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IMPLEMENTATION OF AUGMENTED REALITY IN MEDIA ADVERTISING IN KENYA

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DECLARATION

This research project report is my original work and has not been presented for award of a degree in any university.

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This project report has been submitted as partial fulfillment of the requirements for the degree of Master of Science in Information Technology Management at the University of Nairobi with my approval as the University supervisor.

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ABSTRACT

Augmented Reality (AR) is an emerging interactive technology with high potential to contribute to the competitive advantage of an organization, enabling consumers to obtain rich product experiences using virtual information before a purchase. In order to maintain their competitive advantage, the media advertising industry is required to continuously come up with innovative systems and offerings such as AR.

Considering that implementation is a complex task due to the technical variables, human resources and monetary required, media advertising firms need to ensure successful AR innovation implementation to gain the expected benefits. This study was aimed at assessing the determinants of AR technology innovation implementation effectiveness in media advertising in Kenya**.**

The study employed a descriptive survey with both qualitative and quantitative data.

The findings showed that top management support, implementation climate, implementation policies and practices, human resource availability, and financial resource availability were important factors to AR implementation effectiveness.

The findings highlight the significance of the factors to be taken into consideration and verify implications for the implementation of AR technology. As a result, media advertising firms must take these elements into account. Future study can be done to increase the accuracy and dynamism of the suggested model by including more factors.

The study stresses the importance of AR technology in advertising and what elements firms ought to consider to facilitate successful implementation of this interactive technology for better value delivery. The findings add to the body of knowledge about the use of AR technology.

The research examined AR implementation in the context of Kenyan media advertising industry where AR technology implementation is still at an initial stage and therefore a limitation.

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ABBREVIATIONS

AR	Augmented Reality
AREM	Augmented Reality Experiential Marketing
HMD	Head mounted displays
MRP II	Material Resource planning system II
SD	Standard Deviation
SPSS	Statistical Package for the Social Sciences
WOM	Word of Mouth

DEFINITION OF TERMS

Advertising: Is one-way communication of an influential message by an identified sponsor, whose purpose is for non-personal promotion of the service or product to potential consumers.

Augmented Reality (AR):   An interactive mode of technology that combines visual objects or virtual worlds into the real world to see in real time.

Implementation: Is the initial use of a plan, a method, or any design, idea, model, product, specification, standard or policy that has been adopted.

Likert scale: A way of assigning a numerical value to qualitative data so that it can be statistically analyzed.

CHAPTER 1.   INTRODUCTION

1.1 Background

Today, society and our way of living are constantly influenced by technological innovations. Disruptive innovations have altered how organizations operate and have posed a significant threat to many organizations and industries today (Stewart et al., 2017).

The print advertising industry is experiencing competitive displacement by the digital disruption by losing advertisers and readers to web media supported by internet based advertising (Kueng, 2017, Stewart et al., 2017). This has been facilitated by easy access to the internet and smart mobile phone, where consumers get news anytime, anywhere. The web media is providing a new platform for both local and international business providing fresh chances for advertising and selling of commodities online in a more accessible, intelligible and less costly channel. With the exposure to more varied information, consumers look for real experiences to make opinions. There is a need for marketers to adopt new innovative technologies to reach out to their audience and engage them with the brand, as well ensuring positive experiences at every touch point (Singh & Pandey, 2014). The digital regime has led to the rise of platform companies such as Facebook and Google, increased choice and competition, and the diversification of business models such as native advertising, e-commerce, events and paywalls (Nielsen, 2012). With online platforms, advertisers are able to measure results in terms of impressions, reach and audience engagement and as well advertise at cheaper rates. For this reason, traditional media firms globally are experiencing heavy losses due to poor circulation figures and shrinking newspaper subscriptions, which ultimately translate into diminishing advertising revenue.

Due to the increasingly competitive communication environment, advertisers are having difficulty gaining customer attention and attentiveness. There is a need that the target audience is kept engaged and interacts with the brand. Thus, the need for media advertising firms to adopt and implement innovative technologies such as AR, which tends to add to positive consumer-brand relationship and consumer satisfaction by creating perceived experiential value. AR in advertising allows consumers to examine product qualities in greater detail in order to improve product and brand understanding.

AR is one of the digital tools that can be an enabler of immersive interaction between the consumer and the company by providing positive brand attitude and customer satisfaction for brands (Eyüboğlu, 2011). AR consumers are in charge of the conversation process, they are able to retrieve information when they need it and wherever they need it. Online advertising is changing how advertising campaigns are run, how advertising is bought and sold, and how creative work is done, causing major disruption in the worldwide advertising sector (Evans, 2009).

Currently, the media advertising organizations are operating in an economic uncertainty, highly competitive environment against disruptive new entrants that are powered by fast moving technological advancements; thus the need for them to adopt new technologies to reach out to their audience and meet their instant needs. The innovation adoption includes recognizing the need for an innovation and making a strategic decision to adopt it. The final step in the adoption process is the implementation phase in which members of an organization become skilled, consistent and committed in the use of innovation. In most cases where an adopted innovation is not generating the expected benefit, it's the implementation that fails, not the innovation itself (Klein & Knight, 2005).

Implementation is the key link between deciding to accept an invention and using it on a regular basis. During an innovation adoption process, a technology is often adopted but not sufficiently implemented, thus the anticipated benefits of its use are not utilized (Klein & Knight, 2005). This problem makes the implementation process an important subject to study. Research has shown that about 15% of the technological innovations adopted by companies are cancelled before completion. These innovation projects fail due to lack of understanding into the critical success factors necessary for their success.

Industry 4.0 concepts incorporate production processes and the implementation of the innovative technologies, including additive manufacturing, virtual plant, IoT, and AR (Rojko, 2017). AR is one of the most promising technologies that offer a solution to solve the inadequate interaction problem by allowing consumers to make decisions based on 3D model projections and computer generated visualizations (Rojko, 2017). Some of the advantages of adopting of the industrial 4.0 concept include: improved customer responsiveness, lesser time to market for new products, quite flexible and friendlier working environment, decrease of quality management costs and logistic costs, more efficient use of natural resources and energy and enabling a custom mass production without significantly increasing overall production costs (Rojko, 2017). The AR applications in the industry include designing, training, production assistance, quality assurance, remote maintenance and support of indoor navigation through AR based guidance (Torbacki & Kijewska, 2019).

AR is a technology that blends the virtual and physical world and finds the right to enter into the life of today's customers. Social community apps like Snap chat, Facebook messenger or Instagram are using this type of technology on a daily basis by enabling its users to apply filters on photos that change a person's appearance. The AR technology could be found in several industries, such as retail, education, art, navigation, manufacturing, communication, medicine, automotive, gaming, military, architecture and tourism (Javornik, 2016). By 2024 the augmented reality market is expected to grow to be worth 72.7 billion United States Dollars (USD) from 10.7 USD in 2019 (Market & Markets, 2020).Through the traditional online shopping, consumers are not able to discover the different features of certain products such as the sound, appearances or actual texture. A prospective customer can virtually position

actual products in a real context using AR-enabled apps, providing a vivid depiction of the product's use. AR applications in advertising allow consumers to examine product qualities in greater detail, enhancing both product and brand understanding (Mauroner et al., 2016). AR is providing value to marketers and shoppers in three areas: visualizing and understanding products and features, modifying and customizing selections and creating an engaging buying experience.

By combining data from the virtual and real worlds, AR provides a variety of experiences such as information, personalization, excitement, engagement, entertainment, simplicity of use, participation, and reduced time and cost.

Most research on AR focuses on its contribution in liking advertisements, attitude towards both brand and advert, intentions to purchase and believability of the advert as a result of these experiences (Singh & Pandey, 2014; Uğur & Ceylan, 2014). The purpose of this study is to conduct a review of the determinants of AR technology innovation implementation effectiveness by firms. This will be valuable for marketers to understand the obstacles and know how to overcome them.

Kenya internet advertising revenue is expected to grow from 40 million United States Dollars (USD) in 2018, to be worth 73 million USD by 2023 (Statista, 2021).The newspaper circulation in Kenya declined by 9.3 percent in the year 2019 due to readers opting for online version of newspapers (GoK, 2020). The digital news has made a waning relationship between news organizations and their audiences which has led to decline in both circulation and revenue figures of the print industry.

1.2 Problem Statement

Many organizations embark efforts to improve business processes by implementing innovations. However, many of them reject certain adopted ideas during the implementation stage due to a lack of understanding of how to manage innovation implementation. Research has shown that about 15% of the technological innovations adopted by companies are abandoned before completed (Lacovoc & Dexter, 2005). Cancellation of these innovations has severe consequences including; disruption of operational systems, loss of potential benefits of successful innovation, undesirable publicity and associated negative impacts on reputation of the company and brand image, loss of sunk and opportunity costs and loss of managers' believability (Sawang, 2008) In this study, leveraging on the Sawang &Unsworth implementation effectiveness model, various determinants of effective implementation of AR from an organizational perspective are proposed. Analysis of organizational implementation of AR for media advertising will reveal key determinants that companies should consider while implementing AR to keep their consumers engaged with their brand. With a better understanding of how to manage AR innovation implementation effectively most risks will be reduced.

