with financial institutions as well as with other business partners. There is estimated to be about 2.55 billion social media users and 300 billion transactions taking place via FinTech platform (Life.Sreda, 2015). Use of social media provides data that can be used to analyze consumer behavior and preferences which is very important to FinTech organizations. A research by Bughin and Chui (2010) on the rise of the networked enterprise: Web 2.0 finds its pay day, indicate that even though management is trying to understand if use of Web 2.0 is a passing fad or enduring trend that will underwrite a new era of better corporate performance, use of Web 2.0 technologies in networked firms is improving performance and networked enterprises are more likely to be the market leaders, to gain market share and use management practices that lead to margin higher than enterprises that do not use Web 2.0. The research findings were able to establish the relationship

between organizations' Web 2.0 supporting factors and the average extent of use, identifying a positive relationship between the variables demonstrating that supporting organization factors lead to an increased extent of Web 2.0 use in small and medium enterprises.

4.8.3 Web Based Interactions and Business Value

The commonly used interaction platforms are mainly used to manage and connect to customers in the business ecosystem. SMEs use Web 2.0 for advertisement, gathering information on customer intelligence and internal and external communication. Bughin and Chui (2010) found out that there is a significant correlation between market share and enterprises operating as an ecosystem, showing that technology enable collaboration with external stakeholders enabling the organization to gain market share through creating closer market relationship with customers and sharing information more broadly amongst customers. The research findings were able to establish the relationship between organizations' Web 2.0 average extent of use and the average business value created, identifying a positive relationship between the variables indicating that as the extent of Web 2.0 use in the organization increases there are increased benefits.

CHAPTER FIVE

SUMMARY CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of the research findings, conclusions, recommendations of the study, limitations of the study and suggestions for further research.

5.2 Summary of Findings

The purpose of the study was to identify the frequently used web based interaction platforms, establish the impact of web based interactions in organization's ecosystems, systems and strategic directions and lastly to assess whether the use of web based interactions in small and medium enterprises result in increased value in organizations. The study findings revealed that the common interaction platforms are the social networking sites and WhatsApp as compared to other interaction technologies such as social tagging, weblogs, crowd funding technologies or YouTube. Social networking sites are the most frequently used interaction tools to a large extent rate as the research findings indicate. SNSs are mainly used for advertisement and customer relationship management among the small and medium financial technology enterprises at a percentage rate of 95.5% and 90.9% respectively as well as creating relationships in FinTech ecosystems with customers, financial institutions, potential employees and customers at a mean percentage rate of 91%, 82.8%, 71.8% and 64.6% respectively. This creates efficiency in the organization and the ecosystem. Operating as an ecosystem is seen to influence the organizations' adoption of Web 2.0 technologies to a large extent as indicated by 72.7% of the FinTech enterprises in the study population.

The research sought to investigate the impact of web based interactions in the organizations. The research findings show that there are emerging factors that come up as a result of use of Web 2.0. They include; need for quality content, privacy and security concerns, increased need for digital skills, global connection and cyber slacking. Based on a likert scale, the respondents were able to indicate the impact of these emerging factors on the implementation and success of Web 2.0, pointing out that need for quality content and need for increased digital skills to highly influence the successful implementation and use of Web 2.0 in the organization at a mean of 4.45 and 3.59 respectively. There are other organization factors that affect the successful implementation and use of web based media such as supporting organization culture, structure and policies. The relationship between extent of use and Web 2.0 policies and practices in the organization indicated a positive relationship revealing that the organizations that implement supporting Web 2.0 policies and practices are able to use them more and therefore gain increased business value.

The research indicates that there is a positive relationship between business value created and extent of use. As the extent of use increases so does the value created in small and medium financial technology organizations. The values created include; better matching of organization and customer, time saved in organization processes, price/information transparency, problem solving, new business model, increased employee autonomy and improved customer care and engagement

5.3 Conclusions

The study concludes that the commonly used web based interaction platforms amongst small and medium financial technology firms are Facebook and Twitter while those used to a high extent are Facebook, WhatsApp and Twitter and are mainly used for advertising and customer relationship management.

The study denotes that there are challenges associated with the adoption of Web 2.0 such as security risks and lack of awareness of the potential value and knowledge of use amongst employees leading to cyber slacking, wasted internet bandwidth, procrastination and therefore losses. Innovations associated with Web 2.0 are increasing leading to dilemma in management as they try to make the best decision on the technologies that will lead to increased benefits to the organization and decipher between buzzwords, fads and desirability amongst the technology ecosystems and communities. This leads to ecosystem influence which may result to challenges because of the hype in the technology sector as well as the need for the organization to make decision based on the organization needs and align the digital strategy to the business strategy and as a result create competitive advantage.

