

**DESIGNING A REAL-TIME DATA STREAMING
TECHNIQUE FOR ENHANCING THE
EFFECTIVENESS OF DESTINATION SELECTION**

by

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Abstract

The effectiveness of tour destination selection is dependent on pre-visit information sources. As competition increases in the tourism industry, destination organisations need to improve current destination selection processes. Research on current processes indicate that information sources accessed by potential tourists when making travel decisions may not be a true reflection of what the destination is offering. Any negative difference between perceived images during pre-visit and real images during the actual visit may result in poor destination reputation and dissatisfied customers.

This research addresses this gap by improving the process of destination selection using a real-time data streaming mediation technique as an additional pre-visit information source. The researcher adopted a social-technologist research paradigm and a design-science approach. The research process was executed in three phases; the first phase focused on gathering knowledge on destination selection and pre-visit information sources. The findings in Phase 1 were used in Phase 2 to develop and test the performance of a prototype. Phase 3 involved the evaluation of the prototype tool in a real-world setting.

One of the main outcomes of this research is the development of a destination selection framework using real-time data streaming mediation and a tool (<http://www.tourcampportal.com>) as proof of concept. This research has shown that real-time images are valuable pre-visit information sources when making travel decisions. Real-time images authenticate destination attractions, provide real-time availability of destinations, reduce speculations on destination attractions, and provide actual representations of destinations. The findings of this study contribute the body of knowledge and practice in the tourism sector and provide new areas for further research.

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Dedication

I would like to dedicate this research work to my loving wife and my two daughters for their love, encouragement and support during the entire period of this study.

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List of abbreviations

BPI	Business Process Improvement
DSP	Destination Selection Process
DMS	Destination Marketing Systems
DMO	Destination Marketing Organisations
ICT	Information Communication & Technology
ICTR	Combination of VIS, VCS, VTS, VRS
IT	Information Technology
NACOSTI	National Commission for Science, Technology & Innovation
QoS	Quality of Service
RTDST	Real-Time Data Streaming Technique
SDLC	System Development Life Cycle
SOA	Service Oriented Architecture
SERM	Software Engineering Research Methodology
SEO	Search Engine Optimisation
TAM	Technology Acceptance Model
TTF	Task-Technology Fit
TDI	Tourist Destination Image
TCP	Transaction Control Protocol
TOC	Theory of Constraints
TCC	Tourism Created Content
UCC	User Created Content
UK	United Kingdom
URL	Universal Resource Allocator
UNISA	University of South Africa
VIS	Virtual Information Space
VCS	Virtual Communication Space
VTS	Virtual Transaction Space
VRS	Virtual Relationship Space

Author's declaration

Student number: 48991120

I declare that “designing a real-time data streaming technique for enhancing the effectiveness of destination selection” **is** my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.



17/8/2016

SIGNATURE
(Mr)

DATE

CHAPTER 1

INTRODUCTION

This thesis investigates pre-visit information sources used by potential tourists during tour destination selection. The researcher developed a framework using a real-time data streaming technique as an additional pre-visit information source to address identified gaps. The final framework was implemented and evaluated in a real-world setting to determine its effectiveness and applicability.

1.1 Background to the research problem

Information Communication Technologies (ICTs) provide unique opportunities for innovative organizations to use E-tourism at both tactical and strategic level, and to redesign tourism products to address individual needs and to satisfy consumer wants (Bethapudi, 2013:70; Buhalis & Deimezi, 2004:103). ICT adoption creates value in an organisation and as a result has impact on sales, efficiency, business relationships and customer satisfaction (Fuchs, Hopken, Foger & Kunz, 2010:49).

Tourism sectors have embraced Electronic (E) tourism technology like online transactions and reservations, but limited resources and ever-competitive tourism industry have made it necessary for most organisations to make improvements on their business processes as a survival strategy. Business Process Improvement (BPI) involves discovering weaknesses in a business process and addressing them in subsequent passes (Aalst, Netjes, & Reijers, 2007:92-100).

Technology mediators are new developments that hold potential in the area of improving current Destination Selection (DS). "Facilitating the sharing of such experiences through videos provides access to realistic and imaginative tourist experiences and provides mental pleasure to viewers by stimulating fantasies" (Tussyadiah & Fesenmaier, 2009:37).

Potential tourists making an online reservation during pre-visits access destination information sources that provide information on what to expect at the selected destination. However, due to information sources gaps in existing destination selection, organisations market their tour destination to potential visitors with incorrect information with the aim of attracting more visitors. For instance, China Zoo People's Park in Luohe tried to pass off a dog as an African lion but unfortunately, the dog barked resulting in Zoo visitors complaining of management defrauding them of their money. One of the visitors Sharon Liu who had taken her six-year-old son to the Zoo said: "The Zoo is absolutely cheating us," Liu, had been charged \$2.45 (Mintz, 2013). This shows that any difference between pre-visit expectations and actual experience affects destination reputation and overall customer satisfaction.

Improving current destination selection using real-time data streaming technique as an additional information source was an important process improvement. Joe (2004:16) explains that a streaming process involves capturing media, encoding it to a streaming format before broadcasting through a streaming server where a client sends a request to the server on a computer network, and the server delivers the data that is interpreted by the client. This enables potential tourists to access real-time images on what they expect to see at the destination as an additional authenticated information source. In a survey of tourist destination image by Croy and Wheeler (2007:3), the greater the exposure to images of a destination, the greater the familiarity. Another study by Wang and Russo (2007:190) shows that Virtual Information Space (VIS) has the highest attraction information at 99.2% and organisations must map their future objectives by developing and deploying

Destination Marketing Systems (DMS) that are flexible and able to provide real-time data about the destination.

1.2 Statement of the research problem

Potential tourists who have the desire to travel access a variety of information sources that provide information on what they expect to experience at the selected destination, with a view to developing a holistic destination image. The amount of information available before a visit affects the choice of destination and experience at a selected destination (Jenkins, 2009:2).

During destination selection, potential tourists evaluate the destination image. "Destination image is the sum of beliefs, ideas, and impressions that a person has of a destination and it plays an incredibly important role for the touristic success of a destination" (Tasci & Gartner, 2007:413). Evaluation of destination image by potential tourists is based on organic and induced images, which create expectations, and once the tourist is on site, they compare the complex image with perceived image formed during pre-visit. Complex destination image is formed as a result of actual visit and influence evaluation of alternative destinations on the next occasion (Matos, Mendes & Valle, 2012:112; Croy & Wheeler, 2007:3).

However, there is a recognised gap in existing information sources used by potential tourists to develop a holistic destination image. When organisations market their destination attractions with incorrect information, travellers are hesitant to make decisions because of the lack of confidence with destination images that they have developed (Peng, Xu & Chen, 2013:281).

Prior studies by Matos, Mendes and Valle (2012:112) and Suelin (2010:2913) examined the formation of destination image based on organic images and induced images, and its effects on destination selections, but have not shown how real-time images from streaming technology-mediators can be used to create a holistic destination image. They also fail to provide a comprehensive relationship

between information sources and destination selection, prompting a call for additional studies.

Real-time data streaming mediation technique intends to address identified gaps, by providing real-time images to potential visitors on what they expect to experience at selected destination, for better decision-making. Preconceived images formed before visits to a destination may result in higher levels of destination reputation, customer satisfaction and destination loyalty (Bosque & Martin, 2008:559).

Destination images from available information sources create expectations and once the tourist is on site, they compare the real image with the perceived image formed pre-visit (Jenkins, 2009:2). The destination experience of tourists who make travel decisions based on incorrect information sources from organic and induced images is a non-realisation of expectations, which affects overall customer satisfaction and destination reputation. When the outcomes are not satisfactory, customers tend to go back to search for other alternatives (Suelin, 2010:2910). The framework was validated by development and testing of an artefact in form of a prototype to prove its applicability in a real-world setting.

1.3 Research questions

This study explored and identified the gaps in current tour destination selection and pre-visit information sources used by potential tourists to make travel decisions. The main research question of this study is: “How can a real-time data streaming mediation technique as an additional pre-visit information source enhance the effectiveness of tour destination selection?”

To address the main research question, the study undertakes the following sub-questions:

- What is the status of, and what gaps exist in destination selection and pre-visit information sources?
- What constitutes destination selection framework and real-time data streaming?
- How can a real-time data streaming technique be used to implement a destination selection framework?
- How practical and effective is the implemented tool and the resulting framework?

1.4 Research aim and objectives

The main aim of the study was to develop and evaluate a framework for improving destination selection using a real-time data streaming technique as a technology mediator. The main aim was supported by the following objectives:

1. To identify current destination selection frameworks and information sources.
2. To develop a destination selection framework based on a real-time data streaming technique.
3. To implement a real-time data streaming technique for enhancing the effectiveness of destination selection.
4. To evaluate the practicality and effectiveness of the proposed destination selection framework.

1.5 Rationale

The initial motivation behind this research was a desire to improve business processes in the tourism sector by developing an application that would assist a potential tourist to make informed travel decisions. According to Wang and Russo (2007:199), organisations must map their future objectives by developing and

deploying Destination Marketing Systems (DMS) that are flexible and able to provide real-time data about the destination.

According to Tussyadiah and Fesenmaier (2009:37), “the emergence of new media using multimedia features has generated a new set of mediators for tourists’ experiences” to influence consumer buying behaviour when selling destination products and services. Facilitating the sharing of such experiences through videos provides access to accurate, realistic and imaginative tourist experiences and also provides mental pleasure to viewers by stimulating fantasies and daydreams before their visit (Tussyadiah & Fesenmaier, 2009:38),

Travellers are increasingly turning to the Internet for information search using new models that are being deployed by destination marketers at tactical and strategic level. Travellers are still hesitant to make travel decisions because of a lack of confidence with advertised tour products and services (Peng, Xu & Chen, 2013:281). Destination marketers that need to improve their pre-visit destination image need to provide real-time images as a crucial information source to assist potential tourist in making informed travel decisions (Fuchs et al, 2010:49; Mulec, 2010:10).

Any organisation that fails to effectively communicate during decision-making stage with accurate pre-visit information will eventually not be able to compete with other destinations that are offering competitive services. There is an increasing need for destination marketing tools and approaches to tackle shortcomings in pre-visit information sources used in destination selection. To have an effective online DMS, institutions must adopt technologies that provide useful information and allow users to interact with that information for better decision-making (Fuchs et al, 2010:49; Wilson & Suraya, 2004:78).

The rationale behind the choice of streaming technology as additional information sources lies in consumer psychology. Destination marketers can adopt technologies that tap into potential customer emotions when they are selling destination products and services. Tourist Destination Image (TDI) from available information sources creates expectations. Once the tourist is on site, they compare the real image with perceived image during pre-visit (Jenkins, 2009:2). TDI is influenced by the knowledge the tourist acquired about the destination (cognitive component), the feelings or attachment that tourists develop toward the destination (affective component), individual reasoning, and emotional interpretations that can be either positive or negative (Conative component) (Bosque & Martin, 2008:558; Pena, Jamilena & Molina, 2012:266; Salma, 2007:36).

The final focus for the work became the development of a conceptual framework, and the development of a tool to implement and evaluate this framework to determine its effectiveness. According to Bevan and Petrie (2009:2), the effectiveness of an information system is the accuracy and completeness with which system users can accomplish specific objectives.

1.6 Conceptual and theoretical framework

The researcher identified and grouped theories and concepts that are relevant to this study. Incorporating tourism buying theory, image formation theory and consumer behaviour theory enabled the researcher to solve the underlying research problem.

Tourism buying theory begins with the need recognition stage that leads to information search from personal sources, commercial sources, and public sources. The customer journey framework starts from potential visitor first thinking about a vacation to planning, booking, experiencing and recalling the experience (Fabricius, 2007:31). Customer journey framework use organic and induced images. The framework does not provide pre-visit information sources used to make travel decisions during decision-making stage.

Image formation theory shows that destination image is influenced by cognitive component and affective component that results to cognitive component on individual reasoning and emotional interpretation that can be either positive or negative evaluation (Thompson, Hsio & Kosslyn, 2011:256). Consumer behaviour theory focuses on how individuals make decisions to spend their available resources on a consumption-related product or service (Abdallat & El-Emam, 2011:2). Decision-process stage is influenced by information input and external variables. The Engel-Kollat-Blackwell model fails to indicate the internal and external information sources that have a greater influence on consumers during the decision making stage.

Theory of Constraints (TOC) focus on what to change in the old process, 'to what to change to' and 'how to cause the change' in the new process (Pacheco, 2014:332). The researcher developed a new destination selection framework using streaming technology mediator. The framework implementation option involved development of a tool in form of tourcampportal.com to serve as prove of concept that the framework can actually be implemented. Technology Acceptance Model (TAM) was used to determine the perceived usefulness and ease of use.

1.7 Research paradigm

A paradigm is an all-encompassing system of interrelated practices and consists of the following components: ontology, epistemology and axiology. Paradigms guide research and determine acceptable modes of inquiry, forms of theorising and knowledge claims (Van Zyl, 2015:3).

The primary research paradigms that are adopted in Information Systems research are positivism, interpretive, critical and socio-technologist or develop-mentalist paradigms (Scotland, 2012:10; Flowers, 2009:2). The paradigm adopted for this study was socio-technologist or develop-mentalist. It allows creation of new theories and transfer of technology to the sectors that require them. The valuable contribution of technology is associated with scientific knowledge building that

takes place through conceptualising, designing, building of prototypes (Gregg, Kulkarni & Vinze, 2001:172-173).

Studies that result in the development of IS artefacts are likely to have a tangible effect on reality. Therefore, researchers should discuss its impact and potential value for both the Information Systems field and society (Van Zyl, 2015:17).

1.8 Research design and methodology

To achieve the goals of this research, a design-science approach was adopted, and in particular a revised framework of Nunamaker's multi-methodological approach (Venable, 2006:185). Design-science is a complement to the natural science approach and is particularly relevant for contemporary IS research since it helps researchers to determine the role of the IT artefact and its relevance in IS studies (Arnott & Pervan, 2012:257).

The research design framework for this study consists of four components: theory building, solution technology invention, artificial evaluation and naturalistic evaluation. According to Hart and Gregor (2010:68), theory building contributes to human knowledge and the IT artefact is intended to solve identified organisational problems. This approach provides valuable feedback, which enables the researcher to have a better understanding of the research area and to prove by demonstration that the conceptual framework can be implemented in a real-world setting (Venable, 2006:185).

The evaluation phase provides essential feedback to the construction phase as to the quality of the design process and the design product under development. A design artefact is complete and effective when it satisfies the requirements and constraints of the problem it was meant to solve (Hevner & Ram, 2004:85).

The research process took place in three phases. Phase 1 addressed research objective one and focused on acquiring knowledge on the current destination selection framework and pre-visit information sources. Phase 1 findings together with findings in the literature review informed the development of conceptual framework and set part of requirements for tool development. Phase 2, involved the development and testing of the prototype. Phase 3 involved a practitioner evaluation of the developed tool.

The prototype was evaluated using Delone and McLean's (2003:12) information system success model to determine its practicality and effectiveness. In order to evaluate a real-time data streaming technology mediator as an additional information source, the researcher found it necessary to focus on system quality, Information quality, user satisfaction, perceived usefulness, individual impact during pre-visit before they make travel decisions.

1.9 Research scope

The research focused on destination marketing organisations that are in Kenya and the respondents were from Ministry of Tourism in Kenya, Kenya Wildlife Service (KWS) and The National Museum of Kenya (NMK). The respondents comprised of tourism officers, destination marketers and IT professionals from selected organisations. The researcher improved the validity of the performance testing by adding streaming destinations that had existing public IP cameras available online and terms and conditions of use allowed third party to reuse without modifying the settings of the cameras.

1.10 Research contribution

This research intends to make theoretical, methodological and practical contributions in the field of Information Systems. According to Avgerou (2000:5), the Information Systems field has been very influential on theory, methodology and practice by maintaining close links with professional practitioners when developing

new knowledge, during design, deployment and management of implemented system in organisations.

1.10.1 Contribution to theory

The major theoretical contribution of this study is the development of conceptual framework for destination selection using Real-Time Data Streaming Technique (RTDST). Additionally, RTDST is a theoretical contribution from this study and it refers to technology-based tools that are capable of streaming images in real-time. This study extends the current literature by shedding more light on the effects of pre-visit information sources in destination selection.

The initial conceptual framework in Figure 3.9 was used in Phase 1 to get practitioners' inputs. The final conceptual framework in Figure 5.6 emerged after framework building and validation and had additional components of technology mediator, conative component, virtual communication space and multilingual virtual information space. The extended 'conative' component allows users to perform emotional interpretations resulting from cognitive and affective components. After travel decisions are made, a multilingual virtual communication space is used as a language mediator to interact directly with the selected destination itineraries before making online reservations and enquiries.

This study made improvements to customer journey theory and destination image theory by introducing new additional information source that intends to create a holistic Tourist Destination Image and its influences during decision-making stage. This study further made improvements to Destination Marketing Systems (DMS) that are used in the tourism industry for communication, information, marketing, transactions, and customer relation management (Wang & Russo, 2007:189).

1.10.2 Contribution to methodology

The researcher developed a research process to address the aim of this study. This research process allowed the researcher to have a close contact with the practitioners to grasp what was going on in the tourism sector. Framework implementation architecture is another contribution as depicted in Figure 6.6 and it was used to guide implementation of conceptual framework. It shows a method for integrating various components necessary to effectively implement the conceptual framework in cost-efficient way. In this thesis, UML for the prototype were designed in Chapter 6 (use case and sequence diagram). The designs can be used to visualise and construct any other artefact that may be developed based on this conceptual framework.

The Researcher made improvements to Delone and McLean Information System success model (2003:12). Additionally, the researcher demonstrated use of software testing tools to conduct performance testing of web-based information systems.

This study demonstrated the importance of Search Engine Optimisation (SEO) and implementation of SEO techniques such as Meta description and keywords. The researcher further demonstrated that language translators plays an essential role in enabling the portal to have a global reach by providing the same information in different languages.

1.10.3 Contribution to practice

The tangible outcome of this research is a developed artefact in the form of a web application (tourcampportal.com). Jointly, the proposed conceptual-theoretical framework and the artefact provide a guideline for destination marketers to, holistically understand the influence of pre-visit information sources on destination selection. The solution also provides a cloud-based platform for tour destination marketers to publish destination attractions.

The prototype using real-time mediation tool provides pre-visit experiences to potential tourists on what they expect to experience during visit as a way of tapping to their emotions before making travel decision. Analysis on prototype evaluation shows that streaming technology, as additional information source in destination selection is an excellent process improvement and there is a positive relationship between real-time data streaming technique and destination selection.

1.11 Ethical considerations

Ethical considerations were taken into account in this study as per UNISA requirements and Commission for Science, Technology & Innovation in Kenya. This research had the approval of the principal secretary of Ministry of Tourism in Kenya. Permission to conduct this study provided on 29th May 2014 by the College of Science, Engineering and Technology's (CSET) Research and Ethics Committee (CREC). The researcher conducted this research in a manner that is respectful of the rights and integrity of those who volunteer to participate, as stipulated in the UNISA Research Ethics policy. Appendix 1 shows permission to conduct research project.

National Commission for Science, Technology & Innovation (NACOSTI) provided research clearance in Kenya and they gave research permit numbered NACOSTI/P/14/8677/1756 to allow the researcher to carry out data collection for

Phase 1 and Three and to implement the prototype as per research process. Appendix 2 shows authorisation letter by the Ministry of Science and Technology in Kenya.

During evaluation phase, the researcher ensured participant login parameters to the prototype were secure and confidential not to be used for any activities other than for evaluation of the prototype. The researcher ensured that all research participants understood the objective of the study and the nature of the data collection process. The Phase 1 and 3 questionnaires pointed out, explained the objectives of this study, and assured all the respondents that their feedback would only be used for this study.

1.12 Thesis outline

The thesis is organised in eight Chapters:

Chapter 1: Introduction: This chapter outlines research background, research problem, research questions and objectives, research paradigm, methodology adopted for this research, rationale this research, ethical consideration and thesis structure.

Chapter 2: Literature review: This chapter presents theoretical foundation through a review of related literature review on application of ICT in tourism destination selection, consumer buying behaviour, consumer psychology, Information sources, information search behaviour and technology based mediators.

Chapter 3: Theoretical and conceptual framework: This chapter presents theories and concept that are relevant to this study that aimed at resolving underlying research problem. The conceptual framework was derived from empirical studies and after validation of framework in Chapter 5.

Chapter 4: Research design and methodology: This chapter discusses the research philosophy, methodology and research process adopted to achieve research goals. Ethical consideration, data collection and analysis methods are also presented.

Chapter 5: Framework building and validation: This chapter analyses and presents framework building and validation results, it introduces the findings of quality of proposed framework and appropriate methods for evaluating the practicality and effectiveness of proposed framework and tool. This chapter addresses research objective two, and marks the end of Phase 1 with an improved conceptual framework after incorporating practitioner's inputs.

Chapter 6: Prototype design and implementation: This chapter presents framework implementation option, prototype design and implementation of final conceptual framework to serve as proof of concept that the proposed framework can actually be implemented to address research objective three. Phase 2 ends after testing the performance of developed prototype. The undertakings of Phase 3 are in the last two chapters.

Chapter 7: Framework evaluation: This chapter introduces evaluation process adopted for this research and presents evaluation results of implemented tool to determine its practicality and effectiveness to address research objective four.

Chapter 8: Conclusion and future work: This Chapter consists of research summary derived from all the chapters, research contribution and suggestions for future work.

CHAPTER 2

LITERATURE REVIEW

The purpose of this chapter is to review and synthesise existing and related literature in the field of destination selection. The researcher used the hermeneutic framework for the literature review process; hermeneutics provide a rich theoretical foundation with its two interrelated cycles of searching and acquisition, and analysis and interpretation (Boell & Cecez-Kecmanovic, 2014:264). Inner searching and acquisition circle in hermeneutic framework enabled the researcher to identify new relevant publications, analysis and interpretation circle to classify, assess, and to develop argument. The use of hermeneutic circle enabled the researcher to explore and interpret destination selection, information sources, consumer psychology and Tourist Destination Image (TDI) in an attempt to make clear of area under study.

The first section starts by explaining how ICT is enabling Destination Marketing Organisations (DMOs) to improve on business processes. The second section is the main body, which starts by exploring current destination selection and the customer journey, which start, from the need recognition to post visit. Consumer buying process and behaviour explain how tourists make decisions to buy destination products and services. The section for information search behaviour shows how demographic characteristics and situational factors influence information source preference and trip outcomes. Consumer psychology section shows creation of images based on information sources (organic and induced images) which influences decision-making.

The last section is on Destination Marketing Systems (DMS) and technology based mediators, which focus on how technology is used as a mediator. Data streaming model shows a technique that is incorporated in destination selection to provide real-time images to potential tourist as an additional information source. Table 2.3 on empirical studies summarises the important aspects from literature review and

outlines the gaps, tools to support destination selection, and conclusions of each area of study.

2.1 ICT and tourism

ICT innovations are enabling tourism organisations to improve on business processes in tourism supply chain. Areas that are mainly affected by improving supply chain processes are on destination marketing, logistics and service provision. Majority of hospitality executives are now appreciating the significant added benefits of using technology in tourist supply chain (Law, Leung, Lee & Andy, 2012:11; Rodriguez & Espino, 2008:368).