1.3 Objectives of the Research

a) To review the AR technology as an experiential marketing tool in customer engagement.

b) To analyze the determinants of AR technology innovation implementation effectiveness in media advertising in Kenya**.**

c) To propose a framework for effective implementation of AR by media advertising in Kenya.

d) To apply the proposed implementation framework for AR innovation in selected cases.

1.4 Research Questions

i. How does AR technology enhance customer engagement?

ii. What is the suitability of AR as an experiential marketing tool in media advertising?

iii. What determines the successful implementation of AR in media advertising?

iv. Which framework is suitable for effective implementation of AR by media advertising?

v. How can the identified AR implementation framework be applied in the media advertising in Kenya?

vi. To what degree is the proposed AR implementation framework suitable for effective implementation of AR innovation in media advertising?

1.5 Significance of the Study

Advertisers and marketers will be able to understand the specific determinants of AR technology innovation implementation effectiveness as an experiential marketing tool that will get their messages known and absorbed and gain differential advantage in providing a rich consumer experience in an increasingly competitive consumer markets and information overload.

1.6 Scope of the Study

The study addressed the media advertising industry by focusing on five firms in Nairobi that have undertaken AR projects to create positive brand perception. The study is confined to the initial implementation process of the AR innovation and therefore does not research into the long-term use.

1.7 Assumptions of the Study

Two assumptions were taken into consideration; that the respondents would be willing to respond to the questionnaire and provide valid and reliable information useful for the study.

CHAPTER 2.   LITERATURE REVIEW

In this chapter, a brief discussion on AR technology from historical, research and business perspectives is outlined. Next, the innovation implementation frameworks are discussed.

2.1 Overview of AR Technology

AR is an interactive mode of technology that expands human perception through the superimposition of 3D registered digital layers in the physical world (Schmalstieg & Höllerer, 2016). The AR use in the advertising and other industries has been increased by the development of smart device applications and is developed as an interactive tool in the marketing context (Abrar, 2018). The aim of the AR is to make the user's life easy by availing the virtual information to his immediate surroundings as well as to any indirect view of the real world environment like the live video stream. AR has been used to advertise on social media, allowing prospective consumers to try out a number of products before purchasing which result in loyal customers, increased sales and more informed decisions (Yadav, 2020).

AR technology combines real and virtual content, needs to be registered in 3D and be interactive in real-time (Billinghurst et al., 2015). AR technology has advanced with time including development of these displays allow the users to move freely, without being bound to a stationary screen (Billinghurst et al., 2015).AR can be employed in many forms, such as in-store product videos, touch screen head mounted displays (HMD), recommenders and virtual mirrors (Parise et al., 2016). AR technology is categorized in several types depending on the uses and objectives, they include; marker less AR, marker based AR, projection based AR and the superimposition base AR (Yadav, 2020).

With the ongoing digitalization, decreasing costs, portable devices and improving technology, AR technology usage is growing more. AR technology enhances the perceived informativeness and enjoyment, which eventually enhances purchase intentions and willingness (Pantano et al., 2018).

2.2 AR Experiential Marketing Tool in Customer Engagement

In order to capture the attention of the audiences, the advertising industry has always been changing and adjusting to needs of consumer. Hence, marketing tools are critical to the success of every business. AR is one of tools being used by marketers to create a brand-customer relationship. The term Augmented Reality Experiential Marketing (AREM) was introduced in the marketing tool context (Jin & Yazdanifard, 2015).

AR experiential marketing (AREM) is beneficial to create customer satisfaction (Dohutia, 2012). Firms use AREM as a promotional tool to generate repetitive purchasing and engage customers with their

current product. It is applied in the marketing campaign as an experiential strategy which not only focuses on product or services but similarly impressive experiences for customers (Yuan & Wu, 2008). AREM leads to a positive brand attitude by giving awareness and creating a good impression to the customers (Buleacara & Tamarjan, 2010). Thus, gives a customer confidence and a secure feeling towards the products therefore helping companies to draw more attention from individuals who are not aware of the product.

AREM plays an important aspect in a company positioning itself differently from others. It is suitable for both large and small companies to get their name up on the billboards at little cost and with more consumer engagement.

AR engage customers in entertaining, creative and enjoyable experiences by projecting virtual objects into their direct view of the real world (Scholz & Duffy, 2018). It allows for a unique type of service or product depiction that minimizes intangibility (Heller et al., 2019b), enhances inspiration (Rauschnabel et al., 2019) and enabling clients' purchase decisions to be more creative (Scholz &Duffy, 2018).

AR enables consumers to visualize the relations of product and services directly expanding the number of relationships beyond what is possible with mental images alone. Customers can experiment with multiple ways to use things via AR-enabled interactions before choosing on a certain product. AR reduces the mental work required for customer creativity through service prototype or virtual product in the customer creative process. As a result, client innovation in AR is a blend of novel experiences and problem solving. (Jessen et al., 2020).

Commercial AR apps have been used to simulate direct product encounters in order to increase sales (Hilken et al., 2017), as an efficient technique of conveying specific product information (Smink et al., 2017) and reduce perceived purchase risk. AR provides clients with more comfort while making online purchases (Hilken et al., 2017; Heller et al., 2019a), as well as increased purchase confidence and satisfaction.

AR is beneficial for advertising firms to create a positive brand perception, rich consumer experience and positive word of mouth (Eyüboğlu, 2011).

In conclusion, AR initiatives should be driven by the consumer experience rather than technology. They should focus on the one-of-a-kind, exciting, and valuable experiences made available by AR technologies. AR experiences that fail to meet or exceed customer expectations can ruin the brand's image, waste money, and threaten future projects incorporating AR or other marketing technology.

Marketers should examine consumer engagement and the factors that influence it, such as sociability, affordance, and AR objects (Scholz & Smith, 2016).

2.3 Application Areas of AR technology

The AR technology has been used in several industries, such as medicine, automotive, gaming, military, art, navigation, education, tourism, emergency management and architecture (Jha *et al.*, 2019 and Yunqiang Chen *et al* 2019).

In the Medical Field, AR technology is advancing medical science towards greater proficiency and safety. It is used in medical learning and training. Microsoft HoloLens is utilized in spinal surgery to project an overlay on patients' bodies. With this technology, doctors who are thousands of kilometers apart are able to discuss surgeries and as well provide patients with information on their treatments and preventions.

In the retail e-commerce industry, the AR application is used in various ways including coupon deals, products, clothing and footwear shopping and shopper browsing through different reviewers. Consumers are able to view everything about a product without having to open its packaging.

To attract modern tourists and stay competitive, the tourism industry is using modern technologies such as AR technology. This can be used to restore historical sites by incorporating real-world scenes into screen software, mobile phone cameras, and other modern techniques. The tourists are able to view scenes and obtain any additional information needed about a site.

In sports, AR is commonly used in telecasting. The audience has an enhanced view of sports and entertainment through overlay augmentation tracked through camera feeds. AR boosts sporting events in following ways: outdoor advertising, scanning of banners for the access to the football club's website, ticket office and team shop and event marketing.

In the field of military, AR is used in 3 ways; tactical augmented reality used to help soldiers to give details about their exact location and that of the enemy, helmet mounted AR display that provides overlays with different information of allied armies and AR is used for army soldiers to mentally and physically prepare them for real wars.

AR education app includes 3D overlays, modeling tasks, and designs to assist students in creating models, understanding, and learning animation architectures. This has made education more fun, exciting and interesting.

Firms that use AR in the manufacturing business save human resources, solve problems faster and with less risk, and cut production time and cost.

The most popular game "Pokémon Go" helps gamers to be in an imaginary world like fighting aliens, zombies or capturing fictional creators. Other AR games include Army of Robots, Zombies Go, and Sharks in Park, Temple Treasure Hunt, Night Terrors and Beer Pong AR.

With the AR technology, the advertising and marketing industry are able to connect and engage users. The users are able to try and check products virtually and make purchases after checking how the product fits and how it looks.

AR technology can be applied in public security solutions like search and rescue systems to rescue lost people efficiently.

Within the field of AR and marketing, several research studies have been undertaken, with a lot of focus on a wide range of products as well as variables, which have been explored. Surveys were conducted to explain the impact of AR on consumers, particularly for fashion products like virtual changing rooms, glasses, or cosmetics. Variables that have been tested in relation to AR and its users include; brand attitude, behavioral responses, intention to use and reuse and purchase intention. It was discovered that AR enhances customer purchase intention in relation to curiosity and patronage intention, and that increased user experience of AR influences consumers' satisfaction and readiness to buy.

2.4 AR Attributes

Understanding the AR attributes is very important because it helps marketers in developing the technology further to have great consumer engagement. The key attributes are as follows.

Interactivity – This refers to the extent users may alter the form and context of a mediated environment in real time. Interactions between parties include tapping, swiping and other similar embodied interactions, which could enable ease of use. AR is seen as a technology that is highly interactive and has the ability to get customers more engaged (Huang & Liao, 2015),

Playfulness – This is the ability of a user to get absorbed in the activities and feel the enjoyment in the engagement. Interactive technology enhances convenience and playfulness, IKEA has technologies which enable their users to virtually fit furniture and other items from their catalogue using their smartphones from the comfort of their homes. This characteristic of AR is believed to generate consumer flow.