The study indicates that use of Web 2.0 leads to increased business value in small and medium organizations and increased networked communities that results to increased customer engagement, collaboration, communication and data intelligence for decision making. There is need for establishing organization supporting factors to enable long term success and increased business value as well as internal and external collaboration

The study therefore concludes that there is increased business value associated with the use of web based interactions. This include; better matching of organizations and

customers, time saved in organization processes, price and information transparency, problem solving, new business model, increased employee autonomy, improved customer care and engagement and increased networked enterprises.

5.4 Recommendations of the Study

There is increased Web 2.0 technology that is more innovative and may allow easier collaboration and communication. FinTech organizations need to be able to use these technologies as a way to gain more competitiveness. It is important for organizations to set up digital strategy, supporting organization culture, structure and policies in order for the implementation of social interaction platforms to succeed in the organizations and result to increased business values. Risks such as cyber security and cyber slacking associated with Web 2.0 in the organizations need to be mitigated for organization to succeed in its implementation and use of Web 2.0. With increased innovation and dynamic customer needs, small and medium financial technology enterprises need to make informed decisions and investment in order to reap from interaction platforms.

Organizations must break down barriers to organization change to enable them to create ecosystems enhancing fluid information flow leading to increased employee autonomy, accessibility and employment of talented employees, better decision making and improved problem solving amongst all employees. Internal interactions are important because they enable collaboration, flexibility and multiplicative market share benefits and therefore should not be substituted for external collaboration. Firms should aim to be fully networked for maximum benefits. As the research conclusion indicates, organizations need to implement Web 2.0 organization supporting organization structure, culture and policies that lead to increase extent of use. As organization web 2.0 extent of

use increase the business value associated with these technologies also increases. The study therefore recommends increased use of social interaction tools for increased benefits and continued competitive advantage.

5.5 Limitations of the Study

This study was faced with several limitations and they include; some of the targeted study population failed to respond to the survey resulting to less than 100% response rate while others portrayed unwillingness and apprehension in answering the questionnaire.

Data in this research may not be 100% accurate because it is not verifiable and the respondents of the study may have been biased and answered what seemed favorable and appear suitable and appropriate for their organization.

The study was also faced with limited comparative study on Web 2.0 in financial technology firms and this could be attributed to fast evolving Web 2.0 and therefore lack of relevant research, while most FinTech firms have been operational for 3-5 years and therefore there is little research in the small and medium financial technology sector.

5.6 Suggestions for Further Study

This research sought to find out the impact of web based interactions in organizations' ecosystems in small and medium financial technology enterprises in Kenya. Further studies can be done on monetary value of Web 2.0 in organizations, value of increased Web 2.0 technologies and impact of increased risks associated with web based interactions in small and large organization in various sectors of the economy.

REFERENCES

- Amith, P., (2011). *Resource-Based View of Social Media as a Source of Sustainable Competitive Advantage*. (Master thesis MIT).
- Ashworth, C. (2011) *The Impact of Social Media on SME Online Retailing in the Fashion Sector*. Liverpool, UK, 5-7th July 2011. Patterson, A. and Oakes, S.: Academy of Marketing, Liverpool.
- Bezweek, S., & Egbu, C. (2009). Impact of Information Technology in Facilitating Communication and Collaboration in Libyan Public Sector Organizations. *CIB World Congress 2010*.
- Boyd, D. M. & N. B. Ellison (2007). "Social Network Sites: Definition, History, and Scholarship." *Journal of Computer-Mediated Communication* 13(1): 210–230.
- Broughton, A., Foley F., Ledermaier, S. & Cox, A. (2013). *The use of social media in the recruitment process*. Brighton, UK
- Bughin & Chui (2010). *The Rise of the Networked Enterprise: Web 2.0 Finds its Payday*. Mckinsey Quarterly survey (2010). Mckinsey & Company.
- Chi, M. (2011) *Security Policy and Social Media Use*. The SANS Institute
- Cray, E. (2012). The Social ROI : Successful Social Media Measurement from an Agency Standpoint. *Strategic Communications*, 3(1), 43–52.
- Creswell, J. W. (2009). *Research Design: Qualitative Quantitative, and Mixed Approaches*. Los Angeles: Sage Publications.
- Curran, K. O' Hara, K. & O'brien S. (2011). The role of twitter in the world of business. *International Journal of Business Data Communications and Networking*, 7(3), 1-15. DOI: 10.4018/jbdcn.2011070101