World Bank report by Christie, Fernandes, Messerli and Twining-Ward (2013:10), on “harnessing tourism growth in Africa” showed that countries such as Egypt, Kenya, South Africa, Ghana and Mauritius are developing new tourism products and innovations in ICT for sustainability of the sector. The study by Hinson and Boateng (2007:2) on Ghanaian tourism firms noted that, for organisations to be successful, “there is need for them embrace electronic practices into the management of their tourism business”.

The Kenyan economic blueprint, Vision 2030, covering the period 2008-2030, lists tourism as one of the six key economic sectors. Tourism sector in Kenya intends to be the leading destinations in the world that is providing ‘high-end, diverse, and distinctive visitor experience that few of her competitors can offer’ (Vision, 2030:10). A study by Waema (2013:1) on “the impacts ICT on the value chain of the tourism sector in Kenya” indicated that the majority of the destination marketers are using ICT platforms such as “online reservation systems, online marketing systems, online payment systems and social media to market their packages and wait for inquiries from clients who are globally dispersed”.

However, for the tourism sector in Kenya to make significant socio-economic contributions, the cost of developing ICT platforms and the high cost of broadband need to be addressed (Waema, 2013:1).

Tourism industries are realising their ability to deliver their services and product information directly to consumers (Shanker, 2008:1). Even though tourists have access to technologies that enable faster access to information, it does not mean they will use technology wisely (Minghetti & Buhalis, 2010:49). Law et al (2012:12) explains that, due to an increase of sophisticated customers who want better services in the entire supply chain, managers are forced to adopt best practices technologies to meet present and future business needs. It is important to consider the four groups of destinations namely, high digital access, upper-digital access, medium-digital access and low digital access destinations, before deploying any ICT infrastructure in tourism industry (Law et al, 2012:12).

2.2 Destination marketing organisations

Destinations around the world are now changing the models of marketing by implementing new strategies for better effective destination branding. The new marketing models are creating a better link of what the destination is marketing and what is available at the destination “in order to be able to compete with other old and new destinations that are offering competitive products” (Fyall & Leask, 2006:50).

Destination management is the coordinated management of all the elements that make up a destination which consist of attractions, amenities, access, marketing and pricing (Fabricius, 2007:16). To have an effective online DMO, institutions must adopt technologies that provide useful information and allow users to interact with that information for better decision-making (Fuchs et al, 2010:49; Wilson & Suraya, 2004:78).

Figure 2.1 below highlights components that make-up a destination. Adopting destination management enables organisations to have a competitive edge by establishing strong and unique positions to enable them deliver quality experiences and superior value for money.

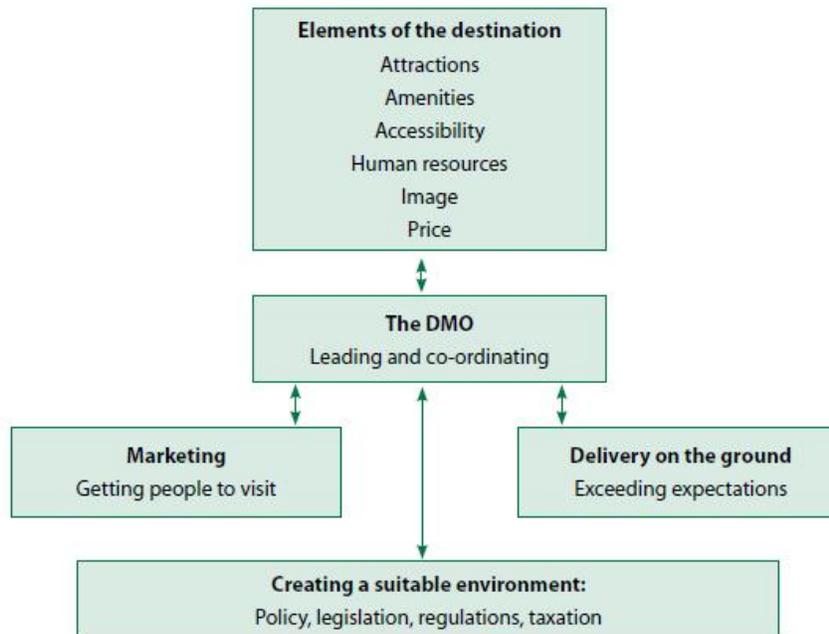


Figure 2.1: Destination marketing (Fabricius, 2007:16)

During the entire processes of destination management, communication with potential visitors during pre-visit, during visit and post-visit is the main lifeblood of many destinations (Fyall & Leask, 2006:59). Destination Marketing Systems (DMS) are used in the tourism industry for communication, information, marketing, transactions, and customer relation management (Wang & Russo, 2007:189).

Destinations have different resources in terms of infrastructure and natural resources. Information received during pre-visit influences cognitive component of image formation process and eventually the choice of destination to visit. According to McCartney, Butler and Bennett (2008:184), perception of a destination are a result of personal realities that drive someone to travel to that

destination and exposure to various information sources play a role during pre-visit, during visit and after visiting.

There is also need for destination governance where government bodies in charge of tourism need to set rules and develop new policies for marketing destinations by involving all institutions. A destination with strong tourist enterprises has a different form of leadership and administration; it is therefore necessary to ensure that any destination organisation embraces destination governance in order to have a successful destination organisation (Beritelli, Bieger & Laesser, 2007:98).

2.3 Destination selection

Destination selection involves activities that potential customers perform during pre-visit, during the visit and post-visit (Croy & Wheeler, 2007:3). Figure 2.2 below depicts customer journey framework that starts from potential visitor first thinking about a vacation to planning, booking, experiencing and recalling the experience.

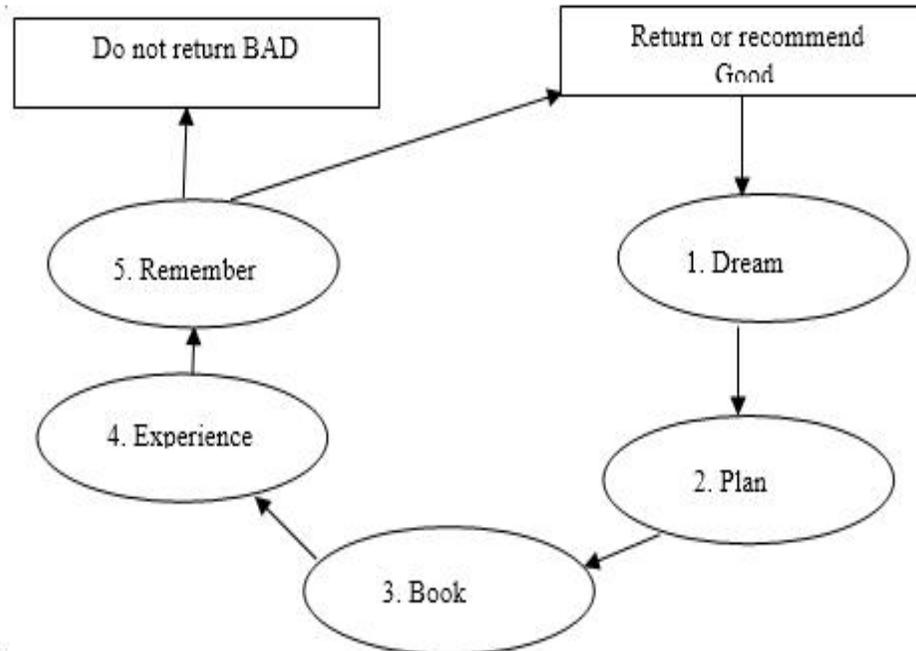


Figure 2.2: Customer journey framework (Fabricius, 2007:31)

According to Djeri and Plavsa (2007:71), the decision making process in destination selection starts when a potential tourist becomes aware of a certain need. If the need is strong enough or it has been transformed into a desire, a potential tourist is motivated to start the search for information on what the tourist destination offers.

The strengths of this customer journey framework is its influences of information sources during creation of destination image from induced and organic images. The main weakness is that, after tourists make decisions to travel to a selected destination. Their experience at the destination may lead to realisation or non-realisation of expectations. Decision-process stage is influenced by information input and external variables. When the outcomes are not satisfactory during post purchase evaluations, customers tend to go back to search for other alternatives (Suelin, 2010:2910).

The model of travel-buying behaviour consists of steps that potential tourist take from need recognition to travel outcome, Mathieson and Wall (1982:95), suggested a linear five-stage model of travel buying behaviour as depicted in Figure 2.3 below.

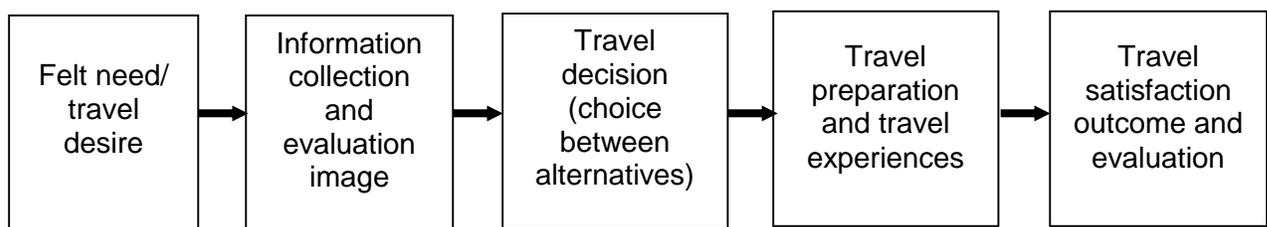


Figure 2.3: Model of travel-buying behaviour (Mathieson & Wall, 1982:95)

The process begins with the need recognition stage that leads to information search from personal sources, commercial sources, and public sources. Potential tourists are always in a position to make choices between two or more alternatives. The choice itself represents a desire to satisfy certain needs and wishes by

choosing a particular tourist destination. However, to be able to make rational decisions, potential tourists need adequate information (Djeri, et al, 2007:73).

Tourists who are visiting a destination for the first time may require a longer time to make decision regarding choice of destination because 'first timers' often go through complex problem-solving technique. Tourists who re-visit a destination often use less time in making decisions because they already have some experience with the destination (Ezebilo, 2013:14). Thus, it is important for destination marketers to have more understanding of tourist preferences to package destination information that meet expectations.

The final two stages include travel preparation and travel experience, travel satisfaction outcome and evaluation. Budeanu (2007:500) explains that, travel experience reshapes personal perception about the destination and may influence subsequent tourist choices.

After travellers have returned home, they often like to share and exchange their travel experience. In this context, ICTs also provide a very effective mechanism for consumers to share their experience or to air their complaints. "In order to provide a channel for customers to leave feedback and complaints, tourism organisations should have an e-complaint handling section on their websites so that there is a proper channel of Communication between management and unsatisfied customers" (Buhalis, Leung & Law, 2011:209).

As mentioned above, potential tourists are faced with a wide range of travel choices. "To be recognised and to attract their rightful share of the global tourism market it is of critical importance for destinations to establish a competitive advantage to out-compete other destination" (Mulec, 2010:14).

The models also show that potential tourists collect and analyse information from available information sources, and "gradually reduced range of alternative

destination and eventually select the best possible choice. Potential tourists' final choice is based on evaluation of the advantages and disadvantages of each possible outcome" from developed TDI. The researcher improved the customer journey framework by applying the Theory of Constraints (TOC) which focuses on what to change in the old process, 'to what to change to' and 'how to cause the change' in the new process (Pacheco, 2014:332).

2.4 Consumer buying behaviour

Consumer buying behaviour focuses on how individuals make decisions to spend their available resources on a consumption related product or service (Abdallat & El-Emam, 2011:2). Consumer buying is influenced by cultural, social, personal, and psychological factors. Therefore, DMOs need to understand consumer behaviour when developing, promoting, selling tourism products as depicted in Figure 2.4 below (Choibamroong, 2005:2; Palani & Sohrabi, 2013:20).

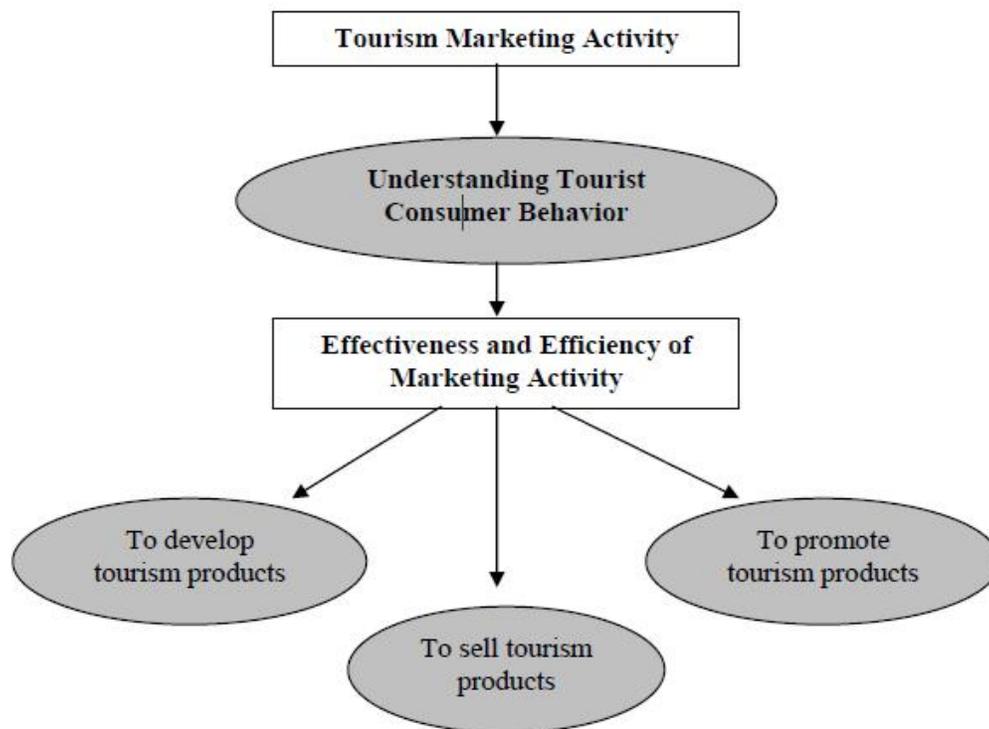


Figure 2.4: Understanding tourist consumer behaviour (Choibamroong, 2005:2)

The model shows that destination marketers need to develop effective and efficient marketing activities to promote tourism products. Traditional marketing approaches are not sufficient any more to satisfy modern, complex and dynamic tourist demands. Strong partnerships between different stakeholders – especially between private and public sectors – are necessary in order to be successful, competitive and to achieve its desired market share in the market where new destinations appear every day (Mulec, 2010:21).

Understanding tourist consumer behaviour is of great importance in determining the marketing activities to be adopted by DMOs. Consumer behaviour show that potential tourists collect and analyse information from available information sources. Potential tourists' final choice is based on evaluation of the advantages and disadvantages of each possible outcome from developed Tourist Destination Image.

Advertisers need to seek greater communication effectiveness when marketing destination products to create a cognitive and affective response. Greater information processability, which is the ease with which consumers can interpret information, can produce a positive affective response that is transferred to the product being evaluated. When information is presented in incomplete and incompatible format, it may interfere with potential tourist ability to carry out imagery and analytical information processing (Thompson & Hamilton 2006:531; Ruiz & Sicilia, 2004:657). It is therefore necessary when developing information for marketing activities for to ensure that the content is 'complete' for users to easily access and understand the message being communicated by advertisers

The knowledge of information source, information search and formation process is useful in this research as it influences decision-making process, which is discussed more precisely in the next sub-section.

2.5 Information source and formation process

Tourists who wish to travel acquire information about destinations from information sources available with a view to developing a holistic imagery (Jenkins, 2009:2). Thompson, Hsio and Kosslyn (2011:256) explain that visual mental imagery involves creation of mental image, interpreting and transforming visual internal representation. As depicted Figure 2.5 below, Tourist Destination Image (TDI) is influenced by cognitive component and affective component that results to conative component on individual reasoning and emotional interpretation that can be either positive or negative evaluation (Bosque & Martin, 2008:558; Pena, Jamilena & Molina, 2012:266; Salma, 2007:36).

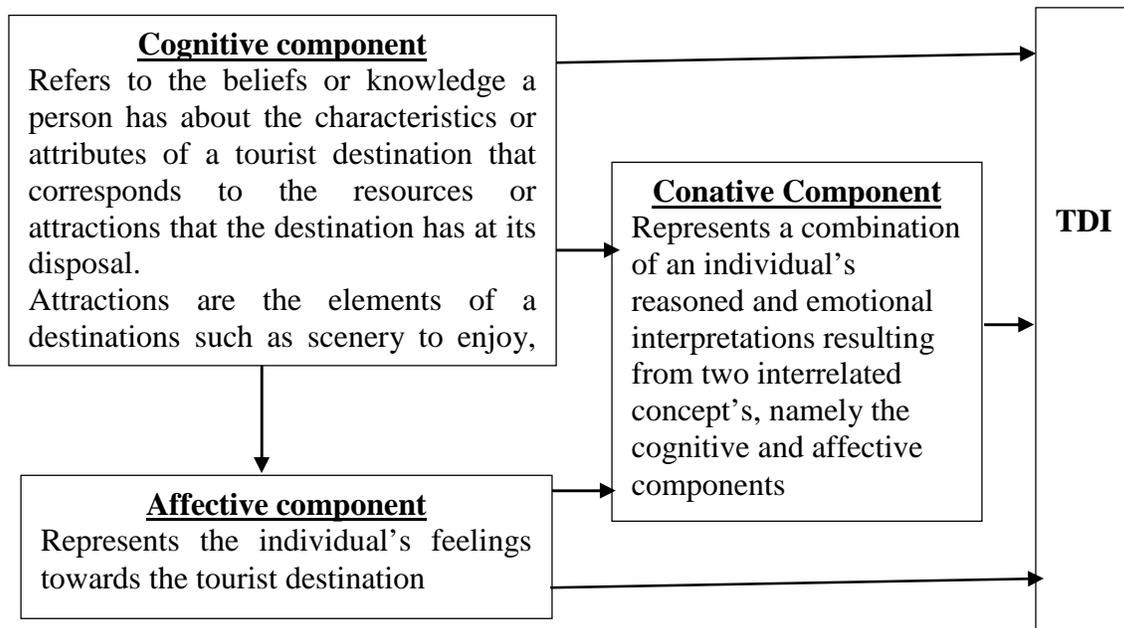


Figure 2.5: Components of tourist destination image (Pena et al, 2012:263)

Information received during pre-visit influences cognitive component of image formation process and eventually the choice of destination to visit. According to McCartney, Butler and Bennett (2008:184), perception of a destination are a result of personal realities that drive someone to travel to that destination and exposure to various information sources play a role during pre-visit, during visit and after visiting. TDI is influenced by cognitive component and affective component that results to conative component on individual reasoning and emotional interpretation that can be either positive or negative evaluation (Bosque & Martin, 2008:558; Pena, Jamilena & Molina, 2012:266; Salma, 2007:36).

Potential tourists frequently have limited knowledge about a destination that they have not previously visited. This knowledge is often confined to symbolic information acquired either from media or from their social group. Therefore, DMOs that need to improve their brand must provide destination image as a crucial source of information. Research findings show that the majority of tourists access information about a destination through word of mouth and very few from online resources (Hanlan & Kelly, 2005:164; Tasci & Kozak, 2006:300).

Table 2.1: Destination image information sources (Hanlan& Kelly, 2005:167)

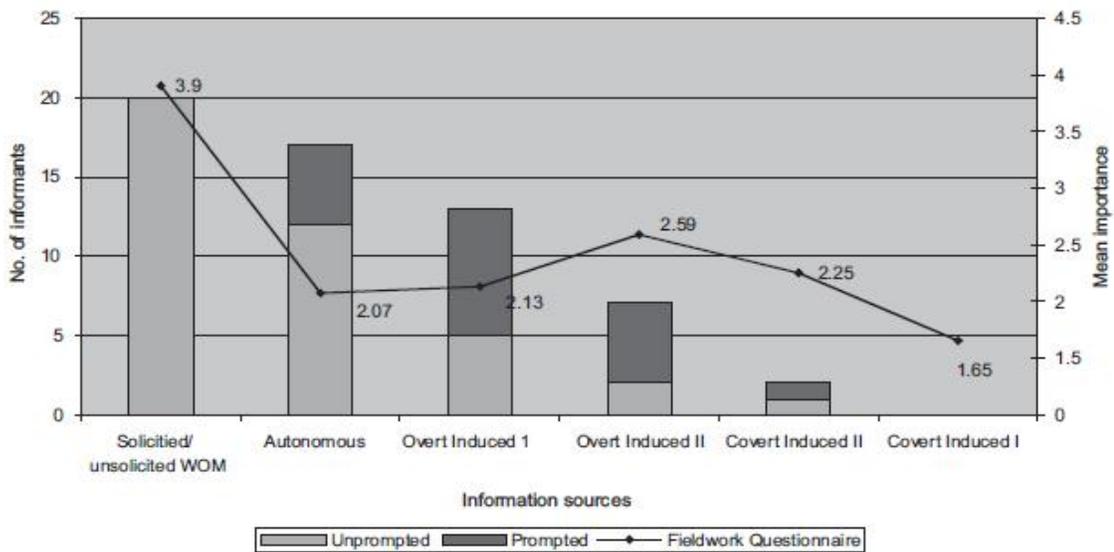


Table 2.1 shows results of destination information source. Word of Mouth (WOM) had the highest number of informants. Informants also acknowledged that agents and intermediaries had influenced their travel plans by providing little image-rich information on each destination.

Research findings show that DMO's should go beyond traditional mainstream media when they are communicating their brand image. Destination marketers create a brand identity for their product and brand image is what the consumer perceives of it. Destination brands give visitors an assurance of quality experiences, reduce visitor search costs and offer a way for destinations to establish a unique selling proposition (Schaar, 2013:3). According to Fyall, Leask (2006:59) and Schaar (2013:3), organisations that fail to effectively communicate their brand image to potential tourists will eventually not be able to compete with other destinations that offer competitive services.

There is a need for more effective branding of destinations. "*The battle for customers in tomorrow's destination marketplace will be fought not over price but over hearts and mind* (Freire, 2007:1)." What persuades tourists to visit one place over another is the emotional connection they feel towards the destination (Schaar, 2013:3).

2.6 Information search behaviour

The growing importance of online information search in travel and the use of search engines in the travel-planning context has become an increasingly important topic in tourism (Fesenmaier, Xiang, Pan & Law, 2011:588). "Tour travellers are increasingly turning to the Internet for information search, although many are still hesitant to make travel decision because of lack of confidence with advertised tour product and services" (Peng, Xu & Chen, 2013:281).

Figure 2.6 below shows the tourist information search behaviour model. Demographic characteristics and situational factors are used to represent some of the environmental and individual factors that affect consumer behaviour in general and information search behaviour (Luo, Feng & Cai, 2004:17).