Service excellence – This is a consideration to providing required information to consumers and predicted service (Huang & Hsu Liu, 2014). Service excellence attribute of AR is quantitavely measured by how well the technology provides the user with predicted service and how the predicted user experience is perceived. The service excellences attribute of AR creates a reactive experiential value

through provision of appreciation, visual attractions and visual stimulation to the customers. (Huang & Liao, 2017).

Aesthetics – Aesthetics attributes of AR have three key items including entertainment, attractive display and liking the visual image (Huang & Liao, 2017). The aesthetics attributes can be used to add value to products by differentiating companies and products and as well motivate consumers.

Ease of Use – It refers to the degree to which a person believes that using a certain system will need no effort. Users are more inclined to adopt an application if they believe it is easier to use than another. Huang & Liao (2015) suggest that a technology that is easy to use is most preferred by consumers with low levels of intellectual innovativeness. This attribute of AR adds convenience to the shopping experience of the consumers.

Perceived Usefulness – This is the degree to which a person believes that implementing a specific system would improve work performance. The simpler a system is to use, the more useful it is perceived to be. Perceived usefulness is critical in making users adopt AR and as well measure of how the AR system adds value to tasks. (Poushneh & Vasquez-Parraga, 2017).

2.5 Sustainable Competitive Advantage through Innovation

An innovation is a new product, system, idea, technology, processes, policy or service that is new to the inventing organization (Sawang & Unsworth, 2011). Competitive advantage is a consecutive process of value creating activities, which should not be implemented at the same time by any potential or current rivals.

Some of the challenges being experienced by businesses today are global competition and shortage of developing technological advancements (Schmitt *et al.*, 2015). This suggests that it is a complicated task for businesses to achieve rapid growth, innovativeness, adaptability and competitive aggression. Therefore, to overcome these challenges, businesses have to be strategic, flexible and as well entrepreneurial. To achieve the competitive advantage, companies should strive to develop products and service features that are imperfectly imitable and not substitutable, valuable, and rare. It is vital for companies to have the capability to meet the needs and understand their consumers, which would improve customer loyalty, competitive differentiation and economic efficiency.

AR is an interactive technology that can be categorized as imperfectly immutable and not substitutable, valuable, and a rare advertising tool for establishing a two-way connection with the customers. AR is an innovation that would increase the market competitiveness in terms of physical stores and rivalry online. For the early adopters of this solution, they will have a competitive advantage over their rivals.

These companies could be perceived as an innovation-forward company by their consumers for AR is an emerging technology that has created buzz and is highly anticipated in the market. Hence, this will positively influence the company's brand and as well target the right customer segment.

The companies use AR to demonstrate and visualize products in 3D to promote their products better and effectively for their consumers such as, on product catalogues, trade shows and more using smart devices like smartphones and tablets. For companies that are using AR internally for service and operating fields, with advanced and efficient resources to decrease lead-time acts as a competitive advantage over their competitors.

As a marketing strategy, firms are using AR to attract clients who are able to visualize more information about the company and get specific information for their needs that is not available in the traditional or normal way of marketing. Together with social media, AR will create a world that the users can step into and change everyday life interaction.

With the tracking and analytic tool feature of AR, companies are able to engage with their customers more efficiently during their campaign. Companies are able to get valuable information and insights about their customer's behavior and interaction with the brand. This knowledge can be used to send more personalized information to customers for their specific needs and wants.

AR offers a faster and easily accessible knowledge transfer without the limitations of geographical locations, thus saves time on travelling from one location to another.

AR media characteristics such as mobility, interactivity, virtuality, location specificity and the synchronization of virtual and physical/real are strong motivators for consumers to get engaged with a brand by creating an entertaining consumer experience.

The location specificity feature enables marketers to deliver a personalized message to consumers that lead to higher intention to purchase, higher trust and more positive attitude. However, privacy is a major concern that can act as unfavorable to the benefit of location-based marketing messaging (Javornik, 2016)

AR creates experiences for consumers by enabling the users to align their perceived frame of reference from the virtual information about a product to the actual product. This enhances their perception of the actual product immediately before purchasing the product. With this capability, marketers are able to evoke and intrigue emotions and feelings of their consumers, which can be classified as experiential marketing.

2.6 AR Innovation Implementation

The use of a new innovation or product is preceded by innovation adoption, which includes recognizing the need for an innovation and the strategic decision to adopt it (Pichlak, 2016). The final step in this process is the implementation. It is the phase of transition during which individuals of an organization should become more skilled, consistent, and devoted in their use of an innovation (Sawang, 2008).

Forward-thinking firms need to invest in implementing the AR innovation technology into their business models to attract more consumers, promote their brand, and improve the client-seller relationships, increase sales and profitability and increase consumer loyalty. With the implementation of AR innovation, marketers may solve several emerging challenges in the traditional advertising such as obtaining consumers' attention and alertness, difficult to select useful information, overload and oversupply of replaceable services and slow speed of reply and payments (Pantano et al., 2018). AR Implementation failure may harm a company's reputation and can be costly to organizations. To enhance the successful implementation of AR innovation, it is very important for top management to understand the key factors that influence it. It has to be a clear and shared understanding where every party understands who does what, when, at what cost.

2.6.1 Barriers of AR

During AR implementation, some hurdles may occur which hinder AR to progress to full deployment. They include:

User privacy- This is due to constant monitoring and recording of user behavior across culture, Social and IP related barrier.

Technological- Technological problems and inefficiency in AR systems, applications, 3-D monitoring and view occur.

Fragmented markets-The AR software, hardware and frameworks lack uniform data processing, management, storage and device integration requirements (Hashim 2017).

Organization adoption of AR include advanced features such as scalability across website, computers, customers, reducing video lag, intuitive user interfaces, protection of information, user access among others. For AR to be successful, optimal planning, communication and implementation strategies should be in place (Boland, 2019)

2.7 Theoretical Framework

2.7.1 Klein, Conn and Sorra's (2001) Theoretical Model

This model is established on the principle that implementation efficiency is significantly related to organizational policies and practices, implementation climate, financial resource availability and management support, and that the perceived benefits from an innovation is related to implementation effectiveness; (Klein et al., 2001). Previous studies have shown that the organizational members' behavior regarding a given outcome is influenced by organizational climate. Some of the policies and practices that influence innovation implementation include training, reward and user support.' This model highlighted that top management support and the availability of financial resources were prerequisites for the implementation of policies and procedures.
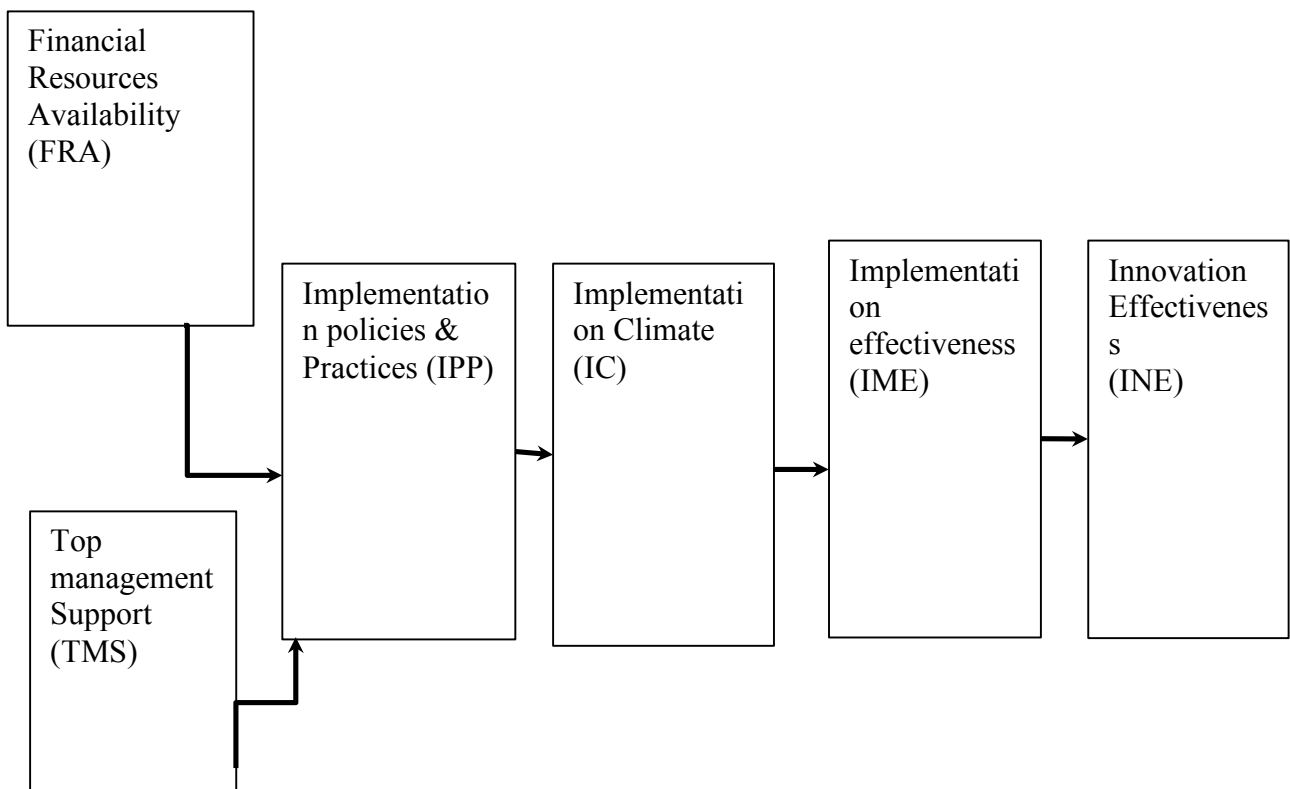
Figure.1: Original Model of Implementation Effectiveness (Klein et al., 2001)