- Darwish, A., & Lakhtaria, K. I. (2011). The Impact of the New Web 2.0 Technologies in Communication, Development, and Revolutions of Societies. *Journal of Advances in Information Technology*, 2(4), 204–216. <https://doi.org/10.4304/jait.2.4.204-216>
- Deloitte. (2017). *Value of connectivity: Economic and social benefits of expanding internet access*, (February). Retrieved from https://fbcdn-dragon-a.akamaihd.net/hphotos-ak-ash3/t39.2365/851546_1398036020459876_1878998841_n.pdf
- Derham, R., Cragg, P. & Morrish, S., (2011). *Creating Value: An SME and Social Media*. PACIS 2011 Proceedings
- Dini, Paolo and Lombardo, Gabriella and Mansell, Robin and Razavi, Amir Reza and Moschoyiannis, Sotiris and Krause, Paul and Nicolai, Andrea and Rivera León, Lorena(2008) Beyond interoperability to digital ecosystems: regional innovation and socio-economic development led by SMEs. *International journal of technological learning, innovation and development*, 1(3).pp.410-426.
DOI:10.1504/IJTLID.2008.019981
- Disrupt Africa (2016), *Finnovating for Africa: Exploring Africa FinTech Ecosystem*. Retrieved from <http://disrupt-africa.com/publications/>
- FinTech Africa (2016). *FinTech Companies from Kenya*. Retrieved from <https://2016.fintech-africa.com/country/kenya>
- Ford, D. A., Kraft, R. & Tewari, R. (2003). *Information gathering and targeted advertising in a web based model using a live information selection and analysis tool*. IOS press Canada
- Ghoshal, S. & Moran, P. (1996). Bad for practice : A critique of the transaction cost theory. *Academy of management review*. 21(1), 13–47.
- Gloria, P.W., Sven, C., Ana, R., & Patrick, B. (2014). *DSS 2.0-Supporting Decision Making with new technologies*. IOS Press. Netherlands

- Grabner, S. (2010). Web 2.0 Social Networks : The Role of Trust. *Journal of Business ethics* (2009), 505–522. <https://doi.org/10.1007/s10551-010-0603-1>
- Hanna, R., Rohm, A., & Crittenden, V. L. (2011). We're all connected : The power of the social media ecosystem. <https://doi.org/10.1016/j.bushor.2011.01.007>
- Holsapple, C., Hsiao, S. H., & Pakath, R. (2014). Business social media analytics: Definition, benefits, and challenges: Completed research paper. *20th Americas Conference on Information Systems, AMCIS 2014*, (2010), 1–12. Retrieved from <http://www.scopus.com/inward/record.url?eid=2-s2.0-84905982833&partnerID=tZOtx3y1>
- Iansiti, M. & Levien, R. (2004). *The Key Stone Advantage: What the New Dynamics of Business Ecosystems Mean for Strategy, Innovation and Sustainability*. Harvard Business School Press.
- Jagongo, A. & Kinyua, C., (2013). Social media and entrepreneurship growth: A new business communication paradigm among SMEs in Nairobi. *International Journals of humanities and social sciences*. 3(10), 213-227.
- Jenner, L. (1994). Are you ready for the virtual workplace? *HR focus*, (71), pp15-16.
- Kabue, J. N. (2013). *Factors Influencing Adoption of Social Media Advertising on Growth of Small and Medium Enterprises: A case of Nairobi County, Kenya*. (Doctoral Dissertation University of Nairobi)
- Kaske, F., Kugler, M. & Smolkin, S. (2012) *Return on Investment in Social Media-Does the Hype Pay Off? Towards an Assessment of the Profitability of Social Media in Organizations*. 2012 45th Hawaii International Conference on System Science
- KEPSA (2015). *Doing business indicators highlights*. Retrieved From: <http://kepsa.or.ke/reports/>
- Kim, D.J., Yue, K.B., Hall, S. P., & Gates, T., (2009). Global Diffusion of the Internet XV: Web 2.0 Technologies, principles, and Application: A conceptual Framework from Technology Push and Demand Pull Perspective,

Communications of the association for information systems: 24(38). Available at:
<http://aisel.aisnet.org/cais/vol24/iss1/38>

Kim, H. D., Lee, L., Lee C.K., (2011). Building Web 2.0 enterprise: A study of small and medium enterprises in the United States. *International Small Business Journal* 29, 1-19.