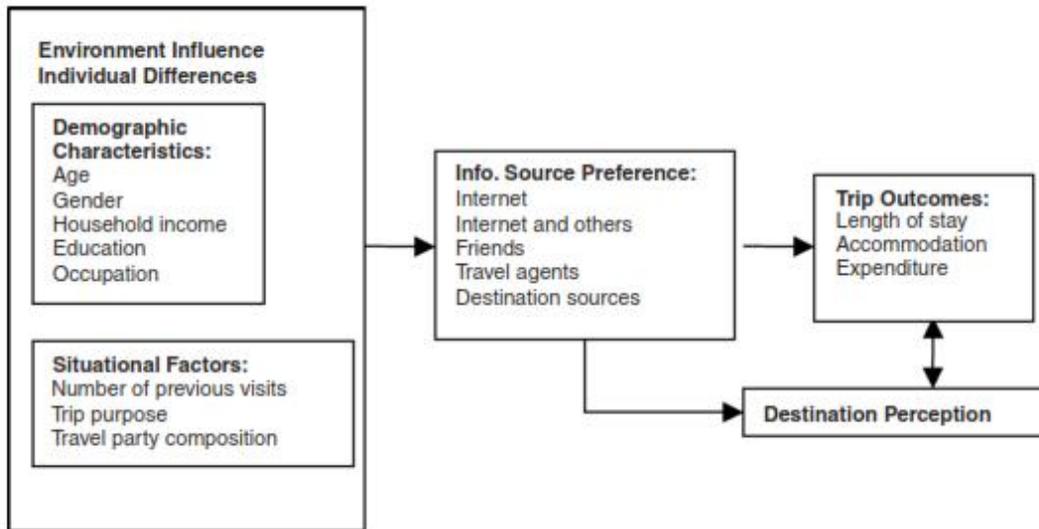


Figure 2.6: Tourist online information search behaviour (Luo et al, 2004:17)

It is evident that information search behaviour influences trip outcomes and the greater the match between the pre-purchase and after-purchase destination image the more likely that the tourist has favourable perceptions toward that destination (Luo et al, 2004:17).

2.7 Consumer psychology

Consumer psychology is necessary in determining the success of destination selection. Image of a destination is created through organic, induced and real images. Organic images are formed as a result of life experience that may or may not have any relation with tourism (Croy & Wheeler, 2007:3).

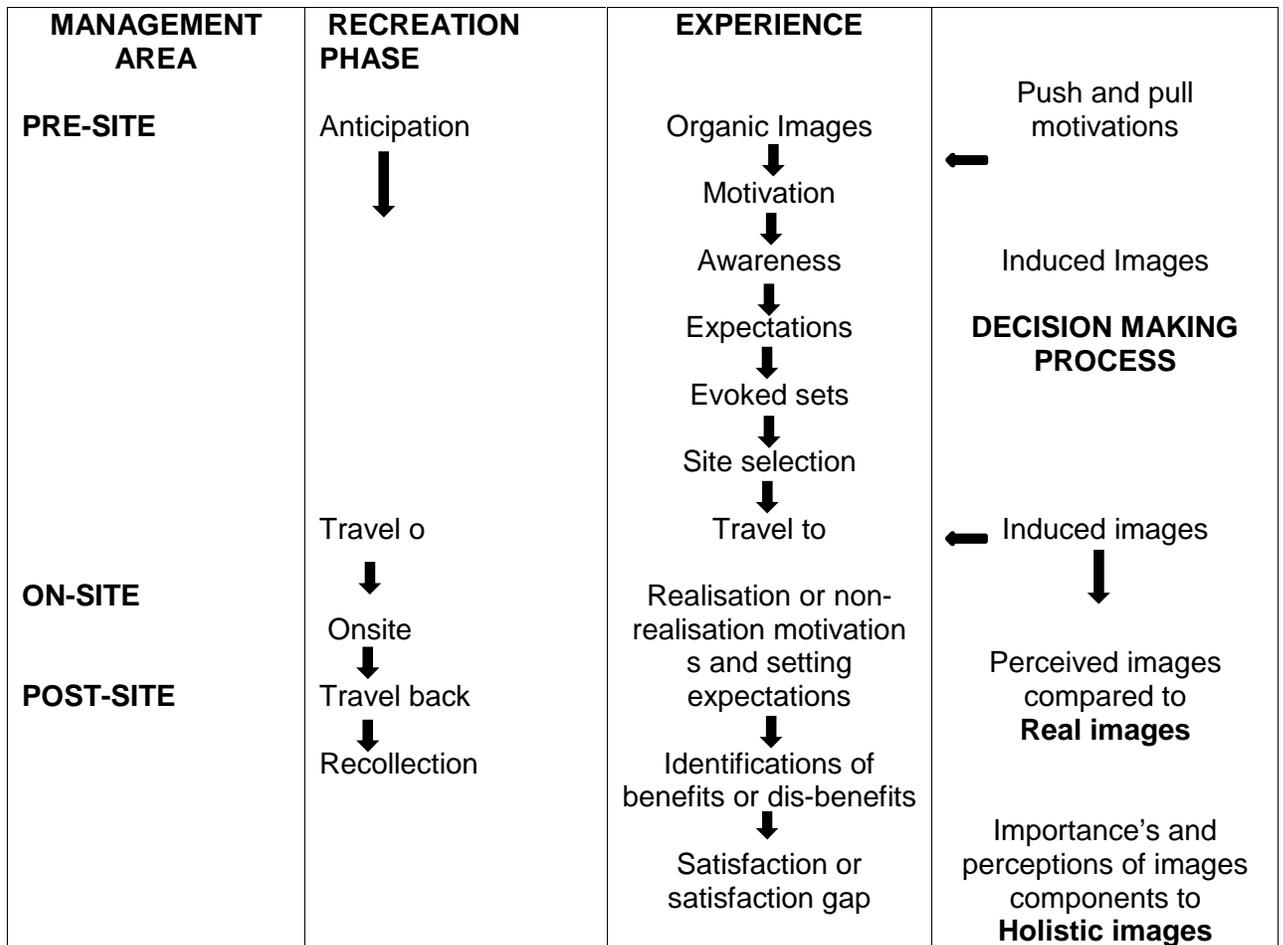


Figure 2.7: Image formations and role as the basis to the satisfying experience (Croy & Wheeler, 2007:3)

Figure 2.7 above shows the image formation, induced images are formed as a result of active search for information on various destinations while real images are those images that are formed during experience of the destination. Sarma (2007:37) observes that cognitive wisdom is an important tourist source of information sources, as it cannot be manipulated.

The decision-making process is influenced by information input and external variables. When the outcomes are not satisfactory during post purchase evaluations, customers tend to go back to search for other alternatives (Suelin, 2010:2910). Bosque and Martin (2008:559), proposed a model on tourist satisfaction and cognitive affective model, where results indicated that image influences, expectations, destination reputation and customer loyalty, and the

“more positive the preconceived image of a destination the higher level of loyalty to the destination”.

Destination loyalty is created from service quality destination image perceived value and customer satisfaction. The image presented to a tourist during pre-visit period influences tourist decision-making process (Kim & Han, 2012). It is therefore, necessary to have Destination Marketing Systems (DMS) that influence decision making when potential tourists are buying destination products or services.

2.8 Destination Marketing Systems

It is worth exploring marketing systems that are used as primarily a marketing tool for promoting destinations. Conceptual model for destination marketing as depicted in Figure 2.8 shows various virtual components in a DMS.

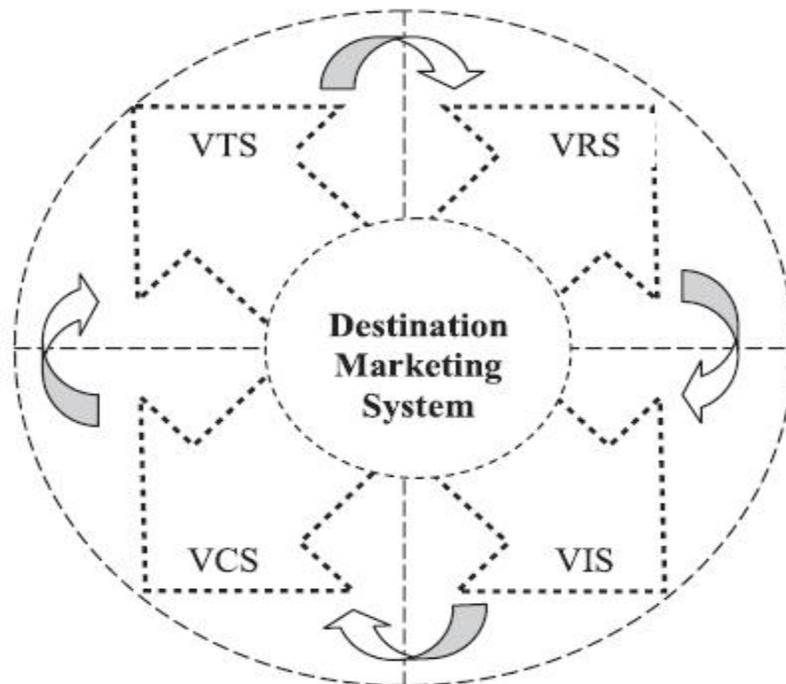


Figure 2.8: Conceptual ICTR model of destination marketing systems (Wang & Russo, 2007:190).

The model consists of Virtual Information Space (VIS), Virtual Communication Space (VCS) that provide the means by which an organisation interacts with potential visitors, Virtual Transaction Space (VTS) that handles financial transactions, and Virtual Relationship Space (VRS), which is the point where the organisation truly understands the customer. The model is referred to as (ICTR) conceptual model for destination marketing. The ICTR model shows that, the role of DMS has shifted to the provision of more functional search requirements (Wang & Russo, 2007:191).

Table 2.2: Popularity vs. importance comparison of technology applications in DMS (Wang & Russo, 2007:195).

	<i>Popularity (% of use)</i>	<i>Importance (% of important)</i>	χ^2	<i>Sig.</i>
<i>VIS</i>				
Activities/attraction information	99.2	99.6	0.008	0.930
Accommodation information	99.2	99.2	0.016	0.903
Events calendar	97.3	98.5	1.49	0.222
Restaurant information	94.2	93.1	0.002	1.000
Shopping information	89.6	95.0	14.99	0.000
Links to regional/city/area pages	88.1	92.7	2.70	0.100
Maps/driving directions	81.2	96.9	6.37	0.000
Travel guides/brochures	77.3	76.2	1.59	0.340
Tour operator information	50.8	90.4	9.16	0.000
Trip/vacation planner	23.5	84.2	10.63	0.000
<i>VCS</i>				
Brochure request capabilities	89.2	96.5	7.67	0.006
Search functions	51.5	89.6	3.99	0.046
Email newsletters	34.6	87.3	9.63	0.002
Interactive tools	28.5	84.2	14.71	0.000
Frequently asked questions	21.5	41.5	74.73	0.000
<i>VTS</i>				
Online reservation	20.8	81.9	9.36	0.002
Banner advertisements	19.2	27.3	70.79	0.000
Themed products	18.8	30.4	104.25	0.000
Secure transactions	10.4	29.2	55.11	0.000
Events tickets	9.6	25.8	77.30	0.000
Attraction tickets	8.8	26.5	58.00	0.000
Shopping carts	8.5	25.8	42.74	0.000
<i>VRS</i>				
Highlight special offers/best buys	33.1	43.5	119.58	0.000
Direct email campaign	30.0	83.1	12.26	0.000
Personalization/customization	23.8	81.2	9.28	0.000
Privacy policy	22.3	37.3	68.46	0.000
Incentive programs	18.5	82.3	6.30	0.012
Cross-selling opportunities	15.8	33.8	60.47	0.000
Virtual tours	13.8	79.2	18.70	0.000
Customer loyalty programs	4.2	23.8	24.72	0.000
Web seal certification	2.3	18.5	13.04	0.000

Table 2.2 shows that VIS has the highest attraction information at 99.2% (Wang & Russo, 2007:190). According to Wang and Russo (2007:199), organisations must map their future objectives by developing and deploying DMS that are flexible and able to provide real-time data about the destination. Success of DMS should not be measured by the number of technologies deployed in the four components but by how effective organisations' make use of such technologies.

As depicted in Table 2.2 above, Virtual Information Space (VIS) has the highest attractions information. Specifically, web applications are being increasingly

explored by DMOs as a central means of communication with respect to brand identity and values associated to it, allowing visitors to virtually experience the destination (Buhalis & Law, 2008:207).

Real-time data streaming technique is a technology-based mediation, which is adopted in this research as an additional information source that aims at influencing destination selection. The next section highlights technology-based mediators to provide a more complete picture on use of mediation techniques in tourism.

2.9 Technology-based mediators

Tour mediation refers to an individual's active attempt to interpret the tour experience to another individual (Wang, Park & Fesenmaier, 2012:372). The emergence of new media using multimedia features has generated a new set of mediators for tourists' experiences and according to (Tussyadiah & Fesenmaier, 2009:37), development of technology-based mediators including the Internet, mobile phones, and digital cameras are on the increase and influences consumer buying behaviour.

The Internet, as a new medium, mediates tourism at a more extended level because it provides interactive opportunities for the audience and the media (Wang 2012:5). Web 2.0 ICT are widely used by tourists during pre-visit to get information about tourism products and to share their tourism experiences during post-visit (Munar, 2010:1).

According to Yoo and Huang (2011:242), web 2.0 is a shared term for a group of web-based technologies that enable users to contribute to developing, rating, collaborating and distributing Internet content and customising Internet applications and some available tools include" blogs, wikis, Rich Site Summary (RSS) feeds, online video sharing such as YouTube, Google Video".

According to Munar (2010:15), Tourism Created Content (TCC) and User Created Content (UCC) that is created and shared over the Internet is categorised as narrative, visual and audio content. The process of TCC and UCC information sharing can benefit tourists who are actually planning to visit the place during decision-making process.

The process of TCC and UCC information sharing can benefit tourists who are actually planning to visit the place during decision-making process. Tourism corporations and organisations can use TCC & UCC (Munar, 2010:15). Tussyadiah and Fesenmaier (2009:37) explain, “Facilitating the sharing of such experiences through videos provides access to realistic and imaginative tourist experiences and provides mental pleasure to viewers by stimulating fantasies and daydreams before visit”.

Real-time data streaming is one of the new technological developments that hold potential in the area of improving the current destination selection as it facilitates sharing of live experiences. Mediation technique adopted in this research involves data streaming. An overview of data streaming is presented in the next section.

2.10 Data streaming

Streaming process involves capturing media, encoding it to a streaming format before broadcasting through a streaming server (Joe, 2004:15), where a client sends a request to the server on a computer network, and the server delivers the data, which is interpreted by the client. Clients access the stream using web browsers such as Mozilla, Google Chrome and Internet Explorer.

Implementation of data streaming applications requires adoption of Service Oriented Architecture (SOA) where the client as a service accesses the application. This is an attractive approach for building large-scale real time data streaming applications. However, Maintaining Quality of Service (QoS) in such application is the main challenges hence the need to simulate service-based

software to be able to determine performance and QoS of any systems (Muqsith, Sarjoughian & Molina, 2010:915).

Streaming over Internet protocol (IP) is highly affected by network bandwidth that varies. Moreover, there is always minimum server computing power to be able to implement multimedia applications. The client server-computing model provides the best approach for implementation of streaming applications (Kuo, Ting, Teng & Chen, 2004:175).

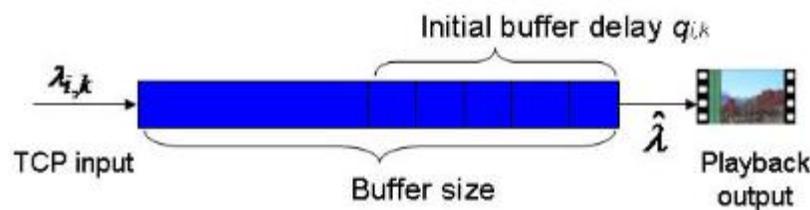


Figure 2.9: TCP streaming model (Yan, Muhlbauer & Plattner, 2011:375)

Figure 2.9 above depicts data streaming model; streaming application consumes high-bandwidth and as a result requires load balancing for better performance on any network. During design such a system it is essential to implement chaining algorithm and buffer management techniques by allowing on demand streaming media to provide new data stream for any client request and wait until there is enough incoming data have been buffered (Schultz & Znati, 2003:258).

According Pauw and Andrade (2009: 87), “the stream processing consists of assimilating data readings from collections of software and hardware sensors in stream form analysing the data, and producing actionable results and the data elements in the stream arrive online”. The streaming systems has no control over the order in which data elements arrive to be processed and once an element from a data stream has been processed it is discarded to avoid network congestion

which leads to low response rate (Babcock, Babcock, Babu, Datar, Motwani & Widom, 2002:2).

This thesis adopted streaming technological mediator implemented using TCP streaming. The streaming component provides live experience on destination attractions to potential tourists to assist them to make informed travel decisions. The streaming component allows potential tourists to authenticate destination attractions and to perform emotional interpretations resulting from cognitive and affective components. With the knowledge derived from organic, induced and real time images about selected and alternative destinations.

Table 2.3 : Summary of empirical studies

Framework	Reference	Goal of study	RTDST	Tool support	Validation	Conclusion
Destination Selection Process	(Fabricius, 2007:31)	To explore Customer Journey	No	No	No	Any organisation that fails to effectively communicate during destination selection process will eventually not able to compete with other destinations.
Consumer Buying Behaviour	(Choibamroong, 2005:2)	To determine how individuals make decisions to spend	No	No	No	Consumer buying is influenced by cultural, social, personal, and psychological factors therefore, DMO need to understand consumer behaviour when developing, promoting, selling tourism products
Destination Marketing Systems	(Wang & Russo, 2007:190).	To evaluate each functions of DMS	No	Yes	No	The ICTR model shows that, the role of DMS has shifted to provision of more functional search requirements. VIS has the

Framework	Reference	Goal of study	RTDST	Tool support	Validation	highest attraction of information Conclusion
Tourist's Image Formation and Role	(Croy & Wheeler, 2007:3)	To explore the role of organic, induced and real image in decision making	No	No	No	Decision making process is influenced by organic and induced images which create expectations and once the tourist is on site they compare the real image with perceived image during pre-visit.
TCP Streaming Model	(Yan, Muhlbauer & Plattner, 2011:375)	To describes the dimensioning of appropriate buffers	No	Yes	No	Streaming model is applied in this research. For better performance streaming applications typically implement of buffers is necessary TCP.

2.10 Chapter summary

This chapter has presented a conceptual-theoretical foundation through a review of related literature and provided a summary of empirical studies. The chapter highlighted activities in destination selection and information sources used in tourism industry. Other areas that were presented are on buying process and destination image. The role of technology-based mediators was discussed on how real-time data streaming mediation technique can be incorporated in destination selection to stream destination attractions as an additional information source.

The next chapter presents grouped theories and concepts that are relevant to this study and how they integrate to the final conceptual framework.

CHAPTER 3

THEORETICAL AND CONCEPTUAL FRAMEWORK

This chapter presents the theoretical and conceptual framework for this study. According to Imenda (2014:189), a “theoretical framework is the application of theories and consists of a set of concepts that shed more light on the research problem”. A conceptual framework is a network of interlinked concepts, which provide a comprehensive understanding of a phenomenon or phenomena (Jabareen, 2009:51).

The researcher identified and grouped theories and concepts that are relevant to this study and how they integrate to the final conceptual framework that is to solve underlying research problem.

This chapter focuses on destination image formation and processing theory, Information processing theory shows that, processed information during tourism buying process influences the type of response generated, which may be cognitive or emotional responses. The chapter examines how the decision process in consumer behaviour theory is influenced by information input and external variables. The chapter discusses the Task Technology Fit (TTF) and Technology Acceptance Model (TAM) that were used to guide the researcher in interpretation of data at evaluation process. Lastly, the chapter presents a summary of theoretical studies and their relevance in this study and concludes by discussing derived conceptual framework for this study.

3.1 Destination image theory

Tourist destination image is important to destination marketers because it relates to decision-making and sales of tourist products and services. Destination image used by the tourist is influenced by cognitive component and affective component, which results to conative component on individual reasoning and emotional interpretation that can be either positive or negative evaluation (Bosque & Martin, 2008: 557; Pena, Jamilena & Molina, 2012:265; Sarma, 2007:37).

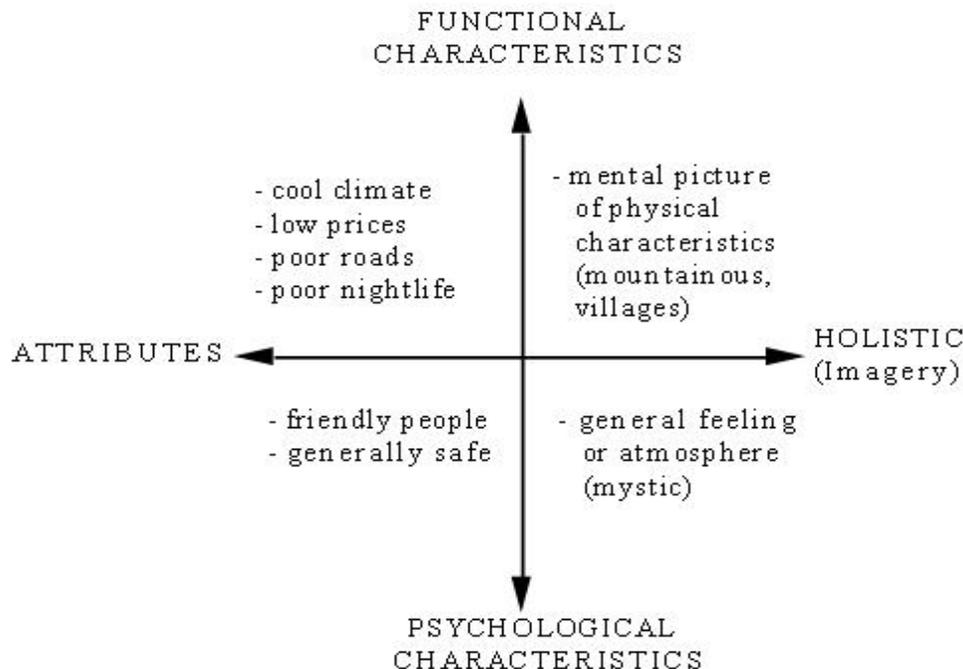


Figure 3.1: The components of destination image (Echtner & Ritchie, 2003:8)

Figure 3.1 above shows the components of destination image on attributes, functional characteristics, holistic imagery and psychological characteristics. The functional characteristics are the more tangible aspects of a destination and psychological are the intangible characteristics of a destination (Sonnleitner, 2011:21). Potential tourists access these attributes of destination image from induced and organic images.

Destination image theory is used in this study to create a mental picture using real-time images as an additional information source. The overall destination image is

now developed after accessing organic, induced and real-time images from streaming mediator to reduce speculation by authenticating destination attractions before visit.

Improved TDI provide potential tourist access to real-time images that intends to create assurance of quality of expected experiences, reduce visitor search costs of destination information and offer a way for destinations to establish a unique selling proposition (Schaar, 2013:3). The next section explains TDI formation and process model.

3.2 Model of tourist destination image formation and processing

Destination images evolve through three stages namely: organic images, induced images and complex images. Organic images are formed as a result of life experience that may or may not have any relation with tourism and “induced images are formed as a result of active search” for information on various destinations (Croy & Wheeler, 2007:3).