2.7.2 Sawang and Unsworth (2011) A Model of Organizational Innovation Implementation Effectiveness

Klein et al.'s original model has some limitations for it only tested the financial resources and a single innovation (i.e. MRP II, a process innovation) for the manufacturing industry. Sawang and Unsworth study has tested both human and financial resources' effect on the model and can be used in both non-manufacturing and manufacturing industry sectors. Additionally, an extra variable was added, "attitude toward future innovation adoption".
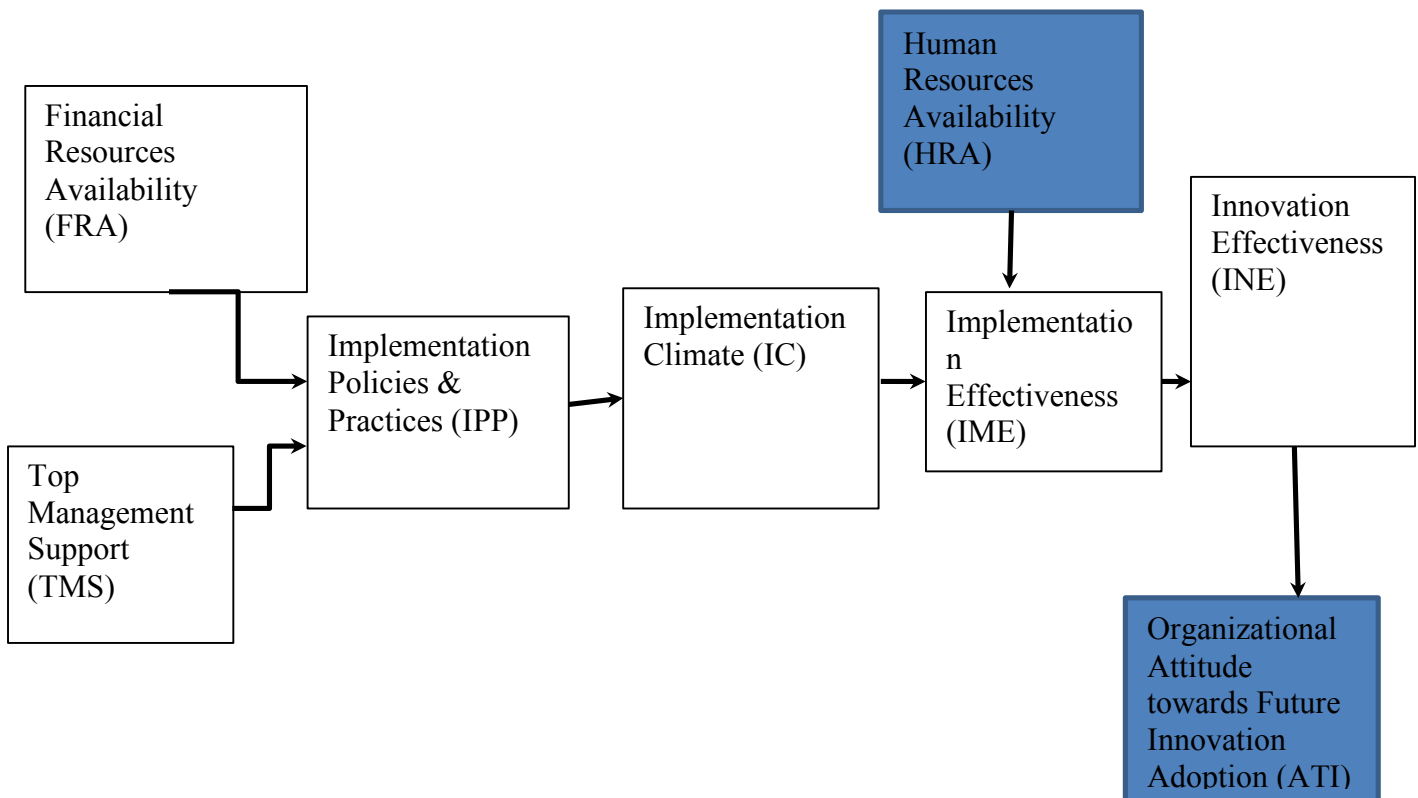
Figure. 2: The Integrated Model of Implementation Effectiveness Sawang & Unsworth (2011)

2.8 Conceptual Framework.

Figure 3, presents a conceptual framework, proposed for AR technology innovation implementation effectiveness that leverages Sawang & Unsworth (2011) implementation effectiveness model. The proposed model consists of five independent variables and one dependent variable. The following section discusses the variables.

I.   Top Management Support

Top management support is one of the important variables that influence innovation implementation as emphasized by previous authors. Firms where the top management is highly innovative and passionate, the management is often prepared to take risks and welcome new technologies. The top management should support activities that promote implementation effectiveness, including enticing more staff members to voluntarily use innovation thus reducing organizational resistance, providing supportive policies and clarifying communications channels for the participants to ask questions or look for information, express their ideas or take part in planning the innovation implementation. In the perspective of the media advertising industry, the AR technology is complex and needs much resources and time to be effectively integrated with other systems in media advertising. There is a need for senior management to view the AR implementation effectiveness as a critical and top priority to organizational effectiveness. The funding for AR deployment, training approval, and technological maintenance support are all delegated to senior management.

II.   Human Resource Availability:

Employees who are skilled and competent are critical to the successful application of technological innovation. Implementing AR technology needs more skills and capabilities from the staff. In the perspective of the advertising sector, more AR technology knowledgeable staff may acclimatize to the technology more smoothly and without so much difficulties. The AR technology should be appealing to all possible users (advertisers, employees, consumers, etc.) and implementation should be done within the budgeted resources (Pantano et al., 2018).

 Effective implementation requires skillful and competent employees to manage the implementation process (Sawang & Unsworth, 2011).

III.   Implementation Policies & Practices

These are practices, structures, plans and strategies that firms utilize to ensure innovation use
 (Klein et al., 2001). An organization establishes its way of implementating policies and practices such as giving rewards (e.g. recognition, promotions) for use of innovation; the quality and quantity of training available to teach employees to use the innovation; the provision of technical assistance to innovation users on an as –needed basis; and the quality, accessibility and user friendliness of the AR

technology itself. Policies and practices help to create the ideal environment for implementing consistent, high-quality innovation utilization. When members of an organization incorporate an innovation with a considerable level of operational, cultural, and strategic fit, the likelihood of effective implementation increases. With combinations of different policies and practices, effective implementation could be achieved.

IV.   Implementation Climate:

Routine organizational procedures impact individuals' behavior and attitudes, creating an implementation atmosphere. The organizational culture is embedded and indicated by its climate. The implementation atmosphere in this study refers to employees' common perceptions about the necessity of implementing AR technology in the advertising industry. When an organization's climate for implementing AR technology is positive and strong, employees consider AR technology as a top priority rather than a distraction from their actual work.

Past studies show that implementation climate has a positive connection with implementation effectiveness. The large-scale information systems implementation effectiveness was at its peak when the implementation climate was favourable and innovation values fit was present (Higgins et al., 2009). Similarly, the context in which an enterprise resource planning system was implemented was linked to its effectiveness (Ngwenyama & Nielsen, 2013). As a result, it is proposed that the environment for implementation should encourage the successful implementation of an idea.

V.   Financial Resources Availability

The organization's ability to pay for installation and any other fees is a key determinant of the project success. Due to a lack of financial resources, businesses may be forced to be too cautious when it comes to investing and capital spending. Implementation of a new technology requires long term investment and high cost of technology setup hence the need for firms to have access to sufficient finance.

In the context of AR technology in media advertising, companies need to invest extensively in AR technology. Some costs include hardware and software, training, facilitation, promotion and motivation of the staff, among others. This demonstrates that finances are important in the implementation process.

VI.   Implementation Effectiveness

Klein et al. (2001) cited implementation effectiveness as a firm's overall consistency and quality of innovation. The definition of implementation success is when a project is completed on time, on budget, meets the original objectives, and is well received by users. To asses whether an implementation was successful or not, the implementation should be looked at through the lens of the stakeholders (Sawang & Unsworth, 2011). They include managers, customers, employees and any other organizational stakeholders.

In this study, the implementation effectiveness is viewed as a measure of output, where the AR project has met a mission to be performed and the technical performance specification, and users have a high level of user satisfaction on the AR project performance.

Independent variables

Dependent variable

Financial availability

Organizational climate
Goal emphasis
Task support

Implementation Policies & Practices

Training

Reward & assistance

AR Implementation Effectiveness in media advertising
Budget
Delivery time
User acceptance/ resistance

Human resource availability
Skills & Commitment

Top management

Committed resources
Management support

Figure. 3: Conceptual Framework for AR Technology Innovation Implementation

CHAPTER 3. RESEARCH METHODOLOGY

This chapter expounds research design, target population, data collection tools and methods, data analysis technique and data presentation procedures.