Kothari, C. R. (2004). *Research Methodology: Methods and Techniques*. New age international (P) limited. New Delhi, India

Kumar, R., Novak, J., & Tomkins, A. (2006) *Structure and evolution of online social networks*. In proceedings of the 12th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, Philadelphia, PA.

Laumann, E. O., Nadler, G and O'farrell, B. (1991). *Designing for technological change: people in the process*. Washington, D.C.

Liang, T. You, J. & Liu, C. (2010). A resource-based perspective on information technology and firm performance: a meta-analysis. *Industrial management and data*. 110(8), 1138-1158. <https://doi.org/10.1108/02635571011077807>

Life.sreda (2015) *Money of the future. Results of 2015 /trends of 2016*. Retrieved from <http://sreda.vc/fintechresearch>

Lim, C., Lakhoua, K. & Mazzawi, Z (2016) Africa and the Global FinTech Revolution. Africinvest. Retrieved from www.africinvest.com

Lin, N. (2001). *Social capital: A theory of social structure and action*. Cambridge, UK: Cambridge University Press

McLoughlin C & Lee Mark, L., (2007). *Social software and participatory learning: Pedagogical choices with technological affordance in web 2.0 era*. ascilite, Singapore

Meske, C. and Stiegliz, S. (2013) *Adoption and Use of Social Media in Small and Medium Sized Enterprises*. Conference Paper. May 2013

- Micro and small enterprises act*. No. 55, (2012). (2017, July 27). Retrieved from <http://kenyalaw.org/lex/actview.xql?actid=No.%2055%20of%202012>
- Miles, M.B., & Huberman, M. A., (1994) *Qualitative Data Analysis: An Expanded Sourcebook*. Beverley Hills, Sage.
- Moore, J. F. (2006). Business ecosystem and the view from the firm. *The antitrust bulletin*, (51)1, pg 31.
- Muegge, S. (2013). *Platforms, Communities, and Business ecosystems: Lessons learned about technology entrepreneurship in an interconnected world*. Technology innovation management review.
- Niewenhuzen, C & Rossouw, D. (2008). *Business management, a contemporary approach*. Juta
- Nyambu, E. M. (2013). Influence of Social Media Marketing on performance of Telecommunication Firms in Kenya. *International Journal of innovative Research and Development*//ISSN2278-0211, 2(9)
- O'Reilly, T. (2009). *What is Web 2.0? Design Patterns and Models for the Next Generation Software*. O'Reilly Radar Inc.
- Owen, L. K. (2002). *Introduction to Survey Research Design*. SRL Fall 2002 Seminar Series. <http://www.srl.uic.edu/seminar/Intro/itrosrm.pdf>
- Oxera. (2015). *Benefits of online platforms*, (October), 53.
- Philips, G. E. & Carlsson, S. (Eds). (2014) *DSS 2.0- supporting decision making with new technologies*. IOS press, 2014
- Pinsonneault, A., & Kraemer, K. L. (1994). Survey research methodology in management information systems: *An assessment*. *Journal of Management Information Systems*, 10, 75-105.

- Richter, D., Riemer, K., & Brocke, J. (2010). Social Transactions on Social Network Sites : Can Transaction Cost Theory contribute to a better Social Network Sites, Transactions Costs and Social Capital. *Network*, 33–49.
- Schwartz, L., Clark, S., Cossarin, M. & Rudolph J., Educational wikis: Features and selection criteria. *International Review of research in open and distance learning*, 5(1), 2004
- Steenkamp, M., & Hyde-Clarke, N. (2014). The use of Facebook for political commentary in South Africa. *Telematics and Informatics*, 31(1), 91-97.
- Stockdale, R., Ahmed, A., Scheepers, H. (2002), *Identifying Business Value from the Use of Social Media: An SME Perspective*. In: PACIS 2012 Proceedings, Paper 169 (2012)
- Tan, Y. L., & Macaulay, L. (2011). Factors Affecting Regional SMEs Progression to Digital Business Ecosystems. *Americas Conference on Information Systems*, Paper 287. Retrieved from http://aisel.aisnet.org/amcis2011_submissions/287
- Timm, C. & Perez, R. (2010). *Seven deadliest social network attacks*. Burlington, MA: Syngress Publishing, Inc
- Treem, J. W., & Leonardi, P. M. (2012). Social Media Use in Organizations: Exploring the Affordance of Visibility, Edit ability, Persistency, and Association. *Communication Yearbook*, 36, 143–189.
- Tucker, C. (2010). The Economics Value of Online Customer Data. *The Economics of Personal Data and Privacy: 30 Years after the OECD Privacy Guidelines*, 23.
- Veronese, M. J., Grace, K., Daniel, K., & Bichanga, W. O., (2014). Role of Social Media Networks in Penetration of International of International Markets by Small and Medium Enterprises in Kenya: a case of Small Businesses at Yaya Center Nairobi County. *European Journal of Business and Management*|| ISSN 2222-1905, 6(26)