Complex image is the result of actual visitation and experience with the destination. Organic images influences motivation to travel and active information search from available information sources. Organic image and induced image are used to create an overall image. During visit is when a more complex destination image is formed and experience with the destination will provide feedback and influence evaluation of alternative destinations on the next occasion as depicted in Figure 3.2 below (Matos, Mendes & Valle, 2012:112).

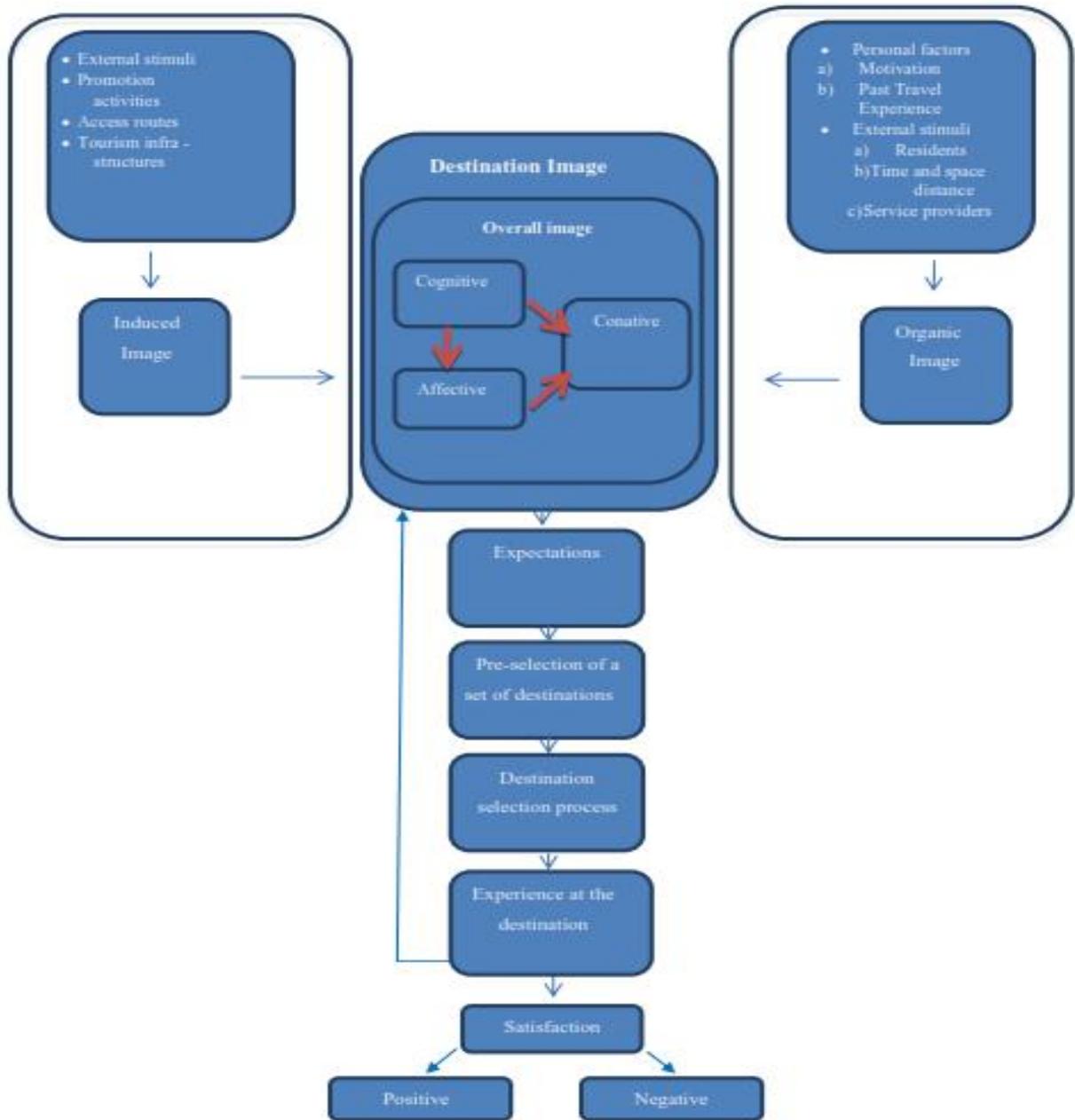


Figure 3.2: Model of tourist's image formation (Matos et al, 2012:112)

The model shows that potential tourists evaluate the destination image based on overall image formed from organic and induced images, that they access before visit based on individual reasoning. TDI is then formed as a result of the knowledge the tourist acquired about the destination (cognitive component), the feelings or attachment he develops towards the destination (affective) and his intention or behaviour in the future (conative).

After that, potential tourists create an overall image comprehending functional and psychological characteristics of destination image, which creates expectations (Matos et al, 2012:111).

The strengths of this model is on influences of complex image that is developed from induced and organic images in decision-making. The main weakness is that, after tourists make decisions to travel to a selected destination. Their experience at the destination may lead to realisation or non-realisation of expectations.

The understanding of TDI formation and its effect on travel decision has high practical relevance in this study. The researcher has adopted this theory by applying organic and induced images as part of pre-visit information sources and cognitive, affective and conative component to link decision-making stage with real-time images. The overall destination image is now developed after accessing organic, induced and real-time images from streaming mediator to reduce speculation by authenticating destination attractions before visit.

3.3 Consumer psychology in web advertisements

Advertisers seek greater communication effectiveness when marketing destination products to create a cognitive and affective response. Greater information processability, which is the ease with which consumers can interpret information, can produce a positive affective response that is transferred to the product being evaluated. When information is presented in incomplete and incompatible format, it may interfere with potential tourist ability to carry out imagery and analytical information processing (Thompson & Hamilton 2006:531; Ruiz & Sicilia, 2004:657).

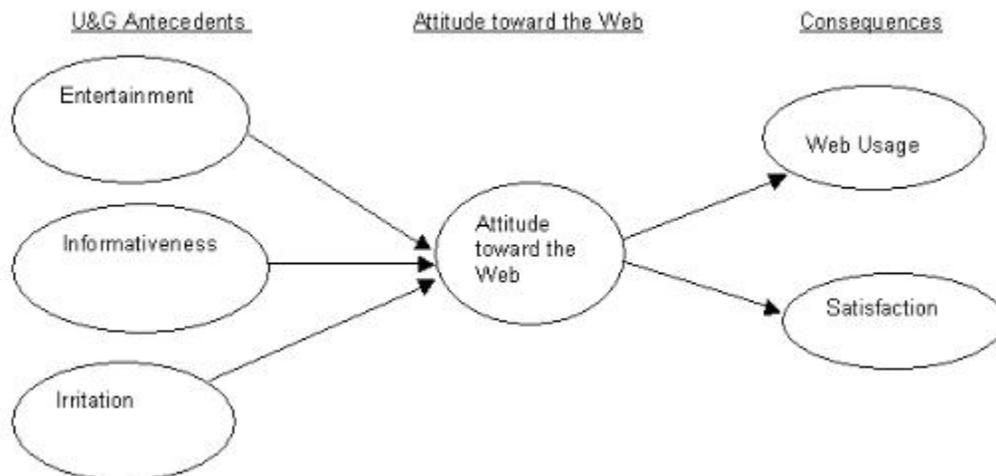


Figure 3.3: Model of attitude toward the web (Luo, 2002:34)

The model of attitude toward the web in Figure 3.3 above indicates that the uses and gratifications antecedents “(informativeness, entertainment, and irritation) affect the attitude toward the web application which later determines web usage and user satisfaction “(Luo, 2002:35). Online advertisements provide important functional characteristics that are used to create mental imagery of the destination. Thompson, Hsio and Kosslyn (2011:256), explain that mental imagery involves creation of a mental image, interpreting and transforming visual internal representation.

It is therefore necessary when marketing destination using the online media to ensure that the content is 'complete' for users to easily access and understand the message being communicated by advertisers. The researcher used this theory to ensure that the prototype provide a complete functional requirement.

Figure 3.4 below depicts decision process factoring in cognitive and affective components. The affective and cognitive triggers need to search for alternatives from other advertisers before the choice of purchase is made.

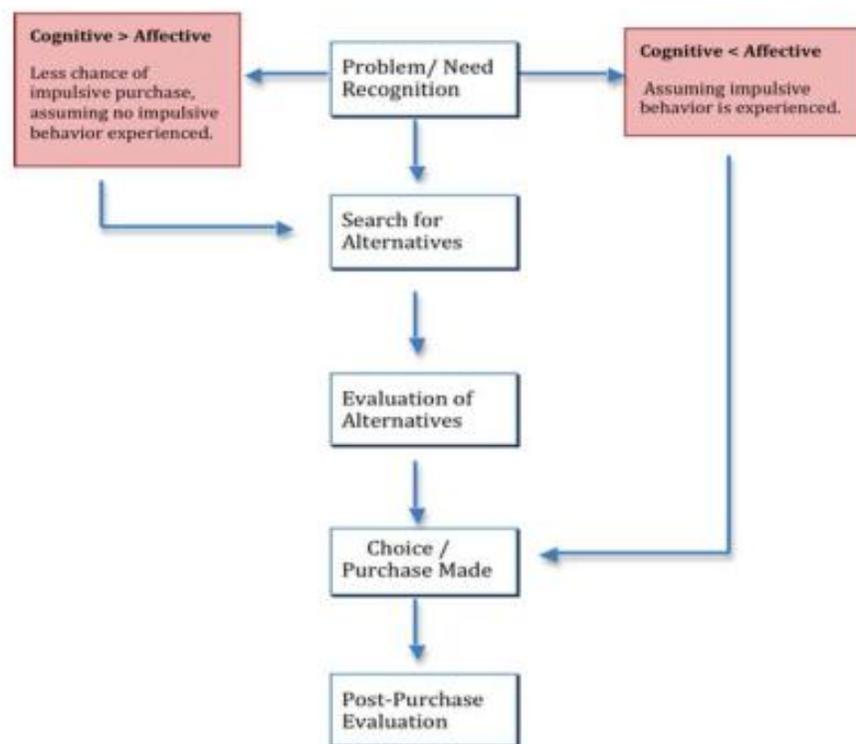


Figure3.4: The modified decision process stages of the Engel, Kollat and Blackwell Model (Suelin, 2010:2913)

This model is used to improve current destination selection by having real-time images as additional information sources that intends to tap into consumer emotions when they are making travel decisions. The next sub section gives an overview of consumer behaviour theory on how it affects consumer decision-making process.

3.4 Consumer behaviour theory

The Engel-Kollat-Blackwell model described in Figure 3.5 below shows the consumer decision process model. The model consists of the need recognition stage, which is followed by alternative evaluation and involves obtaining information from internal and external sources. The other stages are information processing, decision process and variables influencing precision process (Sahney, 2008:9).

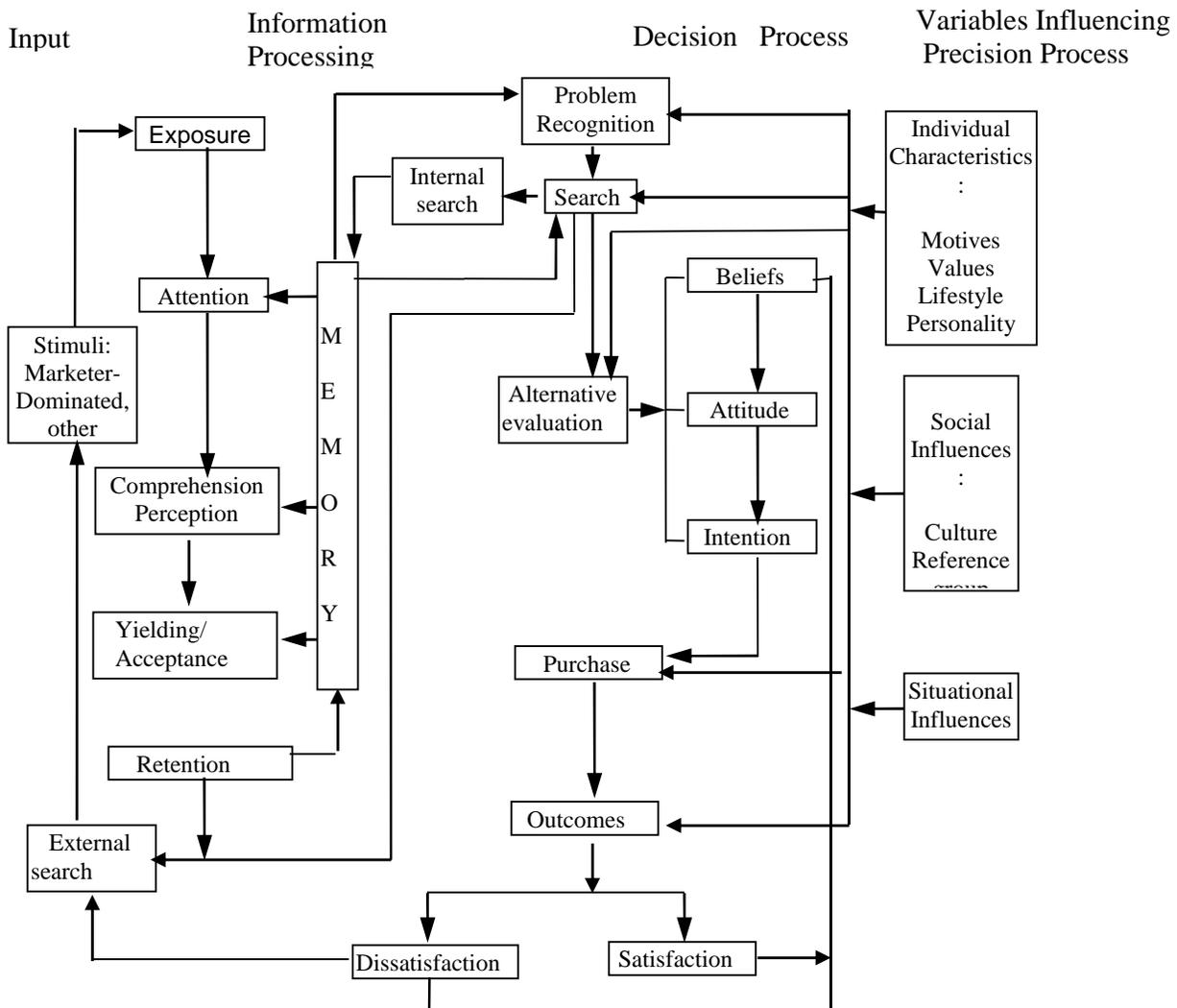


Figure 3.5: Modified Engel-Kollat-Blackwell model of consumer behaviour (Sahney, 2008:9)

Decision-process stage is influenced by information input and external variables. When the outcomes are not satisfactory during post purchase evaluations, customers tend to go back to search for other alternatives (Suelin, 2010:2910).

The models have generalised the decision-making process for any consumer product. This view implies a biased approach to the consumer decision-making process and discuss that the more important a product, the more complex the decision-making process (Mohammadi & Mohamed, 2011:156).

The models also show that potential tourists collect and analyse information from available information sources, and gradually reduced range of alternative destination and eventually select the best possible choice. Potential tourists' final choice is based on evaluation of the advantages and disadvantages of each possible outcome from developed TDI. This theory is applicable in this study in five stages: need recognition stage, information search, information evaluation, purchase and post purchase.

The need recognition stage is the anticipatory phase where travel need or desire that leads to information collection during pre-visit. The next stage is information search about identified possible destinations and gathering knowledge about destination. Information search behaviour influences trip outcomes and the greater the match between the pre-purchase and after-purchase destination image the more likely that the tourist has favourable perceptions toward that destination (Luo et al, 2016:17).

Information evaluation of destination information is the decision making stage during pre-visit that involves emotional interpretations resulting from cognitive and affective component. Purchase stage is adopted at online reservation component and lastly post-visit which is the post purchase stage.

3.5 Theory of constraints and continuous process improvement

Theory of Constraints (TOC) helps to improve processes to performance. Theory of constraints is used in business process improvement and focuses on the right problem and the right solution at the right time (Pacheco, 2014:332). Business Process Improvement (BPI) involves discovering weaknesses in a business process and addressing them in subsequent passes (Aalst, Netjes & Reijers, 2007:92).

According to Jacob and McClelland (2001:3), TOC focuses on three important questions 'what to change' in the old process, 'to what to change to' and 'how to cause the change' in the new process. During 'what to change' stage the core problems in the old process are identified and analysed, the next step is to find the solutions to the problems. How to cause the change: If 'to what to change to' is identified, but it is not possible to cause that expected change, then the solution is not of much of use.

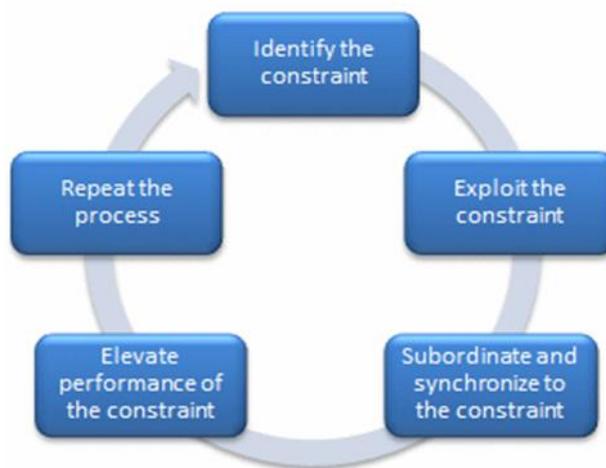


Figure 3.6: Theory of Constraints (Balakrishnan, Cheng & Trietsch, 2008:6)

Theory of Constraints is categorised in Figure 3.6 above consist of five steps:

1. Identify the system's constraints.
2. Decide how to exploit the system's constraints.
3. Subordinate everything else to the above decision.
4. Elevate the system's constraints.

5. If in the previous steps a constraint has been broken, go back to the first step.

TOC was applied in this study to identify constraints in current customer journey framework that involves activities that potential customers perform during pre-visit, during the visit and post-visit (Croy & Wheeler, 2007:3). Customer journey framework starts from potential visitor first thinking about a vacation to planning, booking, experiencing and recalling the experience. TOC was used to exploit the constraint in customer journey framework and determine what to change to and how to cause change using streaming technology to reach primary goal of improving the effectiveness of destination selection.

The theory was as well used to develop a research process in a diagrammatic presentation of the three phases that the researcher followed to accomplish research objectives.

3.6 Task-technology fit theory

Task-Technology Fit (TTF) is the degree to which technology assists users to perform certain tasks (Goodhue & Thompson, 1995:216). The theory suggests that system users can perceive task-technology fit and the perceived fitness can further affect their usage and the performance of using the technology.

Task is the action carried out by the system users and technologies are the tools used by the users to perform tasks. They consist of products, required acts, and information cues (Goodhue & Thompson, 1995:216). Technology-as-tool provides the physical interface for manipulating the technology as representation (Davern, 2007:51). Figure 3.7 below shows that the TTF influences the performance and utilisation of that technology.

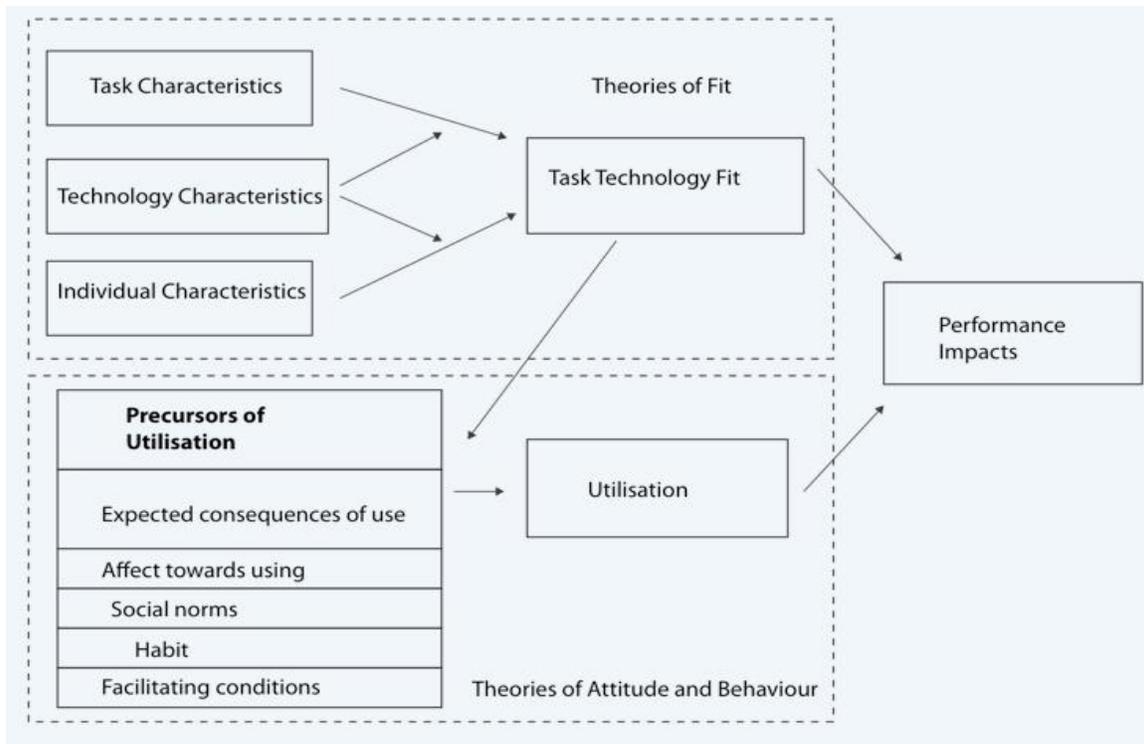


Figure 3.7: Task-technology fit (Irick, 2008:217)

The implication of this model in this study is that, increased utilisation of the prototype might lead to positive performance impacts. Secondly, the TTF model indicates that performance may be increased when a technology provides features and support that fit the requirements of the task that is being improved (Irick, 2008:216). The TTF model was also as a conceptual basis for assessing the performance impacts of proposed tool.

3.7 Technology acceptance model

Davis, Bagozzi and Warshaw (1989) first developed the Technology Acceptance Model (TAM). The model was centred on the theory of reasoned action in psychology research (Maslom, 2007:2). Figure 3.8 below shows an improved TAM by (Chen, Li & Yi-Li, 2011:125), and theorised that an individual's behaviour and intention to adopt a particular piece of technology is determined by the person's attitude toward the use of the technology. Attitude in turn, is determined by

perceived usefulness and perceived ease of use (Kulviwat, Bruner, Kumar & Clark, 2007:1060).

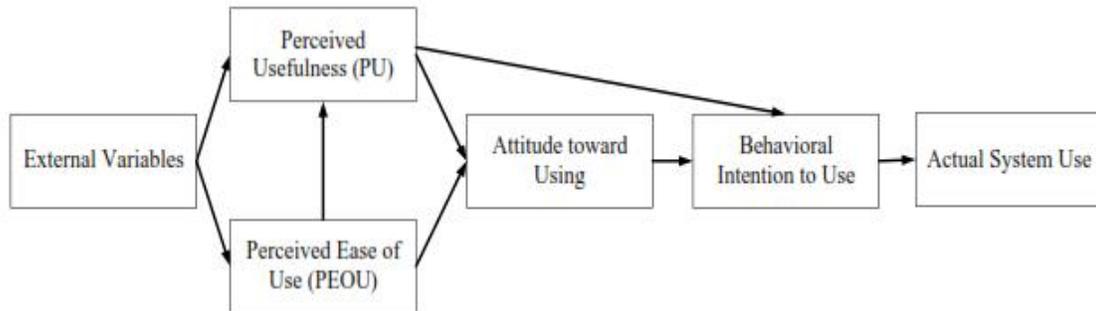


Figure 3.8: Technology Acceptance Model (Chen et al, 2011:125)

The perceived usefulness and perceived ease of use influence user behaviour and attitude towards the task technology fit (Surendran, 2012:175). Perceived usefulness is the extent to which persons believe that technology will enhance their productivity or job performance. Perceived ease of use is the extent to which a person believes that using a technology will be simple (Bagozzi, & Warshaw, 1989:987).