3.1 Research Design

Research design is the plan and techniques for study that range from broad assumptions to detailed data collection and analysis methodologies (Creswell, 2018). In this study, descriptive research was adopted to gain a deep understanding of the linkages of the different variables. Descriptive research involves identification of attributes of a particular group or situation based on observations or the exploration of correlation between two or more variables (Akhtar, 2016).

3.2 Target Population

The term "population" refers to the total group of people who the researcher is interested in studying. All team leaders and members of the ICT and marketing departments of the various AR projects in the five media advertising firms' formed the population of the current thesis. The study population was estimated to be 80.

3.3 Sampling Design

This study adopted the purposive sampling to select the advertising firms that were used for this research. Purposive sampling is a non-probability sampling technique that selects the participants because they meet certain criteria to participate in a study (Wimmer & Dominick, 2011). The participants in this study had to have worked in the respective firm for at least two years and have implemented two or more AR projects.

A pilot study was done to refine the research design and the data collection procedure in the field. It was conducted in May and June 2021 with four middle level managers from an advertising firm that was not among the five sampled. The purpose of the pretesting study was to aid the researcher to identify the questions that needed clarification as well as those that were unlikely to yield meaningful data. The results of the study were not used in the final analysis of the data collected during the main research.

3.4 Data Collection Instruments

A survey questionnaire, designed with research items adapted from previous published research by Sawang (2008) was used to collect data from the respondents deemed to be appropriate informants of

their company's AR deployment experience. Quantitative research questionnaires method of data collection was used to collect information from relatively large populations quickly and efficiently. It is as well easy to administer and it is easier to code, analyze and interpret the data acquired with it.

The guided interviews were done to department heads to deeply understand AR technology in Kenya.

3.5 Data Collection Procedures

This study's data was entirely gathered using a web-based survey. The respondents of this study met the attributes to conduct an online survey for they are tech savvy and have easy access to the internet. Another crucial reason for choosing this type of survey is that the sample size can severely increase due to geographical dispersion during this COVID-19 pandemic where most people are working from home. Other advantages of this kind of survey include convenience, speed, control, coverage, anonymity and cost. The web questionnaire's answers were automatically downloaded into a database, which eliminated the difficult work of coding of a huge number of questionnaires and all potential errors involved with it. The questionnaire has six sections: respondents' information, top management, human resource availability, implementation climate, implementation policies, and financial availability. Each of the sections will be measured using Likert scale where respondents were given a simple task to indicate their level of agreement for each statement. A pilot study was conducted prior to data collection to improve the quality of the questionnaire. The interview questions were shared via email and zoom call made to seek clarification on the responses.

3.6 Data Analysis and Presentation

The Statistical Package for Social Sciences (SPSS) version 28.0 was used to process and analyze the collected data. Quantitative data was analyzed using descriptive statistics, which include standard deviations, mean, frequencies and percentages. The results were presented in terms of tables and charts for ease of understanding and clear overview of the data collected. Multiple regression analysis was used to test the relationship between variables and the extent in which they influence each other. It was as follows: $Y_i = ß_0 + ß_1X_1 + ß_2X_2 + ß_3X_3 + ß_4X_4 + ß_5X_5 + ε,$

Where

Y_i = AR Implementation Effectiveness in media advertising

$ß_0$ = constant (coefficient of intercept), $ß_1 … ß$ = regression coefficient of five variables.

X_1 = Top management;

X_2 = Human resource availability;

X_3 = Implementation Policies & Practices;

X_4 = Organizational climate;

X5= Financial resources availability;

e = Error term;

3.7 Ethical Issues

During this research, several ethical considerations were taken into account. A letter of introduction was obtained from the university to purposely introduce the researcher to relevant authorities concerned. A clear letter of information was provided prior to the participation to ensure participants did not feel pressured to complete the survey. This letter of information highlighted that the participation is voluntary and ensured the participants fully understood what the study concerned. The survey was both voluntary and anonymous. All data collected was solely used for the purpose of this study. The background literature and information sources have been cited to their original authors thus avoiding any accusations and concerns of plagiarism.

CHAPTER 4.   RESEARCH FINDINGS AND DISCUSSIONS

This chapter presents, interprets, and discusses empirical results of determinants of AR implementation in media advertising.

4.1 Response Rate

In this study, 64 out of 80 sampled respondents filled in and returned the questionnaire contributing to 80%. This was acceptable and sufficient for the study because it met the minimum requirement.

Table 1: Response Rate

Category	Frequency	Percentage
Response	64	80
Non-response	16	20
Total	**80**	**100**

Source: Research Data

4.2 Reliability of Constructs

A reliability test was conducted on the constructs to determine whether each item fit and can relate as a group before result analysis was done. The Cronbach's Alpha average results are shown below.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.895	.887	27

Figure 4: Reliability Statistics

The reliability test was satisfactory, since they were above the acceptable value of 0.6 (Wambugu *et al.*, 2015). The average of the items was 0.89, suggesting strong reliability and consistency, and so all may be considered as determinants of the effectiveness of AR implementation.

4.3 Demographic Data

The researcher was interested to know the respondents' level of management and professional experience.

Years of Experience

According to the table majority (54.7%) of the interviewees had worked for at least 5-9 years; it was followed by 23.4% of the interviewees who had a work experience of between 1-4 years, 21.9% more than 10 years. The findings reveal that a big number of respondents had worked for more than 5 years as indicated by cumulative percentage of 78.1% and hence were able to effectively answer the research questions.

Management Level

With regard to management, middle level managers were 51.6%, while top-level managers accounted for 17.1% and low-level managers were the least at 31.3% of the respondents.

Table 2: Demographics Data of Respondents

		Frequency	Percentage
Management level	Top	11	17.1
	Middle	33	51.6
	Low	20	31.3
Years of experience	1-4	15	23.4
	5-9	35	54.7
	10-15 years	14	21.0
	Total	**64**	**100.0**

Source: Research data (2021)

4.4 Descriptive Analysis

The questions were graded on a scale of 1-5. While 1 indicating strongly disagree, 2- disagree, 3- moderately agree, 4- Agree and 5- indicated strongly agree to the question that was asked. The standard deviations give variations of the responses from the mean. The smaller the standard deviation the better the results for it indicates that the responses were not far away from the mean response.

4.4.1 Top Management Support

The goal of the study was to examine top management support influenced the introduction of AR in media advertising in Kenya. The results are shown in table 3.0 below.

Table 3: Top Management Support

Statement	Mean	Std. Deviation
The top management was explicitly committed to the AR project from the initial to final stage	4.9524	.21822
There was adequate communication to the employees on the AR project	4.4762	.60159
The was a coordination mechanism to resolve cross functional conflicts	4.2381	.83095
On successful completion of the project the project team was given incentives and empowered	3.9048	.99523
Adequate budget was provided for the project	3.6190	.66904
The AR implementation was carefully planned and costed.	4.1905	.74960
A realistic time frame was provided for the project	3.9048	.83095
The highly competent and motivated staff were appointed to work on this project	4.2381	.76842
Aggregate	**4.19**	**.50**

Source: Research data (2021)

The respondents agreed to the statement that top management was explicitly committed to the AR project from the initial to final stage (M=4.95, SD=0.218). There was adequate communication to the employees on the AR project (M= 4.48, SD= 0.602). There was a coordination mechanism to resolve cross-functional conflicts (M=4.24, SD=0.831). The highly competent and motivated staff were

appointed to work on this project (M=4.24, SD= 0.768). The AR implementation was carefully planned and costed ((M=4.19, SD=0.750). Further, successful completion of the project the project team was given incentives and empowered (M= 3.91 SD= 0.995). A realistic period was provided for the project (M=3.91 SD= 0.831) and adequate budget was provided for the project (M= 3.62 SD= 0.669).

The results show that the respondents agreed that top management support significantly influences the implementation of AR innovation in media advertising firms as shown by the aggregate mean of 4.19 with a significance variance of .50. This demonstrated that the more the involvement of top management in project implementation, the more likely it was to be successful. The findings validated previous findings by Sawang & Unsworth, (2011) and Wiechetek (2012).

4.4.2 Implementation Climate
The study sought to examine the influence of implementation climate on the implementation of AR in media advertising in Kenya. Table 4.0 shows the findings.

Table 4: Implementation Climate

Statements	Mean	Std. Deviation
The management scans the environment for fresh ideas to better the project	4.5238	.81358
The employees care whether the AR implementation succeeded or failed	4.3333	.73030
Technical assistance is readily available for AR technology	4.2857	.84515
A realistic time frame was provided for the implementation of the project	4.1905	.87287
The management team stressed the importance of the project to the firm.	4.2381	.88909
The project goals were clearly stipulated by the management	4.1429	.65465
Aggregate	**4.29**	**.61**

Source: Research data (2021)

Table 4.0 indicates that respondents highly agree that management scans the surroundings for new ideas to improve the AR project (M=4.53 SD= 0.814), and the employees care whether the AR implementation succeeded or failed (4.33 SD= 0.730). Further the respondents agreed that technical assistance is readily available for AR technology (M=4.286   SD= 0.845), the management team stressed the importance of the project to the firm (M=4.238 SD= 0.889). A realistic time frame was provided for the implementation of the project (M=4.19 SD= 0.873) and the project goals were clearly stipulated by the management (M=4.14 SD= 0.655).