- Waxer, C. (February 2011). *CIOs Struggle With Social Media's Security Risks*. Public CIO
- Webroot Software, Inc. (February 2010). *New Webroot survey shows Web 2.0 is top security threat to SMBs in 2010*. Colorado, USA.
- White, J.S., Mathews, J.N., and Stacy, J. L. 2012."Social media analytics for radical opinion mining in hate group web forum," *journal of homeland security and emergency management* (8:1)
- Wielicki, T. & Erendt, L. (2010) A Knowledge-driven shift in perception of ICT Implementation barriers: Comparative study of US and European SMEs. *Journal of information Science*, (36), 162-174.
- World Economic Forum (2016). Digital Media and Society Implication in a hyper connected Era. *Shaping the future implications of Digital Media for Society Project Report*.
- World Economic Forum. (2015). *Collaborative Innovation Transforming Business, Driving Growth*, (August), 44. Retrieved from http://www3.weforum.org/docs/WEF_Collaborative_Innovation_report_2015.pdf
- Wu, Q., Wu, J., & Ling, J. (2009). Applying Social Network Theory to the Effects of Information Technology Implementation. *Handbook of Research on Contemporary Theoretical Models in Information Systems*, 325–335. <https://doi.org/10.4018/978-1-60566-659-4.ch018>
- Youcef, B. (2002). Web-Based Interactions support for information systems. *Information science: the International Journal of an Emerging Trans discipline*. 5(1), 49-65
- Zhao, W., Kearney, D., & Gioiosa, G. (n.d.). *Architectures for Web Based Applications*. Canada.

Appendix One: Questionnaire

PART I: GENERAL INFORMATION

1. Name of the organization-----
2. Job title/ role-----
3. Level of education of the respondent
 High school education Diploma Bachelor's degree Master's degree
 Doctorate degree
4. Numbers of years the respondent has worked in the organization?
 0-2 years
 3-5 years
 6-8 years
 over 9 years
5. How long has the organization been operational?
 0-2 years
 3-5years
 6- 8 years
 9-10years
 Over 10 years

PART II: WEB BASED MEDIA USED

6. Which web based interaction/social media platform does you organization use? (Tick all that applies)

- | | | | |
|-----------------------------------|-----------------------------------|--|------------------------------------|
| <input type="checkbox"/> Facebook | <input type="checkbox"/> Yammer | <input type="checkbox"/> Funding platforms | <input type="checkbox"/> Instagram |
| <input type="checkbox"/> Twitter | <input type="checkbox"/> You tube | <input type="checkbox"/> Google+ | <input type="checkbox"/> Podcasts |
| <input type="checkbox"/> LinkedIn | <input type="checkbox"/> Weblogs | <input type="checkbox"/> Web conferencing | <input type="checkbox"/> Pinterest |
| <input type="checkbox"/> Wikis | <input type="checkbox"/> WhatsApp | <input type="checkbox"/> Social tagging | <input type="checkbox"/> Myspace |
| Others..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

7. To what extent does the organization use the following web based interaction technologies? Using a scale of 1-5, where 1- no extent, 2- small extent, 3-average, 4-large extent, 5-very large extent

	1-no extent	2-small extent	3-average	4-large extent	5-very large extent
Facebook	()	()	()	()	()
Twitter	()	()	()	()	()
LinkedIn	()	()	()	()	()
Instagram	()	()	()	()	()
Yammer	()	()	()	()	()
WhatsApp	()	()	()	()	()
Wikis	()	()	()	()	()
Weblogs	()	()	()	()	()
Funding platform	()	()	()	()	()
Social tagging	()	()	()	()	()
Webconferencing	()	()	()	()	()
Google+	()	()	()	()	()
You tube	()	()	()	()	()
Podcasts	()	()	()	()	()
Pinterest	()	()	()	()	()
Myspace	()	()	()	()	()