Consumers are more likely to adopt innovations that have perceived advantages than they are to buying products that have little or no additional benefits over the alternatives. Technology users may adopt technological products not only to obtain useful benefits but also to enjoy the experience provided by technological products (Kulviwat et al, 2007:1065).

A major challenge in development of information system evaluation is to develop frameworks that are universally applicable to a wide range of applications (Stockdale & Standing, 2005:1091). The main strength of TAM is that intentions to use a technology influence usage behaviour, and perceived usefulness and perceived ease of use determine intentions to use and actual use. This model has proven to be a useful theoretical model in helping the researcher to understand

and explain use behaviour, perceived usefulness and ease of use during prototype implementation and evaluation. The model guide researchers during design of prototype user interface to achieve a high user usage of the prototype.

Table 3.1: Summary of theoretical studies

Theoretical Framework	Goal of study	Mediation tool	Relevance of theory to this study	Conclusion
Destination image theory (Echtner et al, 2003:43)	Cognitive component and affective component	No	Destination image theory is used in this study to improve TDI using real-time images in addition to organic and induced images.	Information sources affects evaluation of TDI and it may be positive or negative evaluation based on individual reasoning and emotional interpretation
TDI formation process (Matos et al, 2012:112)	Influence of organic, induced images on destination selection	No	The research has adopted this theory by adopting organic and induced images as part of pre-visit information sources. Cognitive, affective and conative component are used to make travel decision.	Organic images, induced images affects complex images that is used by potential tourist to make travel decisions.
Consumer behaviour theory (Sahney,2008, :9)	Decision making process	No	This theory is adopted in this study at the following stages: need recognition stage, information search, information evaluation.	Information sources affects beliefs, attitudes & intention before purchase may lead satisfaction or dissatisfaction.

Theoretical Framework	Goal of study	Mediation tool	Relevance of theory to this study	Conclusion
The Modified Decision Process Stages (Suelin, 2010:2913)	Affective and cognitive decision making process	No	The researcher used real-time images aims at tapping into consumer emotions when they are making travel decisions	Marketers need to tap into consumer emotions when marketing their products and services.
Attitude toward the web (Luo, 2002:34)	Online advertisements	No	The theory was used during prototype development to ensure that the web application was reliable and met online users goals	Marketing destination using the web requires that to users can easily access web content to increase usage and customer satisfaction
Theory of Constraints (TOC) (Balakrishnan et al, 2008:6)	Process improvement	No	TOC was used to identify constraints in current customer journey framework and to exploit the constraint and to develop research process.	Improving destination selection using technology mediator to stream destination attractions.

Theoretical Framework	Goal of study	Mediation tool	Relevance of theory in this study	Conclusion
Task-technology fit (TTF) theory (Irick, 2008:217)	Technology usage and performance	No	TTF model was used in this study as a tool and a conceptual basis for assessing the performance impacts of developed tool by end-users.	Application of technological tools to support the task of decision making during pre-visit
Technology Acceptance Model (Chen et al, 2011:125)	Technology adoption by users	No	TAM was used to understand use behaviour, perceived usefulness and ease of use during prototype implementation and evaluation	Adoption of any technological development is based on innovations that have perceived advantages to the users.

3.8 Realisation of research objective one

The main objective of this phase was to identify current destination selection frameworks and information sources. The researcher identified information sources gaps in existing tour destination selection. Tables 3.1 above on theoretical studies summarise important aspects from the theoretical overview.

The summaries outline the gaps, tool to support destination selection, application of theories and concepts in this study and conclusions of each area of study. The concepts used to develop the conceptual framework are information processing, tourist destination image, pre-visit information sources, use of streaming technology aimed at influencing decision-making process. Technology Acceptance Model was used to measure the effectiveness of the tool during evaluation.

Empirical studies summarise important aspects from literature review and outlines the gaps and the relevance of identified theories in this study. Destination image theory was used in this study to improve TDI using real-time images in addition to organic and induced images. Potential tourists collect and analyse information from available information sources, and gradually reduced range of alternative destination and eventually select the best possible choice. Potential tourists' final choice is based on evaluation of the advantages and disadvantages of each possible outcome from developed TDI, which may be positive, or negative evaluation based on individual reasoning and emotional interpretation.

3.9 Conceptual framework for this research

Concepts are used to express abstract idea and can be found from previous theories or empirical research. After modelling a new conceptual framework, it must relate back to previous concepts (Jabareen, 2009:50).

The researcher improved the relationship between the components as research progressed. The initial conceptual framework was used in Phase 1 to get practitioners' inputs is depicted in in Figure 3.9 below. The final conceptual framework emerged after framework building and validation in Chapter 5. The improved tour destination selection conceptual framework using Real-Time Data Streaming Technique (RTDST) as the technology mediator contains three phases, starting from pre-visit, during visit and post-visit. The old process shows the current destination selection process and information sources based on literature review and theoretical and conceptual frameworks. The new process is an improvement that aims at addressing the gaps using a technology mediator tool in form of RTDST.

3.10 Conceptual definitions

Destination selection involves activities that potential customers perform during pre-visit, during actual visitation and during post-visit (Croy & Wheeler, 2007:3). Customer journey starts from a potential visitor first thinking about a vacation, to planning, booking, experiencing and recalling the experience. Information sources used in destination selection are a force which influences the formation of perceptions or cognitive evaluations but not the affective component of destination image (Baloglu & McCleary, 1999:874).

Information sources during pre-visit that enable potential tourist to make travel decision are in the form of organic and induced images. According to Dominique (2011:331), image influences the attitude that tourists develop towards destinations, which influences the buying decision process.

Induced images are formed as a result of active search for information on various destinations while organic images are formed as a result of life experience that may or may not have any relation with tour destination. Real images are those images that are formed during visit of the destination and it is during this period that the image of tour destination is changed, clarified and expanded (Croy & Wheeler, 2007; Dominique, 2011:310).

Mediation in the tourism setting refers to an individual's active attempt to interpret the tourism experience to another individual. Mediator in the tourism setting is the tour guide, while technology mediators are technological tools used to influence consumer buying behaviour (Tussyadiah & Fesenmaier, 2009:37).

The framework starts from the anticipatory phase and ends at post-visit. During pre-visit potential tourists are in a position to make travel decisions from organic images, induced images and real time images from technology mediator.

Tourists access real-time images using technology mediator to authenticate tourist destination attractions. With the knowledge derived from organic, induced and real time images about selected and alternative destinations, they are in a better position to make informed travel decisions. During visit, tourists compare destination image and experience with pre-visit information sources, which leads to either realisation or non-realisation of expectations. The last component is post-visit where they recall the experience. Any difference between expectations and experience affects destination reputation and overall customer satisfactions.

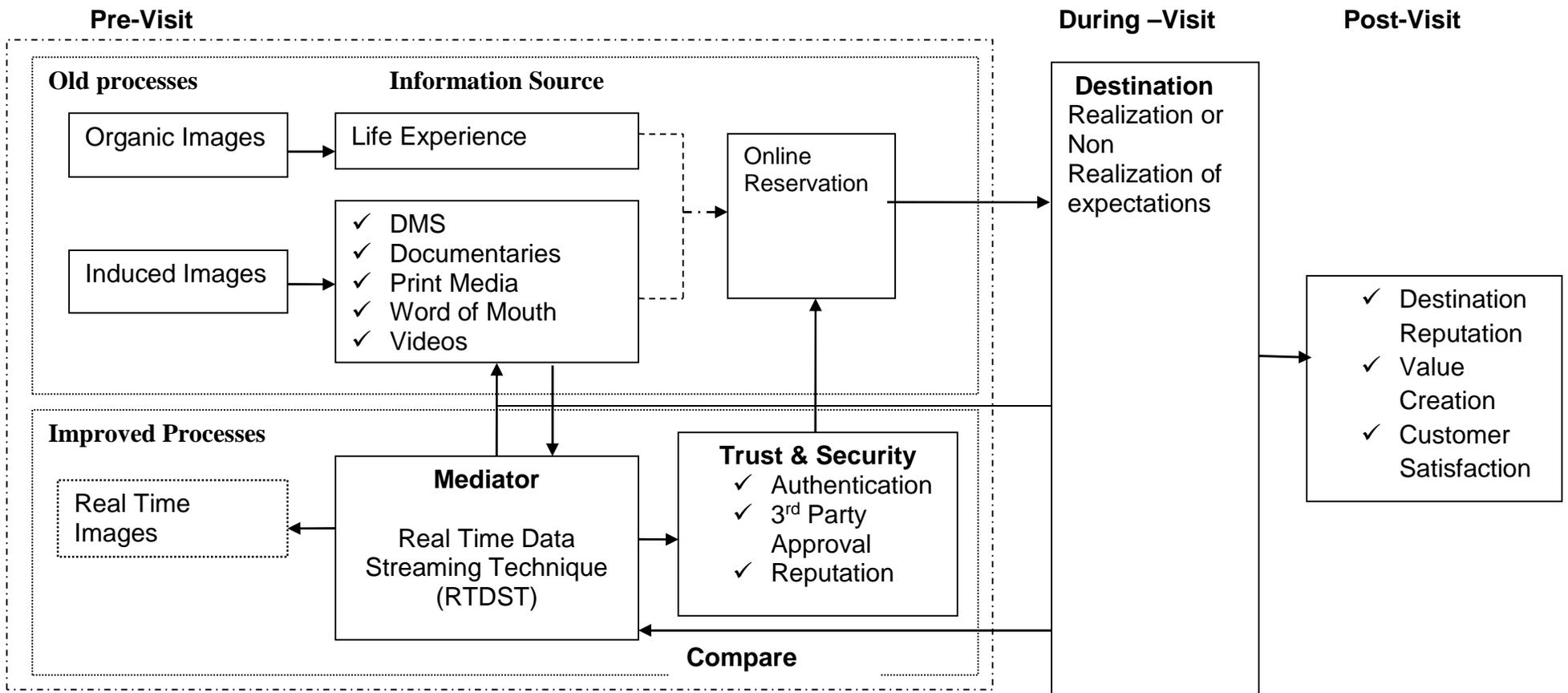


Figure 3.9: Conceptual framework for destination selection using real-time data streaming mediation technique (Author, 2015)

3.11 Chapter summary

This chapter has presented the theoretical framework and how they relate to this study. The researcher developed a new conceptual framework using real-time data streaming mediation technique as an additional information source. The new process is an improvement that aims at providing actual representation of tour destination attractions, pre-visit experience, to authenticate destination attractiveness before decision-making stage.

After coming up with an appropriate research plan, the researcher focused on continuous improvement of conceptual framework, prototype development, framework implementation and evaluation to provide empirical evidence on applicability of this research work in e-tourism. The next chapter presents research design and methodology adopted for this research.

CHAPTER 4

RESEARCH DESIGN AND METHODOLOGY

This chapter outlines the research design and methodology adopted for this study. An overview of the selected research philosophy, research approach and research process is provided. The research approach adopted in this study is Design-Science Research (DSR). The adopted design-science framework is a revised framework of Nunamaker's multi-methodological approach Nunamaker, Chen and Purdin (1991:21) by Venable (2006:185).

4.1 Research philosophy

Research philosophy relates to the development of knowledge and the nature of that knowledge. The philosophy that a researcher adopts is influenced by relationship between knowledge and the process by which it is developed (Saunders, Lewis & Thornhill, 2007:107). Figure 4.1 below depicts the philosophical alignment and it consists of epistemology, ontology and axiology (Durant-Law, 2005:16).

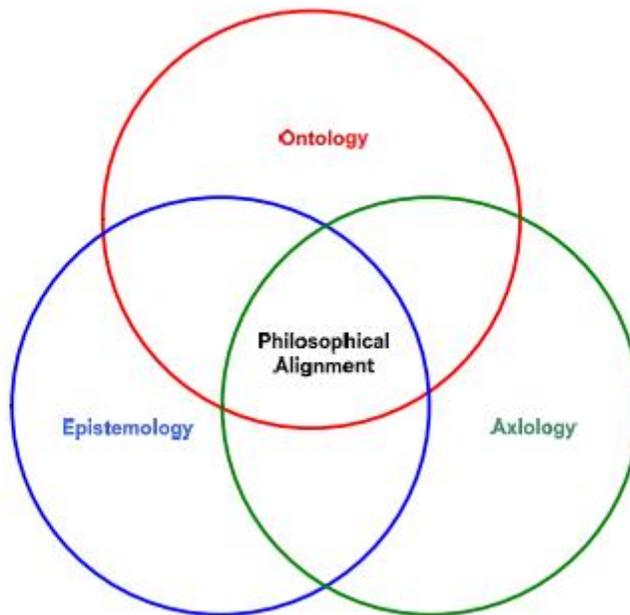


Figure 4.1: The philosophical trinity and alignment (Durant-Law, 2005:16)

Ontology is the philosophy of the worldview of reality which involves study of being and develops this description for the social sciences to encompass claims about what exists (Scotland, 2012:9; Flowers, 2009:2). Epistemology is the philosophy of knowledge and justifications and it is concerned with the nature and forms of knowledge, the sources and limits of knowledge. Epistemological assumptions are concerned with how knowledge can be created, acquired and communicated (Scotland, 2012:9). Axiology includes the disciplines of ethics, pragmatics and aesthetics. Axiology deals with the question of what is valuable. The axiological question for a researcher is "*what is the ultimate purpose of the inquiry*"? (Durant-Law, 2005:15; Kroeze, 2011:7). According to Van Zyl (2015:17), there is a critical need for IS researchers to apply the knowledge gained from their research. Accordingly, IS researchers need to address the societal and developmental value of their research (ibid.).

4.1.1 Philosophical assumptions

This study has adopted DSR as its philosophical framework, which compliments pragmatist philosophy. Problem solving and the need to create new knowledge and thirdly need to transfer technological innovation to DMOs motivated the researcher to adopt a social-technological approach.

According to Saunders et al (2007:108), any research philosophy contains assumptions about the way in which the researcher views the world. These assumptions inform the research approach and methodology. Table 4.1 below illustrates the difference in the way DSR views the world.

Table 4.1: Philosophical assumptions of three research perspectives (Vaishnavi & Kuechler, 2007:20)

Research Philosophy			
Basic Belief	Positivist	Interpretivist	DSR
Ontology	A single reality Knowable, Probabilistic	Multiple realities, socially constructed	Multiple, contextually situated alternative world-states Socio-technologically enabled
Epistemology	Objective; dispassionate, Detached observer of truth	Subjective (i.e., values and knowledge emerge from the researcher- participant interaction)	Knowing through making: objectively constrained construction within a context Iterative circumscription reveals meaning
Axiology: what is value	Truth: universal and beautiful; prediction	Understanding: situated and description	Control; creation; progress (i.e., improvement); understanding

This research followed a subjective ontological position where individuals take an active role in the construction of social reality and that the world can be viewed as a subjective reality. In this study, reality was indirectly constructed based on individual interpretation and is subjective (Bryman, 2001:19). The researcher focused on particular characteristics of DMOs that are of interest, which enabled the researcher to answer research questions for this study.

As stated earlier, epistemology concerns the means for acquiring knowledge. Philosophical assumptions guide the conduct of the researcher, consciously and

unconsciously, because the researcher is influenced in the choice of preferred methods and tools to carry out the research (Vaishnavi et al, 2007:20). In this research, it was deemed necessary to discuss the position undertaken during the process of the research. The research process for this study was structured in three iterative phases that the researcher followed to accomplish research objectives. In all the three phases, the researcher involved research participants. According to Fossey, Harvey, McDermott and Davidson (2002:728), engagement with the research participants in their social world is essential to the understanding of subjective meanings.

In this research, an artefact was developed and the participants interacted with the tool during evaluation stage. In order to evaluate the developed tool, evaluation criteria were established. The criteria for selecting practitioners to participate in framework validation and prototype evaluation were based on their professional experience, independence and ability to work in a group.

Axiology deals with the ultimate purpose and value of knowledge. In DSR, the researcher values creative manipulation and control of the environment (Vaishnavi et al, 2007:20). The researcher developed an artefact that intends to serve as a proof by demonstration that the conceptual framework can actually be implemented in a real-world setting. The conceptual framework and its implementation architecture can be used in designing solutions in relevant field problems. The researcher is hopeful that this study will shed more light on the effects of real-time images in destination selection, and the results will encourage decision makers and other stakeholders in destination marketing to pay closer attention to real-time data streaming mediation technique as an additional information source.

4.2 Research approach: Design-Science Research

This empirical research consisted of field studies, development, experimentation and evaluation of the proposed technique using a mixed method approach.

Research approach adopted in this study was design-science research, which complements the natural science approach. Adopted design-science framework is a revised framework of Nunamaker multi-methodological approach (Nunamaker, Chen & Purdin, 1991:21) by Venable (2006:185).

Design-science research emerged from the history of engineering and computer science research and it consists of two essential activities of building and evaluating. The aim of design-science is to develop knowledge that professionals can adopt to develop solutions that exist in their field (Voordijk, 2011:337). According to (Baskerville, Pries-Heje & Venable, 2007:2), DSR is used to develop new technologies for solving problems.

Design-science is particularly relevant for contemporary IS research because it allows researchers to confront two of the major challenges of the discipline: the role of the IT artefact and the level of professional relevance of IS studies (Arnott & Pervan, 2012:257). Developed tool is complete and effective when it satisfies the requirements and constraints of the problem it was meant to solve (Hevner & Ram. 2004:85).

The research design framework for this study consists of four components, theory building, solution technology invention, artificial evaluation and naturalistic evaluation as depicted in Figure 4.2 below.

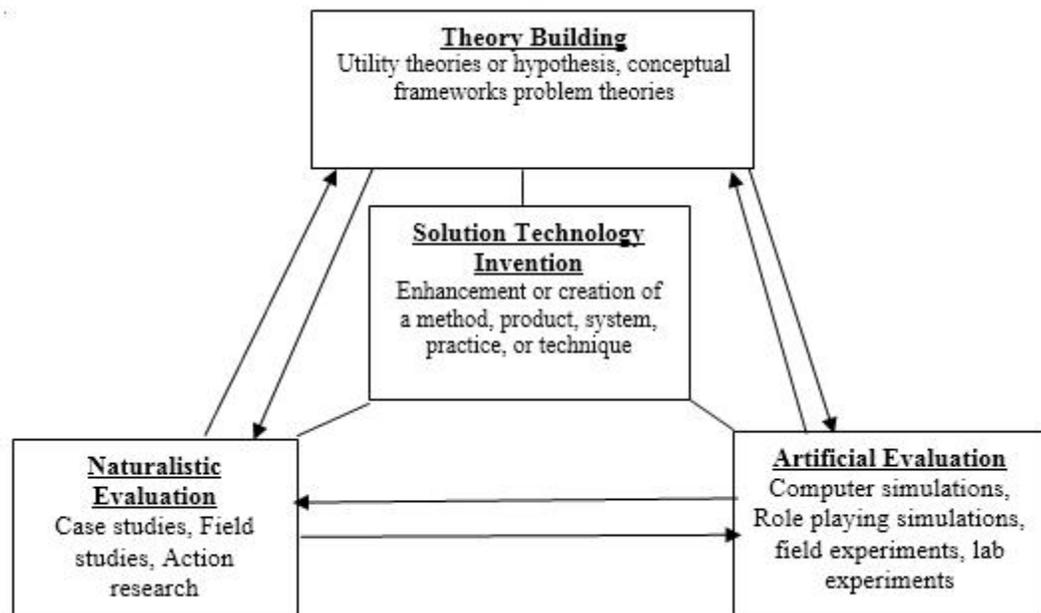


Figure 4.2: Framework and context for DSR (Venable, 2006:185)

Revised multi-methodological approach provides valuable feedback to one another enabling the researcher to have a better understanding of research area and to prove by demonstration that conceptual framework can be implemented in a real world setting. Effective design-science research must provide clear and verifiable contributions in the areas of the design artefact, design foundations and design methodologies (Hevner & Ram, 2004:85).

Information system research using design-science should be informed by business requirements and applicable theoretical knowledge before building proposed solution. One of the disadvantages of using design-science is that if the researcher fails to test and measure artefact performance according to set criteria, it may hamper the ability to judge research outcomes (Voordijk, 2011:338; Venable, 2006:184).

Researchers have argued that design-science lacks of reference to a commonly accepted design-science methodology framework, but on the other hand using design-science as a research paradigm provides information system field greatest

opportunity to increase its relevance to industry practice and to society (Venable, 2006:184).

4.3 Research methodology

Research methodology is a framework to solve the research problem systematically, and consists of the combination of the process, methods and tools that are used in conducting research in a research domain (Kothari, 2004:8). Eldabi, Irani, Paul and Love (2002:64) explain that conducting any type of research should be governed by a well-defined methodology based on scientific principles.

4.3.1 Sampling and unit of analysis

The overall purpose of sampling is to generate a sample that will address research questions (Teddlie and Yu (2009:83). In this study, the researcher adopted mixed method technique of random and purposive sampling. The researcher randomly selected cases that are collectively representative of DMOs in Kenya to increase research credibility and purposive sampling in order to work with participants who understand the research field in selected cases.

According Teddlie and Yu (2009:83) mixed method sampling may employ probability and purposive techniques. Probability sample is planned to select a number of cases that are collectively representative of the population of interest. Purposive sampling technique is the deliberate choice of an informant due to the qualities the informant possesses where the researcher decides what needs to be known and sets out to find people who can and are willing to provide the information by virtue of knowledge or experience.

A unit of analysis is the subject the 'who or what' of study which is informed by the research questions to be pursued (Long, 2013:3). In this study, the unit of analysis were individual respondents from Ministry of Tourism in Kenya, Kenya Wildlife Service (KWS) and The National Museums of Kenya (NMK). They are relatively busy organisations that are involved in marketing destinations and receive local and international tourists. The respondents comprised of experts and tourism officers, destination marketers and IT professionals. According to Forster and Grancht (2013:199), it is the duty of the researcher to ensure that there is a cross section representative of the stakeholders involved.

Europa (2014:2) explains that, the criteria for selecting participants should be based on professional experience, independence and ability to work in a group. The advantage of having experts is that the credibility of conclusion is high, significance reduction in time allocated and cost effectiveness but they also have a tendency of going beyond their field of competence.

4.3.2 The research process

Research process consists of series of actions that are necessary to effectively carry out research (Kothari, 2004:109). Figure 4.3 below shows a diagrammatic presentation of the process that the researcher followed to accomplish their research objectives.

The research process was divided in three phases that aimed at achieving research objectives specified in Chapter 1. Phase 1 addressed research objective 1 (RO1) and research objective 2 (RO2). Phase 2 addressed Research Objective 3 (RO3) and Phase 3 addressed Research Objective 4 (RO4).