According to the study findings, organizational culture has a good link with implementation effectiveness (M=4.29 SD= 0.61). These findings were in line with Klein et al., (2001) and Sawang and Unsworth (2011) who found that organizational climate to be significant for some projects were derailed due to lack of proper climate.

4.4.3 Human Resource Availability

The research sought to examine the influence of the human resource availability on effective implementation of AR in media advertising in Kenya.

Table 5: Human Resource Availability

Statement	Mean	Std.Dev
The AR consultants selected to spearhead the implementation had the infrastructure, experience and reputation to support the organization's vision	4.1429	.96362
We had the relevant technological background and skill level for AR implementation	4.1429	.91026
There was no shortage of managerial talent to effectively introduce and implement AR innovation	3.6190	1.16087
Aggregate	**3.97**	**.94**

Source: Research data (2021)

Table 4.0, shows the respondents agreed the AR consultants selected to spearhead the implementation had the infrastructure, experience and reputation to support the organization's vision (M= 4.14 SD= 0.964), and they had the relevant technological background and skill level for AR implementation (M=4.14 SD=0.910). They were neutral on no shortage of managerial talent to effectively introduce and implement AR innovation (M=3.62 SD=1.161).

The aggregate of (M=3.97 SD=0.94) shows a significant influence of human resource availability to effective implementation. This is an agreement with previous studies by Wiechetek, (2012) and Sawang & Unsworth (2011). Wiechetek (2012) argued that technical infrastructure of an implementing company, knowledge about project and management skills are key factors on effectiveness of IT implementation process.

4.4.4 Implementation policies and practices

The research aimed to find out the influence of implementation policies and practices on the implementation of AR in media advertising in Kenya.

Table 6: Implementation Policies and Practices

Statements	Mean	Std. Devn
Before using AR innovation, our company provided training to staff.	3.3810	.58959
Employees were frequently provided with training during the AR innovation implementation phase.	3.2857	.84515
When employees experience difficulties with the AR innovation, helpful books, videos, and tutorials are available.	4.0476	.80475
The majority of employees were so preoccupied that they had little time to devote to implementing AR innovation.	2.5238	.74960
Employees were encouraged to take time away from their regular work tasks to attend implementation meetings and training sessions at our company.	3.4762	1.03049
Employees that were more knowledgeable about AR innovation and its implementation had a better probability of being promoted, getting a promotion, or receiving a bonus in our organization.	3.6190	.97346
When our employees were stuck on a problem while using AR innovation, our company offered someone to provide assistance.	3.6190	.86465
Aggregate	3.42	.54

Source: Research Data (2021)

The findings indicated the respondents were neutral about the organization provided training to employees before AR innovation implementation took place (M=3.38 SD= 0.590). Employees were frequently provided with training during the AR innovation implementation phase (M=3.29 SD= 0.845). The respondents agreed with the statements helpful books, videos and manuals are available when staff have difficulties with the AR innovation   (M=4.05 SD= 0.805). The organization the more employees knew about AR innovation and its implementation, the better chances were of being promoted, rise or bonus. (M=3.62 SD= 0.973). Employees were urged to take time away from their regular work tasks to attend implementation meetings and training sessions (M=3.48 SD=1.030. When our employees were stuck on a challenge while using AR innovation, our company gave assistance. M=3.62 , SD=0.865).

The respondents disagreed with the statement that majority of employees were so preoccupied that they had little time to devote to implementing AR innovation. (M=2.52 SD=0.750)

 From the findings the respondents agreed that implementation policies and practices have significant influence on AR implementation with an aggregate (M=3.42 SD=0.54). It is evident, with good implementation practices and policies a good climate that encourages implementers' participation in implementation process for everyone feel part of the process and takes ownership of process.

4.4.5   Financial Resource Availability

The research investigated how financial resource availability influences the implementation of AR in media advertising in Kenya.

Table 7: Financial Availability

Statements	Mean	Std. Deviation
Money was readily available to fund the organization's special projects.	3.0476	.80475
We had to work within a tight budget to complete the project.	3.0000	.94868
Money has been readily available to support activities linked to the implementation of this project.	3.8095	.74960
Aggregate	3.29	.34

Source: Research data (2021)

From the findings, the respondents were neutral on the statement that money was readily available to fund the organization's special projects (M=3.05 SD=0.805). Financial resources for organizational investments have recently been reduced (M=3.81 SD= 0.750) and the organization cannot afford to spend money on anything but essentials (M=3.00 SD=0.949)

The findings indicated that the respondents moderately agreed that financial resource availability had positive influence on implementation effectiveness with an aggregate of (M=3.29 SD=0.34).   This contradicts previous findings by Klein et al., (2001) and Sawang & Unsworth,(2011) which revealed that the availability of finances is important in deciding the effectiveness of innovation implementation.

4.4.6 Implementation Effectiveness

The study sought to understand if AR technology was effective by meeting the user's expectations, delivered within specified time and budget.

Table 8: Implementation Effectiveness

Statements	Mean	Std. Devn
As a user of AR technology it gives me contentment and has met my expectations	4.4286	.59761
AR projects were delivered on specified time	4.0476	.58959
AR projects were implemented within the set budget	3.9048	.53896
Aggregate	**4.13**	**.44**

Source: Research data (2021)

According to the results in table 8.0, participants agreed that the parameters analyzed influenced the effective implementation of AR technology projects, as evidenced by the aggregate mean score of 4.13 and standard deviation of 0.44. The respondents agreed that AR projects were completed on time (4.05, 0.590). Sawang & Unsworth, (2011) posited a project developed on time as one of the variables that comprise a project implementation success.

The respondents agreed on the statements that AR technology gave them contentment and met their expectations (4.43, 0.598) and that AR projects were implemented within the set budget (3.90, 0.539). A project is effective when it has met the desired function, working as intended , developed on time and within budget and finds acceptability by users (Sawang & Unsworth,(2011).

4.5 Inferential statistics

4.5.1 Correlation Analysis

Correlation is used to assess the degree to which variables are related to one another. It is represented by r. The Pearson Correlation was used in this study to show the linear relationship between two variables. Results are between 1 and -1. Result of an r of 1 means there is a perfect positive correlation between the two variables, while a result of -1 indicates there is a perfect negative correlation between two values at all. A result of zero shows that there is no correlation between the two variables. A relationship was considered significant if the associated p value was less than 0.05.

Table 9.0 displays the Pearson Correlation data from this study and it reveals that there is an r value of 0.865 which is a strong positive correlation between top management support and implementation climate, there is an r value of 0.840 which is positive correlation between top management support and human resource availability. Therefore, commitment and strong top management support influences implementation climate and human resource availability positively.

The findings show that there is an r value of 0.627, which is a positive correlation between implementation policies and practices and top management support. This indicates that a positive

relationship exists. Hence, increase in the management support influences the implementation policies and practices positively. The r value of 0.157 indicates a positive correlation between the top management support and financial resource availability. Thus, their top management support leads to increase in financial resource availability.

Table 9: Pearson Correlation Coefficient Matrix

			Top management support	Implementation climate	Human resource availability	Implementation policies and practices	Financial availability
Top Management support		Pearson correlation	1				
		Sig.(2-tailed)					
Implementation climate		Pearson correlation	.865**	1			
		Sig.(2-tailed)	<.001				
Human resource availability		Pearson correlation	.840	461	1		
		Sig.(2-tailed)	.000	.163			
Implementation on policies and practices		Pearson correlation	.627**	.482	.770**	1	
		Sig.(2-tailed)	<0.001	.223	.002		
Financial availability		Pearson correlation	.157	.108	.107	.080	1
		Sig.(2-tailed)	.002	.138	.374	.189	
**. Correlation is significant at the 0.01 level (2-tailed).							

Source: Research data (2021)

4.5.2 Regression Analysis

The results in table 10.0 present the fitness model used in explaining the relationship between top management, implementation climate, implementation policies and practices, financial availability and the dependent variable implementation effectiveness. The five independent variables were found satisfactory in determining the implementation effectiveness. This was supported by the coefficient of

determination, R- square of 0.756. These findings indicate that the five independent variables studied contribute 75.6% of the AR implementation effectiveness. Therefore, it means the other factors not studied in this research contribute to 24.4% of the variations in the implementation of AR projects.

Table 10: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.622[a]	0.756	0.678	0.598

Source: Research data (2021)

Further, test results indicated that the model was a good fit for data (table 11.0). The results showed that the independent constructs significantly predict the dependent construct F (5, 59, p<0.005). The P value of the model was 0.001 which satisfied the rule p<0.005.

Table 11 Analysis of Variance (ANOVA)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.543	5	.109	12.487	.001[b]
	Residual	3.341	59	.223		
	Total	4.884	64			

Source: Research data (2021)

Beta coefficient in table 12.0 showed that top management support had a positive and significant effect on AR implementation (0.756, 0.002). This implied that top managers' support on the implementation of the AR project is crucial as they provide direction, provide adequate resources and motivate staff. The findings supported the previous findings by (Sawang & Unsworth, 2011) and (Wiechetek, 2012).