8. What is the main role/use/benefit for web based interactions platforms in your organization? (Tick all that applies)

- () Customer relationship management
- () Communication (stay in touch with customers)
- () Comparison (find, compare and review products)
- () Advertisement
- () Collaboration (e.g. working together on a project)
- () Find information (information and data search)

Other-----

PART III: IMPACT OF WEB BASED INTERACTIONS IN THE ORGANIZATION

9. To what extent does the use of web based interaction lead to the following factors in the organization? Using a scale of 1-5, where 1- no extent, 2- small extent, 3-average, 4- large extent, 5-very large extent

	1	2	3	4	5
Privacy and security concerns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increased need for digital skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cyber slacking amongst employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Need for quality content	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diversity of web based media used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improved global connections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. What are the main cyber security risks faced by the organization as a result of using web based interaction platforms?

- Phishing Cross site scripting (XSS) Trojan
- Social engineering SQL injections viruses
- Malware Denial of service Key logger
- Root kit Spoofing Eavesdropping

If other please indicate -----

11. To what extent does the use of web based interaction lead to organization changes listed below to your organization? Using a scale of 1-5, where 1- no extent, 2- small extent, 3-average, 4-large extent, 5-very large extent

	1	2	3	4	5
Organization policies	()	()	()	()	()
Organization culture	()	()	()	()	()
Organization structure	()	()	()	()	()
Operations(reduced tedious tasks or improved efficiency)	()	()	()	()	()
Reduced costs	()	()	()	()	()
Changes in job description	()	()	()	()	()
Increased market reach	()	()	()	()	()
Business Strategy	()	()	()	()	()

12. To what extent does the organization's web 2.0 practices and policies affect the extent of use? Using a scale of 1-5, where 1- no extent, 2- small extent, 3-average, 4-large extent, 5-very large extent

	1	2	3	4	5
Supporting Organization Structure	()	()	()	()	()
Supporting Organization Culture	()	()	()	()	()
Digital Strategy	()	()	()	()	()
Employees with Digital Skills	()	()	()	()	()
Investing in Web 2.0	()	()	()	()	()
Supporting Policies	()	()	()	()	()

PART IV: BUSINESS ECOSYSTEM

13. To what extent does the organization create networks using web based interaction platforms with members of an ecosystem, shown below? Using a scale of 1-5, where 1- no extent, 2- small extent, 3-average, 4-large extent, 5-very large extent

	1	2	3	4	5
Customers	()	()	()	()	()
Suppliers	()	()	()	()	()
Competitors	()	()	()	()	()
Financial Institutions	()	()	()	()	()
Potential employees	()	()	()	()	()
Government	()	()	()	()	()
Business associates	()	()	()	()	()

14. To what extent has the business ecosystem influence your organization to adopt a web based interaction platform?

1-no extent	2-small extent	3-average	4-large extent	5-very large extent
()	()	()	()	()

15. To what extent does operating as a business ecosystem lead to increased efficiency in the operations of your organization?

1-no extent	2-small extent	3-average	4-large extent	5-very large extent
()	()	()	()	()

PART V: VALUE OF WEB BASED INTERACTIONS

16. To What extent does the use of web based interaction platforms add value listed below to your organization? Using a scale of 1-5, where 1- no extent, 2- small extent, 3- average, 4-large extent, 5-very large extent

	1	2	3	4	5
Better matching of organization and customers	()	()	()	()	()
Time saved in the organization processes	()	()	()	()	()
Price transparency for the customer	()	()	()	()	()
Problem solving	()	()	()	()	()
New business model	()	()	()	()	()
Increased employee autonomy	()	()	()	()	()
Improved customer care and engagement	()	()	()	()	()

17. What digital media strategy does your organization use to measure value?

- () Social Benchmarking
- () Retention
- () Data Analytics
- () Customer Engagement
- () Increased Traffic

THANK YOU!!!

Appendix Two: A list of Financial Technology SMEs in Nairobi

1. Umati Capital
2. Connect Africa Payments
3. Tangazo letu
4. Bamba-pos
5. Tala
6. Farm drive
7. PesaPal
8. Remit
9. JamboPay
10. Bitpesa
11. Bitsoko
12. ConnectAfrica
13. InsureAfrika
14. iNuka Pap
15. Jumo
16. Kipochi
17. M-changa
18. Lelapa Fund
19. Lakt
20. Kwanji
21. Packline systems
22. Lipisha
23. GrassRoots
24. Kopo kopo
25. Chura
26. Inventure
27. DirectPay Online
28. Abacus

Source (Fintech Africa, 2016)