Phase 1 focused on acquiring knowledge on current destination selection and pre-visit information sources. Phase 1 findings together with insights from the literature review will inform the development of a destination selection framework. Phase 1 results were used to improve the conceptual framework and for tool development.

Phase 2 involved the development of a prototype tool to prove by demonstration;
 Phase 3 empirically evaluated the tool according to the framework.

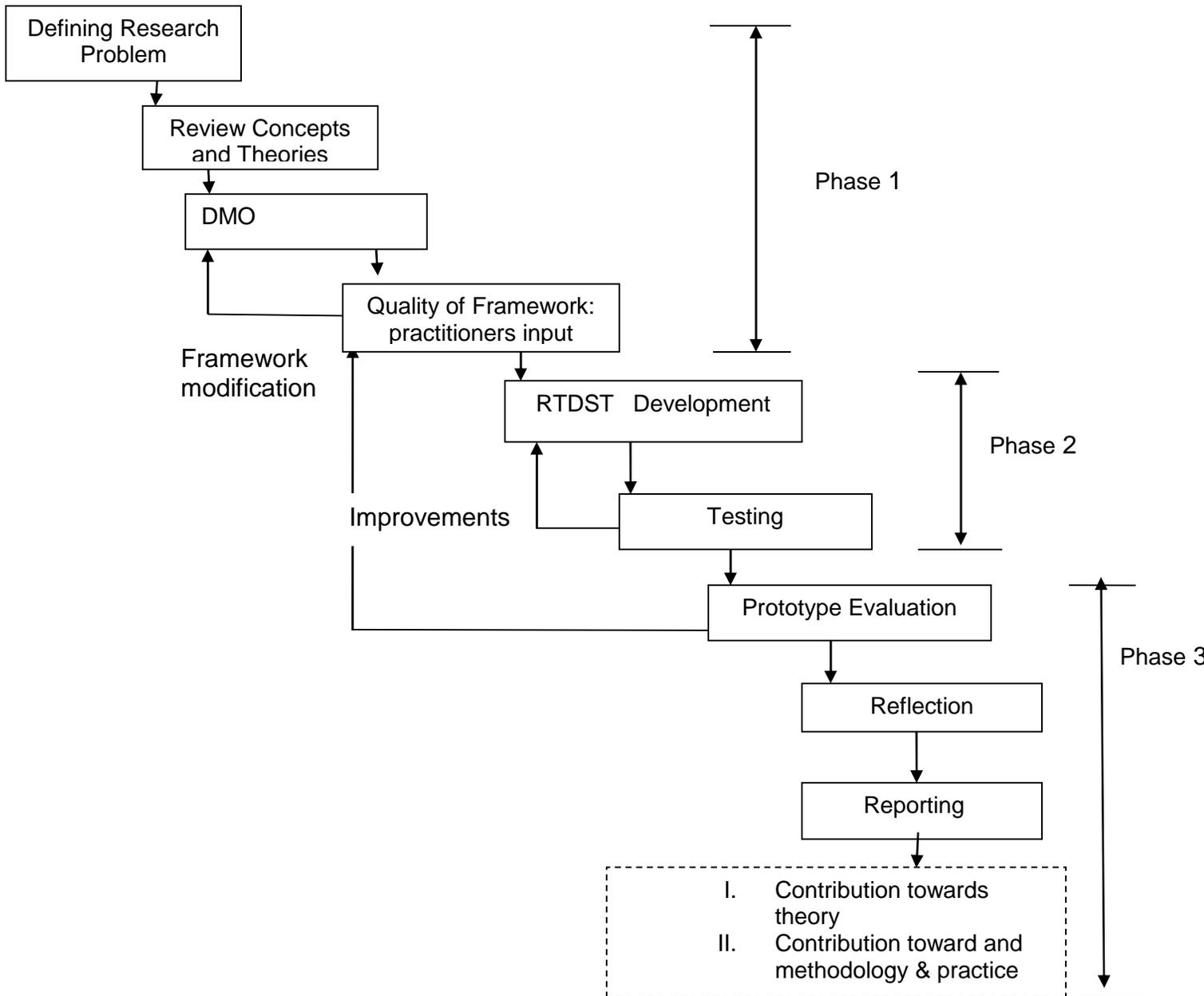


Figure 4.3: Research process

4.3.3 Questionnaires construction

The task of data collection starts after a research problem has been clearly defined and after a clear research design identified (Kothari, 2004:95). The researcher used questionnaires (See appendix 3 and 4). The questionnaires were designed based on the necessity to feed certain inputs into the research. To enhance the quality of data obtained, the questionnaire comprised of scaled questions, multiple-choice questions and open-ended questions.

4.3.3.1 Phase 1 questionnaires construction

The Phase 1 questionnaire, Appendix 3, consisted of three sections: framework building, conceptual framework validation and evaluating the effectiveness of proposed framework and tool. Framework building section answers second research question on what constitutes destination selection framework and real-time data streaming. It was divided into sections, each gathering information about, customer journey framework, information sources and information systems that are utilised by DMOs.

Customer journey framework that starts from potential visitor first thinking about a vacation to planning, booking, experiencing and recalling the experience (Croy & Wheeler, 2007:3). According to Djeri and Plavska (2007:71), the decision making process in destination selection starts when a potential tourist becomes aware of a certain need. If the need is strong enough or it has been transformed into a desire, a potential tourist is motivated to start the search for information on what the tourist destination offers. Decision-process stage is influenced by information input and external variables. When the outcomes are not satisfactory during post purchase evaluations, customers tend to go back to search for other alternatives (Suelin, 2010:2910).

Information received during pre-visit influences cognitive component of image formation process and eventually the choice of destination to visit. Destination

images evolve through three stages namely: organic images, induced images and complex images. Organic images are formed as a result of life experience that may or may not have any relation with tourism and Induced images are formed as a result of active search for information on various destinations (Croy & Wheeler, 2007:3).

The second section on conceptual framework validation answers the first research question on what is the status of, and what gaps exist in destination selection and pre-visit information sources? It was divided into sections that intended to gather opinion of respondents in regards to completeness of initial framework and aims of proposed streaming technology as additional information source.

Respondents were required to weight the information sources contained in the new process and on how real-time data streaming technique can be used to implement a destination selection framework. Theory of constraints is used in business process improvement and focuses on the right problem and the right solution at the right time (Pacheco, 2014:332). TOC was applied in this study to identify constraints in current customer journey framework that involves activities that potential customers perform during pre-visit, during the visit and post-visit (Croy & Wheeler, 2007:3).

The last section of Phase 1 questionnaire was to determine the main areas to be considered when evaluating proposed conceptual framework and tool in Phase 3. Information system processes, outcomes and user satisfaction are the areas to be evaluated by experts or by potential users (Bevan & Petrie, 2009:4).

4.3.3.1 Phase 3 questionnaire construction

The Phase 3 questionnaire, Appendix 4, was designed based on evaluation criteria that was adopted from DeLone and McLean model for evaluation of Information Systems (Delone & McLean 2003:12) and perceived usefulness from Technology Acceptance Model (Chen et al, 2011:125). The questionnaire had two sections that gathered information about respondent profile, system quality, real-time information quality, user satisfaction, perceived usefulness and individual impact.

The aim of Phase 3 questionnaire was to evaluate framework implementation option in a real world setting and use collected data to determine the effectiveness of the prototype hence the framework by answering research question. How practical and effective is the implemented tool and the resulting framework?

The first section focused on gathering information on user experience and sought to establish respondent's opinion in regard to portal design, usability, performance and the quality of streaming. Usability evaluation is used to assess the extent to which a system's human machine interface (HMI) complies with the various usability criteria that are applicable in its specific context of use (Harvey, 2009:563; Scholtz, 2006:512). Increased utilisation of the prototype might lead to positive performance impacts. Secondly, the TTF model indicates that performance may be increased when a technology provides features and support that fit the requirements of the task that is being improved (Irick, 2008:216).

The respondents were required to indicate the extent to which they encountered difficulties while interacting with the portal in regards to browser compatibility, stream availability, validity of pages, and distortion in page contents, website errors and online reservations. Usability represents one of the most important acceptance criteria for interactive software applications in general and web applications in particular. According to Hitz, Leitner and Melcher (2006:219), usability is one of

the most important quality factors for web applications and poorly usable applications cause users to reject them, especially on the Web.

The second section of Phase 3 questionnaire aimed at establishing from practitioners the usefulness of the portal in enhancing the effectiveness of destination selection. The respondents were required to give their opinion in regards to usefulness of real-time images as additional information source for destination marketing, value addition of integrating streaming technology and the experience of potential tourists when they make online reservation using the portal. Experiences arise from activities, from the environment and the social contexts embedded in the activities (Ooi, 2013:30). Technology users may adopt technological products not only to obtain useful benefits but also to enjoy the experience provided by technological products (Kulviwat et al, 2007:1065).

4.3.4 Data collection and analysis

The researcher adopted onsite self-administered surveys to have control on who filled the questionnaire and to allow the respondents to be familiar with the concept of the questionnaire. According to Eiselen and Tina (2005:2), one disadvantage with web self-administered questionnaire is that the response rate tends to be low compared to on site distribution, although web based surveys are relatively easy to administer and analyse.

Phase 1 questionnaires were self-administered from June to August 2014, where the researcher scheduled meetings with respondents in their offices. The researcher adopted onsite self-administered surveys to have control on who filled out the questionnaire and to allow the respondents to be familiar with the concept of the questionnaire.

The prototype was tested by a group of practitioners in Ministry of Tourism and Information Technology professionals after which they were provided with Phase

3 questionnaires to evaluate the prototype. The prototype was also accessible to online visitors and data was captured using Google analytics for further analysis. The criteria for selecting respondents in framework validation and prototype evaluation was based on their professional experience, independence and ability to work in a group. The study targeted thirty respondents from tourism officers from Ministry of Tourism and Information technology professionals

Web analytics software was used to collect data during from online visitors who accessed the web application. Web analytic software tracks web application visitors and information request to determine and improve the effectiveness of implemented web application (Kent, Carr, Husted & Pop 2011:536).

The researcher focused on the following dimensions: audience overview, information acquisition, online visitors and behaviour, geographical reach, language used and technological tools used to access the portal. The data was generated from (tourcampportal.com) Google analytic dashboard starting from 14th December 2014 to 9th February 2015.

Evaluation of RTDST prototype by selected experts was conducted in Phase 3 from 15th February to 3rd March 2015. Data collected during evaluation Phase 3 was presented using Tables and graphs. Google analytics data from online visitors was analysed using univariate analysis. Regression analysis was used determine the effects of real-time data streaming mediation technique on destination selection process.

Data analysis was done after collection data in Phase 1, collected data was analysed using SPSS 17. Univariate analysis such as descriptive statistics and frequency distributions was used to gain better understanding of collected data. The researcher used Phase 1 results to develop the framework and RTDST prototype in Phase 2.

Results obtained were used to improve the framework based on practitioners input and provide proof of the effectiveness of the proposed framework using streaming technological mediator. Table 4.2 below depicts data analysis phases at micro and macro level.

Table 4.2: Data analysis phases

	Micro Level	Macro Level
Phase	Phase 1	Phase 3
Objective	Understand the domain of tour destination selection and information sources	Assessing usability of the prototype. Assessing the effectiveness of the prototype on Tour Destination Selection Process
Purpose	Exploratory	Application
Method	literature review ,Field studies,	literature review, field studies,
Data Analysis	Mixed method	Expert &web users Evaluation
Contribution	Conceptual Framework and development of prototype	Improve framework, Effectiveness of RTDST in destination selection

4.3.5 Evaluation

The evaluation of interactive information systems encompasses three types of evaluation: Performance, Usability evaluation, Overall impact. Usability evaluation is used to assess the extent to which a system's human machine interface (HMI) complies with the various usability criteria that are applicable in its specific context of use (Harvey, 2009:563; Scholtz, 2006:512). Information system processes, outcomes and user satisfaction are the areas to be evaluated by experts or by potential users (Bevan & Petrie, 2009:4).

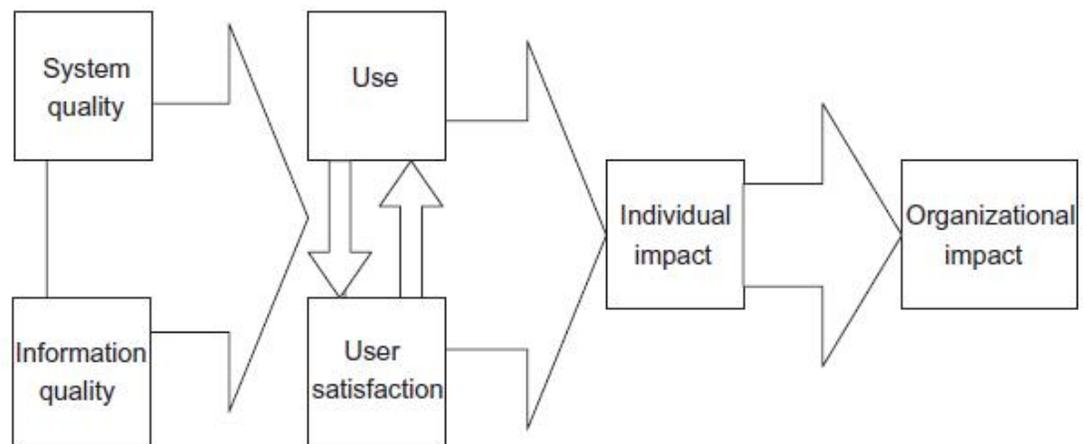


Figure 4.4: Information system success model (Delone & McLean 2003:12)

Adeyinka and Mutula (2010:1797) explain that, perceived quality of information system and perceived information quality are significant predictors of user satisfaction with the system, but they do not matter to the user of the system but user satisfaction is a strong predictor of individual impact.

The improved TAM by (Chen, Li & Yi-Li, 2011:125), theorised that an individual's behaviour and intention to adopt a particular piece of technology is determined by the person's attitude toward the use of the technology. Attitude in turn, is determined by perceived usefulness and perceived ease of use (Kulviwat, Bruner, Kumar & Clark, 2007:1060).

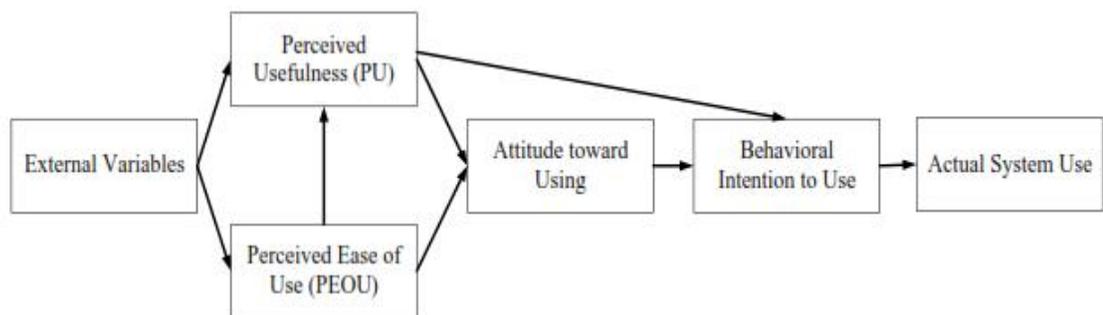


Figure 4.5: Technology Acceptance Model (Chen et al, 2011:125)

According to (Palmius, 2007:13), one criticism of Delone and McLean information system success model is that it is bloated with too many areas to measure effectiveness that it is not practical to handle everything. Lai, Yang and Tang (2006:14) introduced dependability in the framework. In their study on information quality, system quality, dependability, perceived usefulness, user satisfaction and intention to use, they found that system quality had the largest total effect on dependability, perceived usefulness and intention to use.

The perceived usefulness and perceived ease of use influence user behaviour and attitude towards the task technology fit (Surendran, 2012:175). Perceived usefulness is the extent to which persons believe that technology will enhance their productivity or job performance. Perceived ease of use is the extent to which a person believes that using a technology will be simple (Bagozzi, & Warshaw, 1989:987).

The researcher adopted elements from DeLone and McLean model for evaluation of Information Systems (Delone & McLean 2003:12) and perceived usefulness from Technology Acceptance Model (Chen et al, 2011:125)

Figure 4.6 below depicts evaluation framework for real-time data streaming technology mediator as an additional information source, the researcher found it necessary to focus on system quality, Information quality, user satisfaction, perceived use, individual impact during pre-visit before they make travel decisions. A major challenge in development of information system evaluation is to develop frameworks that are universally applicable to a wide range of applications (Stockdale & Standing, 2005:1091).

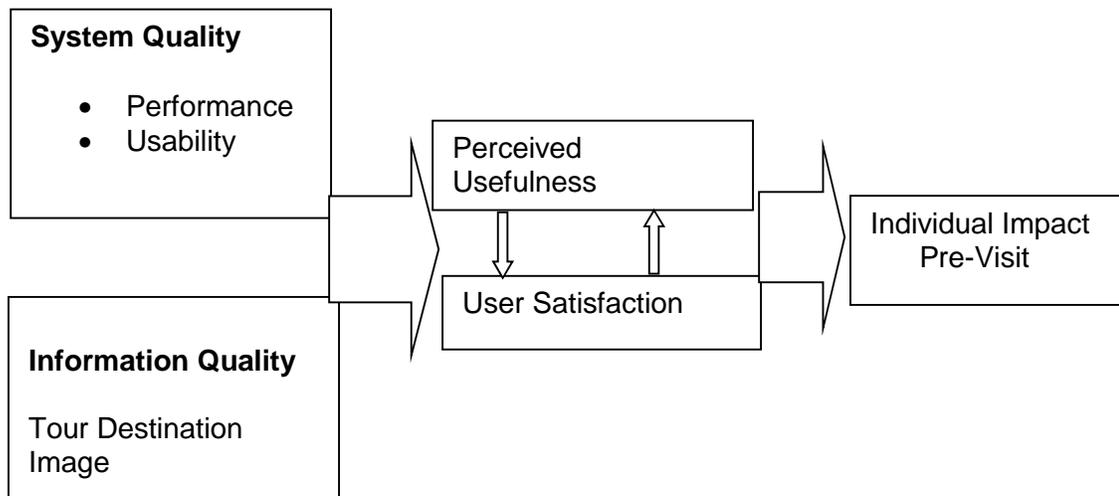


Figure 4.6: Evaluation framework for real-time data streaming mediator (Self, 2014)

The Phase 3 questionnaire, Appendix 4, was designed based on evaluation criteria and comprised of respondent profile, system quality, information quality, user satisfaction, perceived usefulness, and individual impact. The motivation for adopting perceived usefulness in the evaluation framework was to enable the researcher to determine how RTDST would enhance destination selection. The questionnaire consisted of the following sections: system quality, real-time information quality, user satisfaction, perceived usefulness and individual impact. The questionnaire comprised of scaled questions, multiple-choice questions and open-ended questions.

4.3.6 Validity and reliability

Research validity is concerned with accuracy while reliability is the scale of consistency (Barry, Chaney, Piazza-Gardner & Chavarria, 2013:2). It is required that the measuring instruments used in research are reliable as they contribute to overall research validity.

Data analysis requires a number of closely related operations such as establishment of categories, the application of these categories to raw data through coding, tabulation and then drawing statistical inferences (Kothari, 2004:18).

To ensure reliability, the questions were designed to measure particular traits. The researcher ensured questionnaires were not biased and ambiguous and data collected was guided by research objectives, specific issues being investigated and research questions that the researcher kept in mind during data collection and evaluation of the prototype. A pilot testing of the questionnaire was also conducted to ensure that all participants understood the objective of this study.

Validity was ensured by having accurate representation of relatively busy DMOs that are involved in marketing destinations and receive local and international tourists. The respondents comprised of experts and tourism officers, destination marketers and IT professionals and they were provided with detailed explanation of the study aim, objective and significance. During performance testing, the researcher used multiple sources of streaming cameras. A group of practitioners in Ministry of Tourism and Information Technology professionals tested the prototype, they were provided with evaluations criteria of the prototype.

4.4 Ethical considerations

In this study, most of the ethical principles and issues that need to be considered were taken into account. Firstly, and most importantly, this research had the approval of the principal secretary of Ministry of Tourism in Kenya.

The researcher also followed established guidelines by UNISA Research and Ethics Committee. Appendix 1 shows grant of permission to conduct research project by UNISA. The researcher conducted this research in a manner that is respectful of the rights and integrity of those who volunteer to participate, as stipulated in the UNISA Research Ethics policy. Appendix 1 shows permission to conduct research project.

National Commission for Science, Technology and Innovation (NACOSTI) provided research clearance in Kenya and they gave research permit numbered NACOSTI/P/14/8677/1756 to allow the researcher to carry out data collection for Phase 1 and Three and to implement the prototype as per research process. Appendix 2 shows authorisation letter by the Ministry of Science and Technology in Kenya.

During the data collection process, the researcher ensured that all research participants understood the purpose and the nature of the data collection process. The questionnaires pointed out and explained the purpose and the objectives of this research and all the participants were notified and assured that their inputs and feedbacks would be used as a research view and it would be considered private.

The researcher was granted permission to stream and integrate the four destinations attractions IP cameras used in evaluation stage and terms & conditions of usage were applied. The prototype had terms and conditions for all users. Terms and conditions for the prototype are available online and all users were required to adhere to terms and conditions.

During evaluation phase, the researcher ensured participant login parameters to the prototype were secure and confidential not to be used for any activities other than for evaluation of the prototype. Confidentiality means that research participants were free to give and withhold as much Information as they wished to the person they chose. The researcher should have knowledge and expertise on the area of investigation, maintain confidentiality and be able to identify limits (Fouka & Mantzourou, 2011:10).

4.5 Chapter summary

This chapter provided an overview on research design and methodologies. An overview of research paradigms and methodologies was provided in order to select the most appropriate ones for this study.

Adopting design-science as the methodology for this research allowed the researcher to develop new ideas on conceptual framework, while naturalistic evaluation allowed the researcher to have clear understanding on destination selection and how well the proposed solution will work in real-world environments. A socio-technologist paradigm allowed creation of new systems and transfer of technology to practitioners. The researcher identified appropriate evaluation criteria for the prototype to determine its practicality and effectiveness. The next chapter is on framework building and validation by practitioners.

CHAPTER 5

FRAMEWORK BUILDING AND VALIDATION (PHASE 1)

The aim in this first phase was to validate the conceptual framework on whether the concept makes sense to respective practitioners. This chapter highlights the findings for Phase 1 of the research process in determining the quality of developed conceptual framework and to identify areas for improvement based on practitioners' inputs. The outcome of Phase 1 helps to identify appropriate methods for measuring the effectiveness of the proposed framework and tool.

5.1 Phase 1 research instrument

The Phase 1 questionnaire, Appendix 3, consisted of three sections: framework building, conceptual framework validation and evaluation. The three sections of questionnaire comprised of twenty questions made up of binary, scaled, multiple-choice and open-ended questions.

The questionnaires were self-administered from June to August 2014, where the researcher scheduled meetings with respondents in their offices. The researcher adopted onsite self-administered surveys to have control on who filled out the questionnaire and to allow the respondents to be familiar with the concept of the questionnaire.