The study found that implementation climate had a positive and statistically significant influence on the implementation of the AR projects as indicated by beta values (0.841, 0.000).Klein et al., (2001) observe that an organizational climate that encourages implementers participation in a project ensures implementation success. This is due to the fact that everyone feels like they are a part of the process and take ownership of it. The employees regard the AR innovation use as a number one priority, not as an obstacle to work on their day-to-day tasks.

The study found out that human resource availability had a great and significant impact on AR project implementation (0.613, 0.004), implying the more skillful and competent employees are on a project the more likelihood of achieving effective implementation.

The study indicated that implementation policies and practices had a positive and significant effect on AR projects implementation (0.706, 003). Implying an organization providing training, technical support and incentives to use an innovation affects the project implementation effectiveness Sawang, (2008).

The study established that financial resource availability had a positive and significant effect on implementation of AR projects (0.327, 0.000). This indicates that organizations need adequate finances to offer training, hire consultants, buy hardware and software AR infrastructure and motivate staff. The findings support earlier findings by Sawang & Unsworth, (2011) and Klein et al., (2001) which found that the availability of finances is significant in determining the implementation effectiveness of technological innovation.

Table 12: Regression Coefficient

Model		Unstandardized Coefficients		t	Sig.
		B	Std. Error		
1	(Constant)	0.431	.542	4.123	.001
	Top Management Support	.756	.300	3.978	.002
	Implementation Climate	.841	.399	2.745	.000
	Human Resource Availability	.613	.284	3.461	.004
	Implementation Policies and Practices	.706	.461	2.999	.003
	Financial Resource Availability	.327	.090	3.626	.000

Source: Research data (2021)

As per the table above, the joint optimal model is shown below:

Yi= 0.431-0.756X1+0.841X2-0.613X3+0.706X4+0.327X5

Where;   X1= Top management

       X2= Implementation climate

     X3= Human resource availability

     X4= Implementation Policies & Practices

     X5= Financial resources availability

4.6 The Optimal Model

The study results show that all the variables were acceptable in predicting the AR technology innovation implementation effectiveness, none of them was rendered redundant.

Based on the outcomes, the following figure is the optimal model for the study. The revised conceptual framework is presented in figure 6.

Independent variables

Dependent variable

Financial availability

Organizational climate
Goal emphasis
Task support

Implementation Policies & Practices

Training

Reward & assistance

AR Implementation Effectiveness in media advertising
Budget
Delivery time
User acceptance/ resistance

Human resource availability
Skills & Commitment

Top management

Committed resources
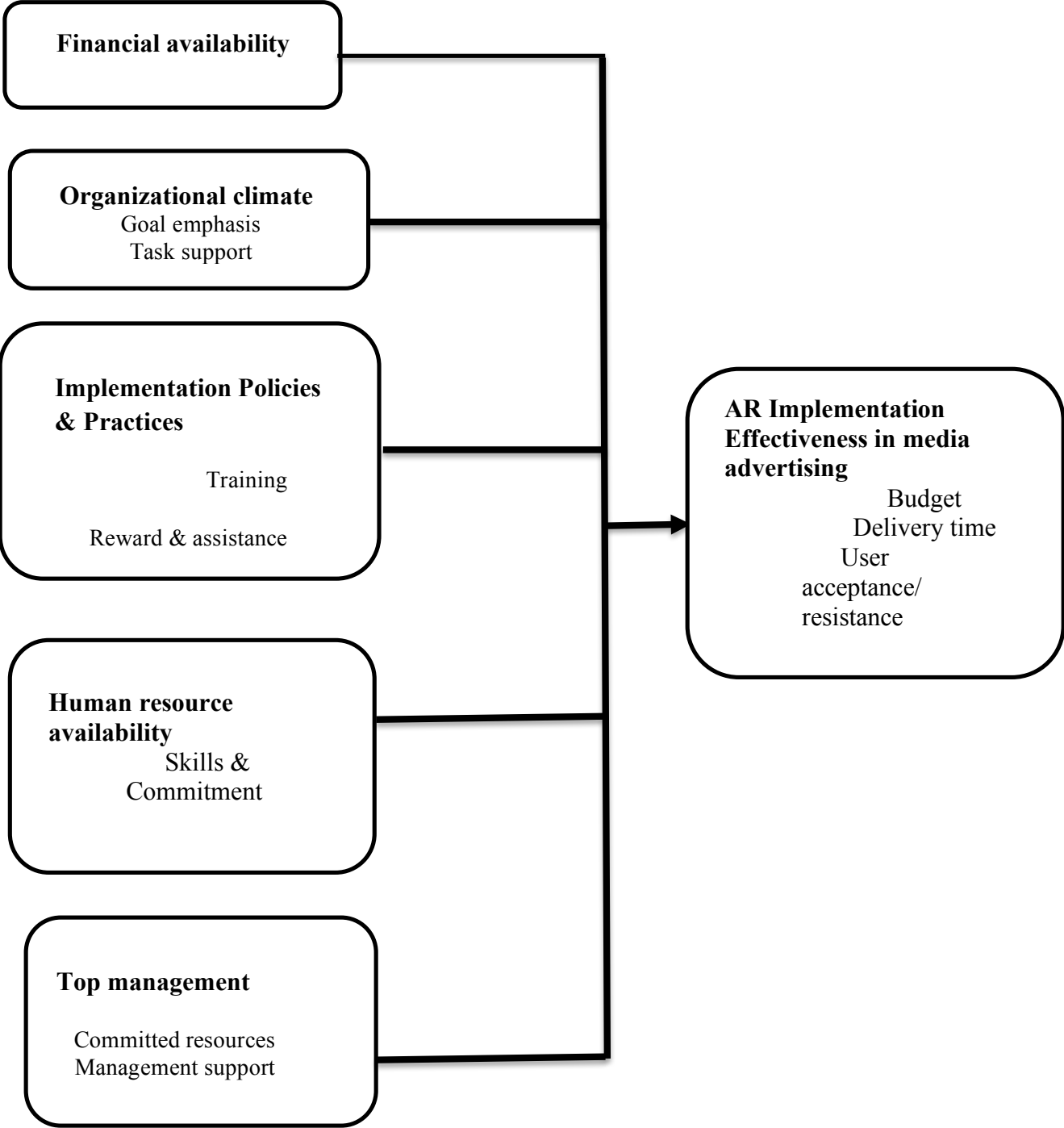Management support

Figure. 5: Optimal model for AR technology innovation implementation

4.7 Summary of Qualitative Findings

To get an in-depth knowledge and understanding about the use of AR in the media advertising industry in Kenya, the researcher used a qualitative interview approach.

AR is about emphasizing reality, basically overlaying something in real-time. It enables you to change the present surroundings in order to create a more stimulating and enriched experience. It is user friendly and easy to use.

4.7.1 Benefits of AR

Data from the interviews highlighted that print media and other traditional advertising methods have some limitations such as video and audio cannot be transmitted, linear communication that restrict interaction, static nature of the content and no context base of the contents.

AR technology offers a solution to the print ads limitations. It allows customers to explore multimedia contents with image, video, animation and audio to entertain and engage users. AR platforms enable marketers to update the ad's content on a regular basis by adding or altering original adverts. AR enables users to review context-based contents by browsing the location bound contents as visually overlaid on a real worldview. AR as well, enables a two-way interactive communication between consumers and the advertisement as it requires interaction between physical and virtual environments.

Nonetheless, with all the above advantages of AR ads, marketers do not know how to implement it. Thus, there is a need for more awareness to both marketers and consumers.

4.7.2 Challenges and Limitations to Implementing AR

The respondents highlighted that as AR technology is fairly new in the market, it has not reached its optimal potential and not enough content is out there. The design of the AR products need to be more practical. It requires more time for training and employees getting used to the applications and how to use the organization. There is a gap and lack of understanding by the company's senior management who tend to make the decisions.

4.7.3 Future of AR

AR is the next big thing and its potentials are never-ending. The market for AR will be huge in the next 5-10 years. Globally there is going to be many wearable technologies from companies like Microsoft, Sony and Samsung. There will be more focus on selling physical products with AR using physical applications such as watches, glasses and through social media.

Locally the technology will be adopted on a day-to-day basis for professionals first but also by society as a whole eventually.

CHAPTER 5.   CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary of the study findings based on descriptive analysis and literature review, relevant discussions and the recommendations.

5.1 Linking Findings to Objectives

Objective 1: Review AR technology as an experiential marketing tool in customer engagement

From the literature review in chapter 2, marketers may employ AR to create immersive brand experiences, create more interactive advertising, and let consumers to experience products and environments in unique ways. Thus, cultivate positive brand perception and word-of-mouth (WOM) among customers.

Objective 2: To analyze the determinants of AR technology innovation implementation effectiveness in media advertising in Kenya.

The key drivers of effective implementation of AR were identified to be top management support, implementation climate, availability of human resource, implementation policies and practices, and financial resource availability. The top management avails both financial and human resources for a project. They as well assist in getting user support in system implementation. For change to occur, the leadership team's commitment is vital, and they give constant direction and critical monitoring for overall performance.