5.2 Data analysis and results

The statistical information presented is derived from forty (40) questionnaires distributed to respondents from the organisations under study. Thirty-eight (38) questionnaires were completed and returned, giving a response rate of ninety-five percent (95%).

The computer program used for the data analysis was the Statistical Package for the Social Sciences (SPSS). The descriptive data is presented as frequencies and percentages in pie charts, tables and bar charts. Percentages are rounded off to the first decimal point. Five response alternatives – strongly agree, agree, neutral, disagree, and strongly disagree – were reduced to three categories namely agree, neutral and disagree, in order to facilitate the discussion process.

The results are presented based on the data gathered by means of Phase 1 questionnaire. Cronbach's alpha (α) coefficient was employed in order to test the reliability of the research instrument and its constructs (Morosan & Fesenmaier, 2007:24). Cronbach's alpha (α) is a measure of how well each scale correlates with the remaining items in a particular section; it is a measure of consistency within a particular scale. The overall reliability of the scale employed in the definition section was 0.935. An acceptable level of reliability for the coefficient would be any value greater than 0.7 (Law & Hsu, 2006: 297; Wong & Law, 2004:320).

5.2.1 Biographical information: Phase 1 participants

The biographical information presented in this section includes variables such as gender and age, current position, period of service, and professional qualifications.

It was important to ascertain the age of respondents in order to obtain a broad indication of their years of experience as employees in the organisation under study. This was important as understanding of the destination selection varies according to level of experience.

Table 5.1: Respondents' age

Age group	Frequency	Percent
20-30yrs	6	16.9
31-40yrs	22	57.7
41-50yrs	7	19.2
51-60yrs	3	6.2
Total	38	100.0

According to Table 5.1 the majority of the respondents (n=32) were above 31 years of age (83.1%), with 22 (16.9%) being 30 years or younger. It was essential to establish the positions held by the respondents as some of the questions required respondents who could understand tourism marketing and E-tourism technology developments. Respondents were required to answer the following question (2): How long have you worked in tourism. The majority of respondents (82.3%, n=31) were involved in developing strategies for destination marketing and were employed as destination marketers, tourism officers, or public relation officers. Only 17.7% (n=7) respondents served at Information Technology (IT) departments. Respondents were further requested to indicate the period of service in their current position with the aim of establishing their experience in destination marketing to answers question (3): How long have you worked in tourism?

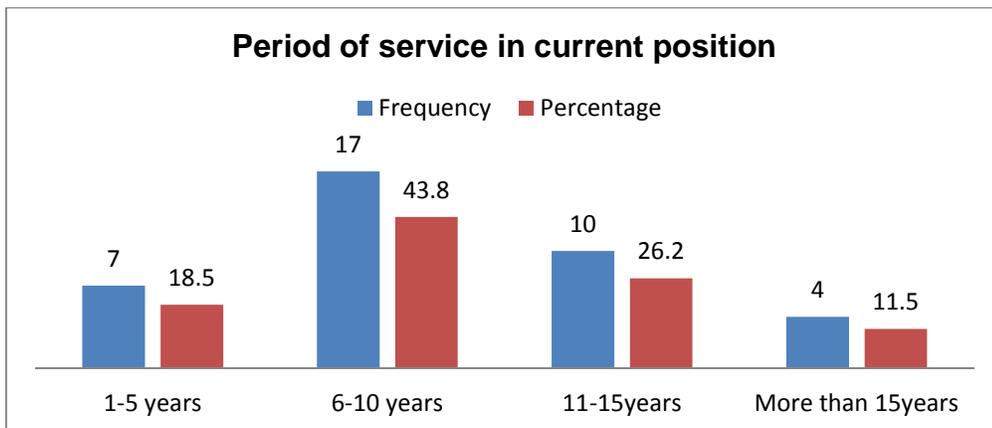


Figure 5.1: Period of service in current position

According to Figure 5.1, the greater majority 43.8% of the respondents indicated that they had served in current position for 6-10 years. However, there was not a great variance in the representation of the different time intervals. The majority 81.5% (n=31) of the respondents had six or more years of work experience in their current positions.

The level of the respondents' expertise in destination selection was sought. The following question (4) was posed: What is your level of expertise? According to Figure 5.2 below, 21.5 % (8) of the respondents were beginners, 38.5% (15) were intermediate while 40% were advanced.

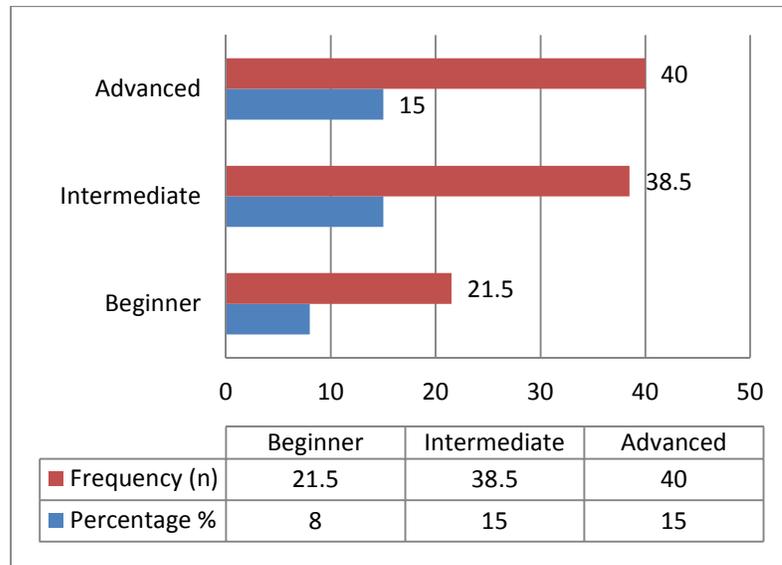


Figure 5.2: Professional qualification

5.2.2 Framework building

Destination choice is regarded as the primary element in the decision making process. This study sought answers to the following question (5): Does your organisation have a customer journey framework? A 'yes' or 'no' response was required. All the respondents indicated that they had an existing customer journey framework. Respondents were further asked to outline the potential customer journey during destination selection to answer question (6): Please outline the potential customer journey during destination selection process.

The respondents explained that there are three basic levels of decisions:

(1) **Core decisions**, which are planned in detail and well in advance of the trip including primary destination, date, length of trip, travel members, accommodation, travel route, overall travel budget. Miller, a tourism officer based at Ministry of Tourism head office in Kenya, said, "*International tourists visiting Kenya are interested with itineraries of destinations and cost of trip that they intend to visit*".

(2) **Secondary decisions**, which appear to be considered prior to the trip but also considered largely flexible to accommodate the possibility of change such as secondary destinations, activities, attractions; and

(3) **En route decisions**, which are not considered until the travellers are actually en route such as rest stops on the road, restaurant stops, shopping places, items to purchase, budget for gifts and souvenirs.

The respondents indicated that all the elements have different roles and different levels of perceived importance. Decisions made at an early stage seem to condition decisions made in later stages.

The study sought to establish the main factors that affect travel decisions during the destination selection. The following question (7) was posed: In your own opinion, what are the main factors that affect decisions during tour destination selection process? The majority of respondents cited that the deepest and most widespread influences on consumer behaviour are cultural factors. Culture appears as the most central foundation for an individual's wants and behaviour, consisting of the basic values, perception, wants, and behaviours that a person constantly comprehends in the society.

According to Palani and Sohrabi (2013:2), tourists are more conscious about security, safety, environmental issues, and quality of services, available information and expenses rather than visiting a place without proper prior

information. Distance is no more a big obstacle to visit a place while available information and branding of the destination is more important.

Destinations that fail to maintain the necessary infrastructure or build inappropriate infrastructure face significant risks (Morrison, Taylor & Douglas, 2004:23-24). A destination's attractiveness can be diminished by violence, political instability, natural catastrophe, and adverse environmental factors and overcrowding. Destination marketing is an important part of developing and retaining a particular location's popularity.

The information sources of tourist activities have changed greatly over the past fifteen years, due firstly to the impact of new technologies; secondly, to the change in tourist consumer behaviour, thirdly to the increase in the number of tourist destinations, and finally to the growing competition among different destinations. For this reason, the main aim of this section was to identify the main activities involved in tour destination marketing.

5.2.2.1 Information sources used to market destinations

This study sought answers to the following question (8): What are the main activities involved in tour destination marketing? The majority of the respondents cited that advertising is the best way for initial publicity of tourist attractions. Advertisement methods are chosen according to needs and demands. These methods are printed media, broadcast and online media. Printed media include magazines, newspapers, journals and billboards. Printed media are sometime more expensive than online marketing. It is mainly used for local and domestic marketing. Another activity that was cited by the respondent was the use of social media for tourism marketing. Most of the tourism organisations utilise online advertisement and they have online accounts like YouTube, Twitter and Facebook to connect people and give up-to-date information about their services.

The study sought to establish information sources that are mainly used to market destination. The following question (9) was posed to solicit this information: Which

of the following information sources do you mainly use to market your destination? From the study findings as depicted in Table 5.2 below, the respondents strongly agreed that print media was mainly used to market their destinations as shown by a mean of 4.4. In addition, the respondents agreed that word of mouth and documentaries are also used as shown by means of 4.4 and 4.2 respectively.

Table 5.2: Information sources for marketing destinations

Information source	Mean	Std. deviation
Word of mouth	4	0.15
Print media e.g. brochures	4.6	0.32
Documentaries	4.4	0.18
Facebook	4.1	0.15
Twitter	4.4	0.18
YouTube	4.4	0.18

According to Schegg, Scaglione, Liebrich and Murphy (2007:471), advertising plays an important role in promotion of tourism destinations, because it generates awareness of the destinations as possible places to visit, creating positive images of the destinations and motivating the tourists to travel to those destinations.

It was important to ascertain whether the information sources portrayed by real travellers. This study sought answers to the following question (10): Information sources portrayed by real-travellers, which are not primary meant to be marketing tools affects customers who have never been there? A 'yes' or 'no' response was required.

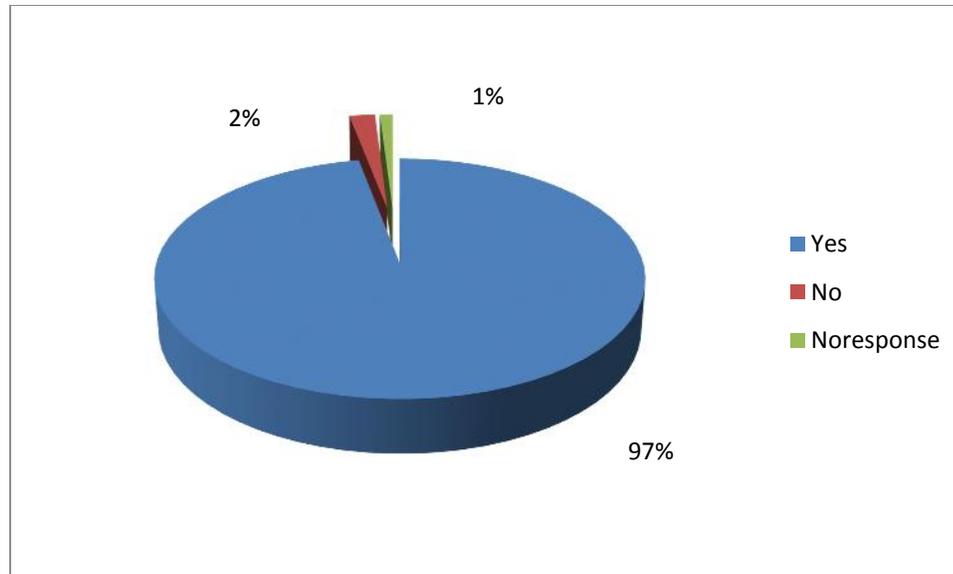


Figure 5.3: Shared information sources by travellers

It is evident from Figure 5.3 that the greater majority 97% of the respondents indicated that the information sources portrayed by real travellers, which are not primarily meant to be marketing tools affects customers who have never been there. Another important factor is destination image, because it influences destination selection. Information sources, like brochures, relatives and friends, have an influence on image formation in a tourist destination (Beerli & Martin, 2004:660).

This finding implies that the information about a concrete destination that is occasionally demanded by tourists is a particularly important means of promotion for the tourism industry. Sources of information about a destination have a great influence on the process of tourist decision-making, and the behaviour of tourists determines how the search for information is done and how information will be used.

In addition, the study sought to find out whether the organisations under study had an interactive website. This study sought answers to the following question (11): Does your organization have an interactive website? A 'yes' or 'no' response was required. All the respondents indicated that their organisations had an interactive website. According to Scott (2010, 77:79) the concept of internet marketing means

optimising the site in which the written content garners links which act as trust endorsement in the purpose of listening to what the community often does and responses. It can be concluded that an interactive website facilitates tapping into a much larger community that may not have been available via traditional advertising channels. It helps to boost up the brand awareness and raise the visibility of product or services in the targeted customers.

The study further sought to establish how often the destination information was updated. The following question (12) was posed to solicit this information: How often do you update destination information?

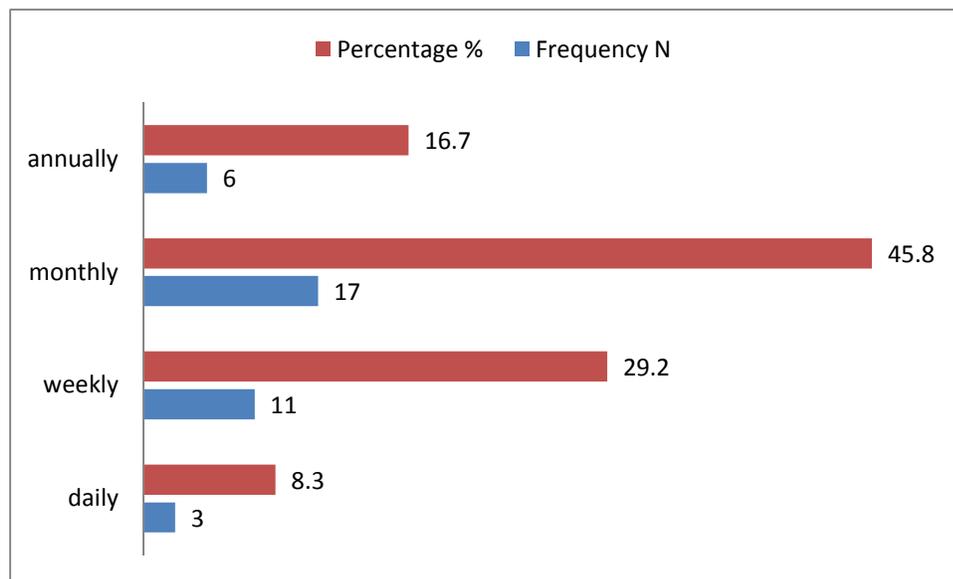


Figure 5.4: Updating destination information

According to Figure 5.4, 45.8% of the respondents indicated that they updated the destination information every month, 29.2% (n =11) indicated weekly, 16.7% (n = 6) indicated annually and a few 8.3% (n=3) indicated daily.

Respondents were further requested to indicate the type of systems that they use. This study sought answers to the following question (13): Does your organisation utilise the following systems?

Table 5.3: Systems utilised by DMOs

		Yes	No	Totals
Online reservation systems	n	25	13	38
	%	65	35	100
Virtual information systems	n	21	17	38
	%	55	45	100
Third party online reservation	n	17	21	20
	%	45	55	100

Respondents indicated that their organisations utilised third party online reservations. Furthermore, the sought to establish the opinion of responded on proposed conceptual framework. This study sought answers to the following question (1): Does the diagram represent tour destination selection process? The respondents indicated that the diagram represents customer journey in destination selection during pre-visit, visit and post visit. Further, the respondents were asked to answer question (2): Identify components and statements that are not correct and relevant in destination selection process. All statements were relevant to destination selection.

The study sought to find out whether the conceptual framework was complete to answer question (3): In your opinion, is the conceptual framework complete?

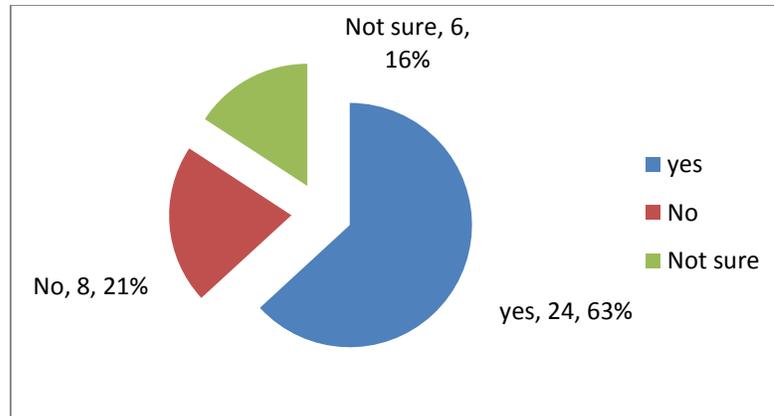


Figure 5.5: Completeness of the conceptual framework

The respondents who indicated 'No' explained that the conceptual framework was not complete. The study sought to establish additional components to the conceptual framework to answer question (4): Please identify and suggest changes that in your opinion will improve proposed conceptual framework.

Majority of the respondents cited that framework should contain anticipatory phase, decision-making phase and a virtual communication space that support multilingual languages. According to Chhatwani, Gada, Ganji, Pathirapandi and Tikku (2013:74), multilingual web applications play a strategic role in the quality and effectiveness of the information and services being advertised by meeting the need language needs of diverse clients by providing the same information in different languages. They also suggested five stages: motivation stage, information acquisition, joint decision-making process, vacation activities and subsequent satisfaction and complaints.

According to respondents, the tourism motivation stage should initiate the whole decision process. The second stage is to search for information about the destination, accommodation and transportation. The third stage is joint decision making. Based on the acquired information, a vacation alternative must be selected. The fourth stage is the actual vacation trip followed by the last stage of (dis)satisfaction. Some respondents suggested a three-stage tourist choice process, which includes first taking a vacation or not; second visiting foreign vs.

domestic destinations; and third taking multi- vs. single-destination vacations. This study therefore concludes that purchase decisions are a result of three behavioural concepts: motivation, cognition, and learning.

This study sought answers to the following question (5): Please give your opinion on the following statements regarding the conceptual framework. The findings in Table 5.4 below indicated that the conceptual framework was complete as shown by a mean of 4.0. Lastly, the respondents agreed that pre-visit information sources influence the choice of destination to visit as shown by a mean of 3.7. The amount of information available before visits affects the choice of destination and on what they expect to experience at selected destinations (Jenkins, 2009:2).

Table 5.4: Statements on conceptual framework

	Mean	Std Deviation
Conceptual framework represents information sources in destination selection process	4.3	0.16
Conceptual framework is complete	4	0.12
All statements in the framework are understandable	4	0.75
Pre-visit information sources influences choice of destination to visit	3.7	0.18

The respondents agreed that the conceptual framework represents information sources in destination selection as shown by a mean of 4.3. The pre-visit information sources are derived from organic, induced and complex images.

Organic and induced images create expectations and once the tourist is on site, they compare the real image with perceived image during pre-visit. Organic images are formed as a result of life experience that may or may not have any relation with tourism and induced images are formed as a result of active search for information on various destinations (Croy & Wheeler, 2007:3). Organic image and induced image are used to create an overall image. During visit is when a more complex destination image is formed and experience with the destination will provide feedback and influence evaluation of alternative destinations on the next occasion (Matos, Mendes & Valle, 2012:112).

5.2.2.2 Applicability and proposed aim of streaming technology

The study sought to know the respondents' opinion regarding the acceptability of conceptual framework in various sectors. The following question (6) was posed: Proposed conceptual framework is applicable in the following tours destinations? The study used a Likert scale of 1 to 5 where 1 was not at all acceptable, 2 was slightly acceptable; 3 was moderately acceptable, 4 was very acceptable, and 5 was completely acceptable.

Table 5.5: Acceptability of conceptual framework in various areas

	Mean	Std Deviation
a. National parks	4.2	0.18
b. Animal orphanage	4.1	0.19
c. National museums	4.5	0.31
d. Archaeological sites	4.2	0.16
e. Bark yard Zoo	4.0	0.18
f. Beach hotels	4.1	0.27

From the findings in Table 5.5, the respondents indicated that the conceptual framework is very acceptable in national parks, animal orphanage, national museums, archaeological sites, and backyard Zoo and beach hotels as shown by means above 4.0.

5.2.2.3 Information sources for marketing destinations

The respondents were further asked to weigh the additional component of streaming technology during pre-visit to answer question (7): Kindly weigh the additional component of streaming technology during pre-visit. A five point Likert scale. Likert scale is a non-comparative scaling technique from which respondents choose one option that best aligns with their view (Betram, 2007:2). Respondents agreed that the conceptual framework provides additional information sources to

potential tourists as indicated in Table 5.6 below. The value for the additional components is high in every case and the standard deviation is very low with only one component with the lowest mean score of 3.4.

Table 5.6: Additional components of streaming technology

Additional components of streaming technology	Mean	Std. Deviation
Provide additional destination information source	3.9	0.18
Provide product information	4	0.19
Provide real-time availability	4.5	0.31
Provide actual representation of tour destination	4	0.16
Increase online visitors	3.8	0.18
Helps potential customers to buy destination on product	3.4	0.27
Provide tourist experience before online reservation	4.3	0.12
Customer needs are met during pre-visits	4	0.15
Add value to tourist pre-experiences	4.6	0.32
Authenticate tour destination before visit	4.4	0.18
Reduce imaginations	4.1	0.11
Improve destination reputation to potential customers	3.6	0.03
Stimulates customers to have travel intention	4.1	0.02
moving real time images arouse mental pleasures	4.2	0.02

Respondents agreed that the conceptual framework provides additional destination information sources and real-time availability of destinations. Image influences expectations, destination reputation and customer loyalty, and the more positive the preconceived image of a destination the higher level of loyalty to the destination (Bosque & Martin, 2008:559). A unique and strong image is needed to capture travellers' attention.

According to Inversini, Marchiori, Dedekind and Cantoni (2010:323), online destination reputation is an essential component of destination competitiveness and online reputation is the media impressions created by consumer after a collective assessment of Tourism Created Content (TCC) and User Created Content (UCC) that is created and shared over the Internet.

The study sought to find out the aims on streaming technology. This study sought answers to the following question (8): What other aims on streaming technology as additional information source not in above list? The proposed aims on streaming technology suggested by the respondents were grouped into six distinct categories namely distribution, marketing, content, customers, stakeholders and management.

1. Facilitate the effective distribution and sale of a comprehensive range of tourism products from a destination,
2. Effectively co-ordinate the marketing activities and branding of a specific destination and the comprehensive range of products it has to offer,
3. Present the destination as a holistic entity displaying a destination orientation rather than product orientation,
4. Provide an appropriate and sustainable relationship building mechanisms with customers through effective, meaningful and continuous communication,
5. Build and maintain meaningful relationships with stakeholders,
6. Facilitate the management of a destination by supporting real time data streaming technique activities and through the provision of tools, support and training for its stakeholders.

This study further sought answers to the following question (9): In your opinion, what will be most likely tourist experience during-visit when they make travel decision based on additional information source of real-time data streaming as a mediator?