The availability of skilled and qualified staff is critical to the successful implementation of technological innovation. Employees that are skilled and competent see change as an opportunity rather than a threat, and as a result, they are more willing to participate in it. When implementing new technologies, organization members may require training and capacity development to enhance their skills and capabilities. This may enhance work effectiveness.

Implementing policies such as development opportunities for employees, providing training would improve employee's skills and knowledge allowing them support an implementation of a technology.

A positive work environment stimulate how tasks are undertaken and the employees' behavior and attitudes. Where the implementation climate for AR technology implementation is positive and strong, the employees regard the technology use as a top priority not as a distraction from their day-to-day task performance.

Adequate funding resources for implementing a technology positively influences implementation effectiveness. Organizations spend a lot of money in providing training, incentive programs and higher pay package to their employees during implementation.

The current research confirmed the results of earlier studies, which identified some of these determinants key in implementation of innovations in different fields.

Objective 3: To propose a framework for effective implementation of AR by media advertising in Kenya.

The study adopted Sawang & Unsworth (2011) Implementation Effectiveness model as a suitable framework. This model integrate both financial and human factors in determining implementation effectiveness. It has been used to examine implementation of a range of innovation in different industries. The study found top management support, implementation climate, human resource availability, implementation policies and practices, and financial resource availability as drivers of effective implementation.

Objective 4: Apply the implementation framework for AR innovation in selected cases.

The respondents from the five media advertising firms indicated that the successful implementation of AR innovation was significantly influenced availability of training before and during implementation, participation in the implementation process, adequate financial resources, support from senior management and positive work environment.

AR contributes to the development of marketing, strengthening the interaction with the consumers, increasing sales and as well improving the image of the company.

According to the research, implementing AR innovation is a complex task that must take into account both organizational and human attributes. There is a need for more consumer awareness of the value and positive impact of AR technology to individuals and organizations. This is due to low uptake of AR projects by clientele and which some have been cancelled before completion.

5.2 Conclusion

AR technology is one of the advanced technologies that companies could use in their marketing communication to increase customer involvement and positive perception of the brand.

Implementation failure can be costly and it may harm a company's brand image and reputation. In order to realize effective implementation of AR in media advertising the five critical variables should be focused on the top management support, human resource availability, implementation policies and practices, implementation climate and financial resource availability.

However, future research incorporating additional factors can be conducted to improve the accuracy and dynamism of the proposed model.

5.3 Recommendations

The findings in this study can be of importance to top management to consider when implementing an innovation for the first time. An organization that has decided to implement innovations such as AR, should consider adapting a long term strategic plan which involves setting clear objectives and goals, availability of skilled staff, implementation budget and user involvement.

Organizations should establish communication channels via which users and other participants can seek information, discuss ideas, and participate in the design and execution of innovations. Thus, the users of an innovation should not only use it but as well realize organizational improvements from its use.

Top managers should cultivate positive insights of AR innovation implementation among organization members, thus resistance will be reduced. The employees should be aware of the AR innovation and its use; as well, the senior managers need to be open minded towards implementing AR.

Furthermore, the implementation of technical breakthroughs takes time and requires both human and financial resources. Top management should support initiatives that promote implementation effectiveness, such as choosing team leaders, developing supportive policies, clarifying communications, and committing from the start.

5.4 Limitations and Further Research

The research examined AR implementation in the context of Kenyan media advertising industry where AR technology implementation is still in an initial stage and no other similar studies have been done of AR technology in Kenya within the study area and therefore no validation.

AR is an emerging technology, there are not so many firms who are implementing it therefore the sample size is limited. Further research should therefore focus on other industries and as well on usability, acceptability and consumer habits of AR ads in Kenya.

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APPENDICES

APPENDIX A: INTRODUCTORY LETTER

Dear Respondent,

Hello,

My name is Jane Wambui Waithaka, a Masters student at the school of Computing and Informatics, University of Nairobi. My research is on **IMPLEMENTATION OF AUGMENTED REALITY IN MEDIA ADVERTISING IN KENYA.** You have been picked as a respondent because you participated in the AR projects in your organization.

I kindly request your participation in this data collection by filling in this survey questionnaire. The survey contains 6 sections with 30 questions. Filling in the questionnaire will take about 20 minutes, where your response will go a long way in making me fulfill my academic dream! I therefore thank you immensely for taking time to fill the questionnaire.

Note that any information provided will be treated with utmost confidentiality and at no time will it be used for any other purpose other than for this project.

If you have any questions regarding this study or would like additional information please contact the researcher on Email: wambui.waithaka@students.uonbi.ac.ke.

APPENDIX B: QUESTIONNAIRE

Section 1: Respondents' Information

1. Kindly indicate your management level at your organization.

   Senior management   ( )

   Middle level management   ( )

   Low level management   ( )

2. How many years have you been at this organization?

   1 -4 Years   ( )

   5 to 9 years   ( )

   10 to 15 years   ( )

   16 to 19 years   ( )

   More than 20 years   ( )

   There is no right or wrong answer to this survey. Please answer all questions. The success of the research depends upon your answering these questions openly, accurately, and as fully as possible.

Section 2: Scale Items

Top management support

The following statements refer to the top management association with AR implementation. Please indicate to what extent you agree with these statements. Where

1=strongly disagree, 2=disagree, 3=moderately agree, 4=agree, 5=strongly agree

M1: **Management support**	1	2	3	4	5
The top management was explicitly committed to the AR project from the initial to final stage					
There was adequate communication to the employees on the AR project					
The was a coordination mechanism to resolve cross functional conflicts					
On successful completion of the project the project team was given incentives and empowered					
M2: **Committed resources**					
Adequate budget was provided for the project					

The AR implementation was carefully planned and costed.					
The highly competent and motivated staff were appointed to work on this project					

Implementation climate

The following statements refer to the implementation climate association with AR implementation. Please indicate to what extent you agree with these statements. Where

1=strongly disagree, 2=disagree, 3=moderately agree, 4=agree, 5=strongly agree

M1: **Task support**	1	2	3	4	5
The management scans the environment for fresh ideas to better the project					
The employees care whether the AR implementation succeeded or failed					
Technical assistance is readily available for AR technology					
A realistic time frame was provided for the implementation of the project					
M2: **Goal emphasis**					
The employees are well informed about the objectives and the implementation process					
The AR implementation was carefully planned and costed.					

Human Resource availability

The following statements refer to the human resource availability association with AR implementation. Please indicate to what extent you agree with these statements. Where

1=strongly disagree, 2=disagree, 3=moderately agree, 4=agree, 5=strongly agree

M1: **Skills & Commitment**	1	2	3	4	5
The AR consultants selected to spearhead the implementation had the infrastructure, experience and reputation to support the organization's vision					
We had the relevant technological background and skill level for AR implementation					

There was no shortage of managerial talent to effectively introduce and implement AR innovation					

Implementation policies & practices

The following statements refer to the Implementation policies & practices association with AR implementation. Please indicate to what extent you agree with these statements. Where

1=strongly disagree, 2=disagree, 3=moderately agree, 4=agree, 5=strongly agree

M1: **Training**	1	2	3	4	5
Our organization provided training to employees before AR innovation implementation took place.					
Training was often available to employees during AR innovation implementation phase					
Helpful books, videos and manuals are available when employees have problems with the AR innovation					
Most employees had been so busy that they had little time to devote to the implementation of AR innovation.					
Our organization encouraged employees to take time off from their regular work tasks to attend implementation meetings and training sessions.					
M2: Reward & Incentives					
In our organization the more employees knew about AR innovation and its implementation, the better chances were of getting promoted, rise or bonus.					
Our organization provided someone to help when employees got stuck on a problem while using AR innovation.					

Financial resource availability

The following statements refer to the financial resource availability association with AR implementation. Please indicate to what extent you agree with these statements. Where

1=strongly disagree, 2=disagree, 3=moderately agree, 4=agree, 5=strongly agree

● **M1: Financial resource availability**	1	2	3	4	5
Money was readily available to pay for special projects in the organization.					
We have had to implement the project on a tight budget.					
In this project, money has been readily available to support activities related to the implementation					

Implementation effectiveness

The following statements refer to AR technology implementation effectiveness. Please indicate to what extent you describe your organization's experience with AR technology implementation experience over the past three years. Where1=strongly disagree, 2=disagree, 3=moderately agree, 4=agree, 5=strongly agree ；

● **M1: Implementation effectiveness**	1	2	3	4	5
As a user of AR technology it gives me contentment and has met my expectations					
AR projects were delivered on specified time					
AR projects were implemented within the set budget					

APPENDIX C: INTERVIEW GUIDE

The aim is to acquire the respondent's attitudes, opinions and perceptions of the AR technology in Kenya.

1. What is your perception of AR? What is AR to you?

2. What are the main factors that you consider when deploying AR features in your customer experience?

3. What are your main objectives/goals for deploying AR in your customer experiences?

4. To your understanding, how can the technology of AR be utilized to provide customer value? How can AR influence customer engagement?

5. What are the benefits and advantages of using AR? Why should advertising companies implement AR

6. What are your future predictions for AR within marketing and advertising industry?

7. What are the challenges and limitations to implementing AR in Kenya (marketing & advertising industry)

8. Any other suggestions or information about AR technology, which may be relevant?