Table 5.7: Tourist experience during visit when using information sources contained in a new process

		Agree	Neutral	Disagree	Mean	Std deviation
Realisation of expectations	n	17	8	13	3.0	1.25
	%	45	21	34		
Non-realisation of expectations	n	10	6	22	3.0	1.23
	%	26	16	58		

From the findings in Table 5.7, the 45 % respondents indicated that the most likely tourist experience during visit when they make travel decision by using information sources contained in new process will be realisation of expectations and only 26% indicated non-realisation. Individual reasoning and emotional interpretation can be either positive or negative evaluation (Bosque & Martin, 2008:558; Pena, Jamilena & Molina, 2012:266; Salma, 2007:36).

After tourists, make decisions to travel to a selected destination. Their experience at the destination may lead to realisation or non-realisation of expectations. The destination experience of tourists who make travel decisions based on incorrect information sources is a non-realisation of expectations, which affects overall customer satisfaction and destination reputation.

According to McCartney, Butler and Bennett (2008:184), perception of a destination are a result of personal realities that drive someone to travel to that destination and exposure to various information sources play a role during visit. Beeton, Bowen, and Santos (2006:27) suggest that real time streaming technology portrays notions of quality in tourism experiences to the public. In these circumstances, images can help to define and direct tourism experiences to potential travellers. Images persuade people to visit places and once there, people “gaze” at that which initially drew them to the destination.

Table 5.8: Proposed aims of streaming technology

	Mean	Std deviation
Provide accurate information	4.1	0.01
Provide actual representation of tour destination	3.6	0.03
Helps potential customers to buy destination product	4.1	0.02
Provide real – time availability	4.2	0.04
Satisfy customer needs during pre-visit	4.7	0.05
Authenticate tour destination	4.2	0.04
Improve destination reputation to potential customers	3.6	0.01

The study sought to establish proposed aims of streaming technology to answer question (10): Kindly weigh the information sources contained in the new process (with real-time data streaming technique). From the findings in Table 5.8, the respondents agreed that the proposed aims of streaming technology provide accurate information and actual representation of tour destination. The streaming component also helps potential customers to buy destination product as shown by means above 4.0. According to Hanefors and Mossberg (2002:240), real-time streaming technology allows travellers to perceive the current state of a destination.

The content of the images is of critical importance since it determines what kind of image the destination is attempting to create in the minds of potential consumers (McDowall & Choi, 2010:256). This study therefore infers that real-time streaming technology can be an accurate information source when making travel decisions because visual images appear to be more memorable and powerful in people's minds.

Table 5.9: Tourist experience when using information sources contained in old process

		Agree	Neutral	Disagree	Mean	Std deviation
Realisation of expectations	n	13	6	19	3.0	1.25
	%	35	15	50		
Non realisation of expectations	n	23	6	9	3.0	1.23
	%	60	15	25		

This study sought answers to the following question (11): What would be most likely be a tourist experience during visit when they make travel decision by using information sources contained in old process that contain induced and organic images. Their experience at the destination may lead to the realisation or non-realisation of expectations. The respondents indicated that, during visit the most likely tourist experience when they make travel decision by using information sources contained in old process will be non-realisation of expectations.

5.2.3 Evaluation of the proposed framework

The objective of this process was to determine the main areas to be considered during evaluation of the proposed conceptual framework and tool. The respondents were required to indicate their level of agreement regarding the proposed conceptual framework and tool to answer question (1): Please indicate how strongly you agree or disagree on determining the effectiveness of proposed conceptual framework and tool. From the findings as shown in Table 5.10, respondents strongly agreed that content accuracy, freshness, performance, intent to visit, reliability, usability and navigation, and reliability would be the best way of evaluating its effectiveness as shown by means above 4.0. According to Bevan and Petrie (2009:2), the effectiveness of an information system is the accuracy and completeness with which system users can accomplish specific objectives.

Table 5.10: Evaluation of the effectiveness of the proposed framework and tool

Evaluation criteria	Mean	Std. Deviation
Content	3.9	0.18
Freshness - up to date	4	0.19
Content accuracy	4.5	0.31
Intent to visit	4	0.16
Geographical reach	3.8	0.18
Streaming quality	3.4	0.27
Number of shares	4.3	0.12
Performance	4	0.15
Usability and navigation	4.6	0.32
Reliability	4.4	0.18
Revenue generation	4.1	0.01
System management	3.6	0.03
Number of registered users	4.1	0.02

From the study findings, content accuracy, number of shares, usability and reliability had a mean score above 4.3. The evaluation of interactive information systems encompasses three types of evaluation: Performance, usability evaluation, overall impact. Usability evaluation is used to assess the extent to which a system's human machine interface (HMI) complies with the various usability criteria, which are applicable in its specific context of use (Harvey, Stanton, Pickering, McDonald & Zheng, 2009:563; Scholtz, 2006:512).

The study sought answers to the following question (2): What other areas you would consider significant when evaluating the effectiveness of the proposed framework? From the study findings, the respondents cited that the evaluation should include revenue elements from online reservation module. Mutero of Kenya Wildlife Service, said, *"Tourists who have made online reservation after accessing the streaming technology can also be used evaluate revenue generated"*

5.3 Conceptual definitions

Destination selection involves activities that potential customers perform during pre-visit, during actual visitation and during post-visit (Croy & Wheeler, 2007:3). Customer journey starts from a potential visitor first thinking about a vacation, to planning, booking, experiencing and recalling the experience. Information sources used in destination selection are a force, which influences the formation of perceptions or cognitive evaluations but not the affective component of destination image (Baloglu & Mccleary, 1999:874).

Information sources during pre-visit that enable potential tourist to make travel decision are in the form of organic and induced images. According to Dominique (2011:331), image influences the attitude that tourists develop towards destinations, which influences the buying decision process.

Induced images are formed as a result of active search for information on various destinations while organic images are formed as a result of life experience that may or may not have any relation with tour destination. Real images are those images that are formed during visit of the destination and it is during this period that the image of tour destination is changed, clarified and expanded (Croy& Wheeler, 2007: Dominique, 2011:310).

Mediation in the tourism setting refers to an individual's active attempt to interpret the tourism experience to another individual. Mediator in the tourism setting is the tour guide, while technology mediators are technological tools used to influence consumer buying behaviour (Tussyadiah & Fesenmaier, 2009:37).

The framework starts from the anticipatory phase and ends at post-visit. During pre-visit potential tourists are in a position to make travel decisions from organic images, induced images and real time images from technology mediator.

Tourists access real-time images using technology mediator to authenticate tourist destination attractions. With the knowledge derived from organic, induced and real time images about selected and alternative destinations, they are in a better position to make informed travel decisions. Conative component allows users to perform emotional interpretations resulting from cognitive and affective components. After travel decision is made, multilingual virtual communication space is used as a mediator to interact directly with the selected destination where they make online reservation and enquiries.

During visit, tourists compare destination image and experience with pre-visit information sources, which leads to either realisation or non-realisation of expectations. The last component is post-visit where they recall the experience. Any difference between expectations and experience affects destination reputation and overall customer satisfactions.

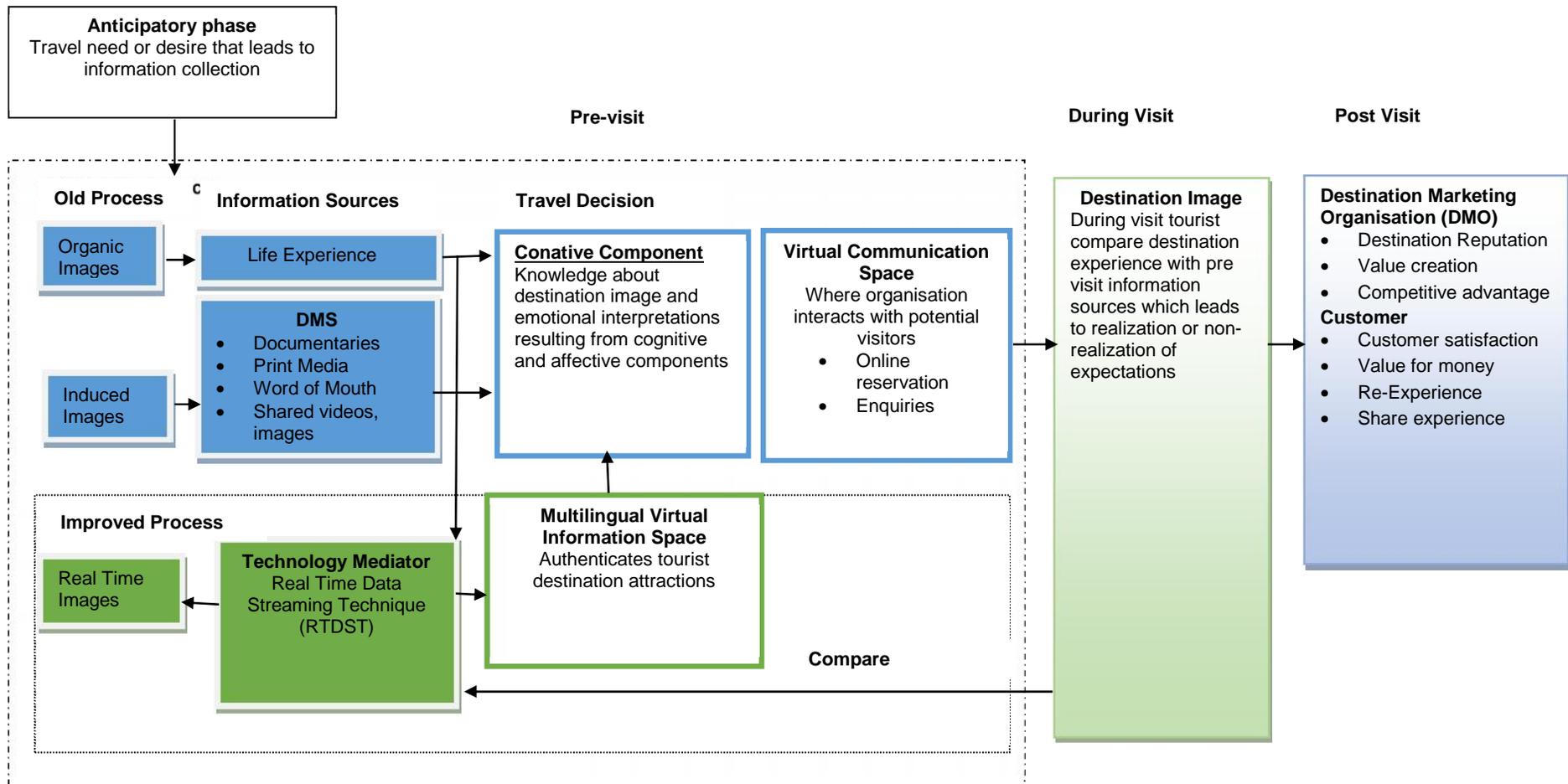


Figure 5.6: Destination selection framework using real-time data streaming mediation technique (Author, 2015)

5.4 Realisation of research objective two: improved conceptual framework

The main objective of this phase was to develop a destination selection framework based on a real-time data streaming technique. The researcher identified the gaps and developed an initial framework from related theories and concepts derived in Chapters 2 and 3. Practitioners validated the framework. After validation, areas of improvements were identified based on inputs provided by research participants. Thus, an improved conceptual framework was developed:

The new conceptual framework starts from the anticipatory phase and ends at post-visit. During pre-visit, potential tourists are in a position to make travel decisions from organic images, induced images and real time images from a technology mediator. Tourists access real-time images using the technology mediator to authenticate destination attractions. With the knowledge derived from organic, induced and real-time images about selected and alternative destinations, travellers are in a better position to make informed decisions. The 'conative' component allows users to perform emotional interpretations resulting from cognitive and affective components. After travel decisions are made, a multilingual virtual communication space is used as a mediator to interact directly with the selected destination where they make online reservations and enquiries.

During a visit, tourists compare the destination image and experience with pre-visit information sources. This leads to either a realisation or non-realisation of expectations. The last component is post-visit where they recall the experience. Any difference between expectations and experience affects destination reputation and overall customer satisfaction.

From the data analysis on framework validation, it was evident that the destination selection using induced and organic images do not represent the true destination image. This can be resolved by adopting a real-time data streaming mediation technique for destination selection. This intends to:

- Provide an accurate and unbiased destination image;
- Provide a mechanism of authenticating destination attractions through effective, meaningful and continuous communication;
- Provide a pre-visit experience to potential tourists to aid in buying destination products; and
- Provide an effective way of marketing a destination by building and maintaining meaningful relationships with potential visitors.

The framework was used to develop the tool in form of a prototype as proof of concept. The solution was (tourcampportal.com) was developed and integrated with a real-time data streaming mediation technique to implement the conceptual framework.

5.5 Chapter summary

From the findings, it is clear that pre-visit information sources influence the choice of destination as shown by a mean of 3.7. Ninety seven percent of respondents indicated that the information sources portrayed by travellers, which are not primarily meant to be marketing tools, affect customers who have never been there. The additional information source using a streaming technology mediator provides product information, real-time availability, actual representation of a destination, pre-visit experience during decision-making process, and authenticates destination attractiveness as shown by means above 4.0. The findings indicate that, during visit the most likely tourist experience of tourists when they make travel decisions based on technology mediator will be realisation of expectations.

CHAPTER 6

PROTOTYPE DESIGN AND IMPLEMENTATION (PHASE 2)

This chapter presents prototype design and implementation of conceptual framework to serves as 'proof of concept' that the framework can actually be implemented. The objective of this phase was to develop a prototype using real-time data streaming technique and to test its performance. The researcher designed the prototype considering three types of users' i.e. portal administrator, tour destinations and web users. The researcher used Unified Modeling Language (UML) and conceptual diagrams as basis for modelling in order to make Chapter 6 more easily understandable, even by non- IT experts.

6.1 Unified modeling language

Unified Modeling Language (UML) is a general-purpose visual modeling language that is used to specify, visualise, construct and document the artefacts of a software system (Hartmann, Imoberdorf & Meisinger, 2000:2). The researcher chose to use case and sequence diagrams to show the interaction and behaviour of users who will interact with the system. Use case diagram defines how an entity may use the system under development; it contains actors, use cases and interactions between actors and the system under development (Dijkman & Joosten, 2002:2). A sequence diagram shows interactions between objects in a way that emphasises links rather than sequence (Mike, 2005: 146). Figure 6.1 below shows the use case of the prototype. The main actors that interact with the system are DMO, portal administrator and the web users.

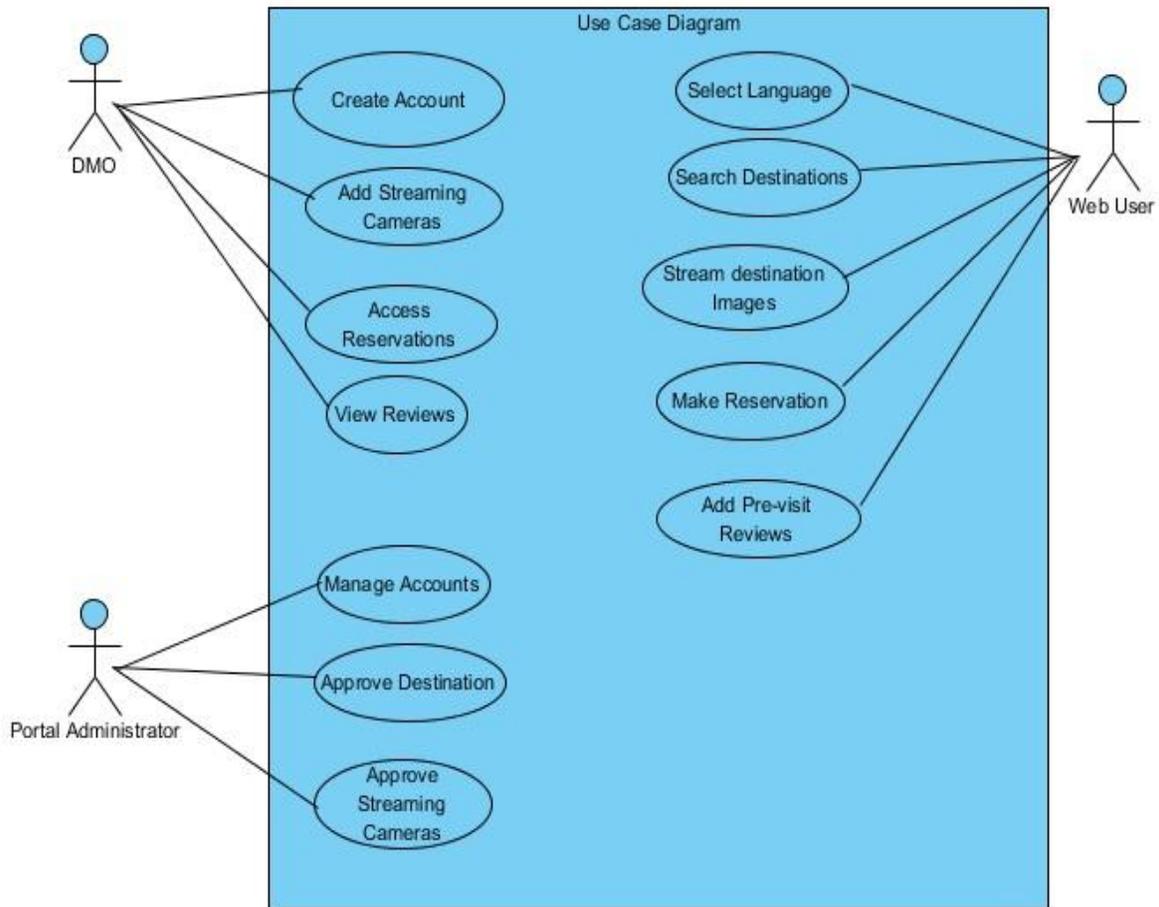


Figure 6.1: Use case diagram

The use case diagram was applied to design the modules for the prototype. DMO module allows the users to create account. The account is used to manage cameras and destination profile. Add streaming cameras allow registered DMOs to publish private or public cameras. DMOs have access to reservations modules where they access all bookings sent by web users. DMOs and other web users access reviews submitted by web users. The portal administrator is a super user who has access to all the modules of DMO and web users. The admin approves all users, streaming cameras and DMOs. The use case diagram was used to develop sequence diagram for the prototype.

A sequence diagram has two dimensions. The vertical dimension represents time and the horizontal dimension represents the objects participating in the interaction. Time flows from top to bottom. Objects are shown as vertical lines and messages as horizontal arrows extending from a sender object to a receiver object (Poranen, Rikki & Nummenmaa, 2003:91). Figure 6.2 below depicts the sequence diagram that shows the behaviour sequence of the use case. There are thirteen messages in the sequence diagram, the DMO starts by creating an account and then the administrator of the portal approves the accounts to enable DMO to add a live streaming camera. Once the administrator approves the streaming camera, it is automatically available to the web users who can now search and stream destination attractions. Web users have access to DMO reservation components and every user is allowed to send enquiry messages to DMO, write pre-visit reviews on destination attractions. The last message is a direct communication between the DMO and potential tourist.

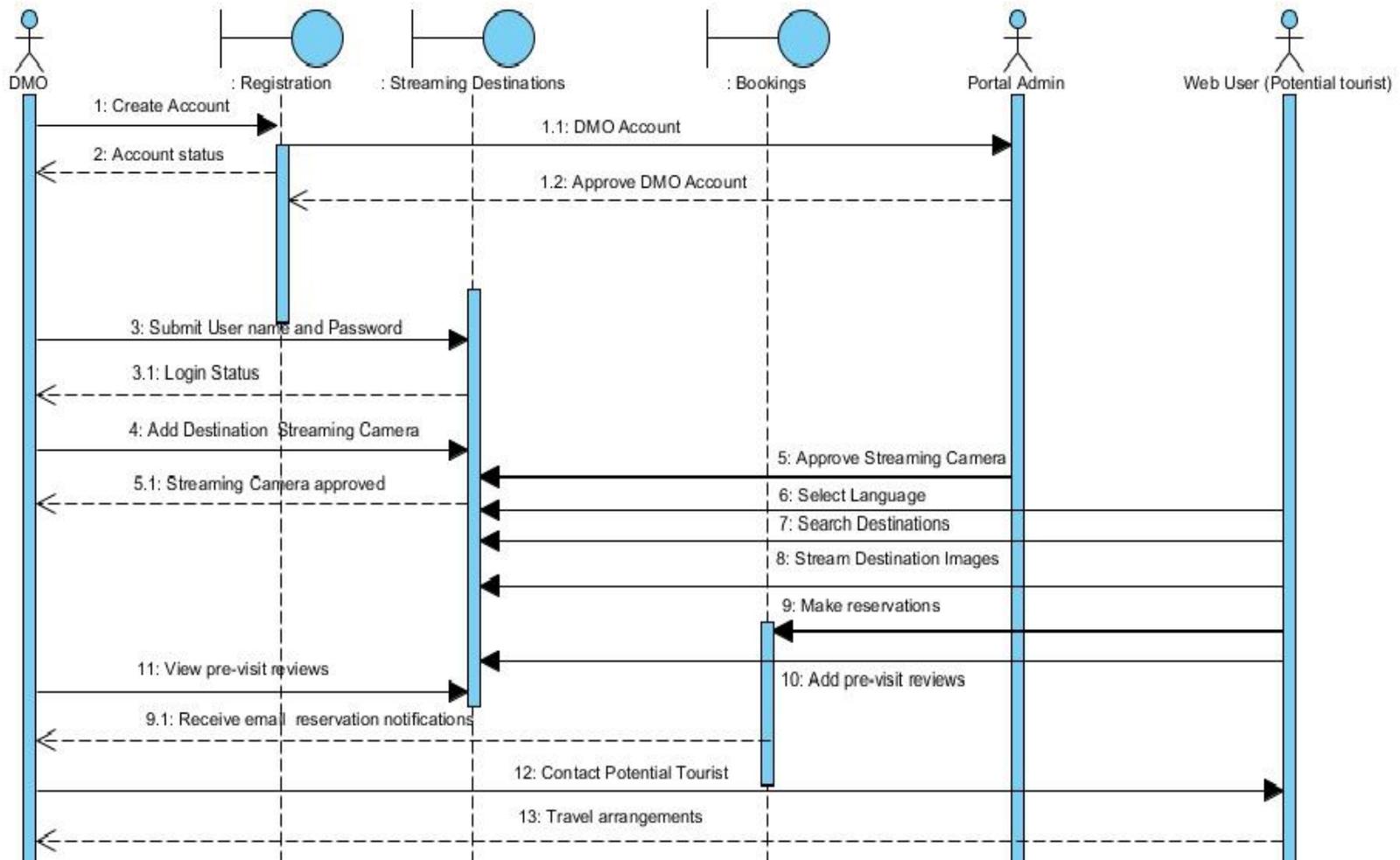


Figure 6.2: Sequence diagram

6.2 Conceptual graphs

A conceptual graph is a network of concept nodes and relation nodes and they are used to express meaning in a form that is logically precise, humanly readable, and computationally tractable to avoid the possibility of misconceptions and misunderstandings about the framework implementation (Sowa, 2000:1). Conceptual graphs are based on concepts and relations, concepts are in rectangle and relations are represented with oval shapes. The direction of the arrows assists the direction of the reading (Polovina, 2007:2).

The symbol ' \forall ' is used when the predicate is true for all objects meaning for all. The generic symbol '{*}' is the plural marker, which refers to a set of unspecified elements whose type is determined by the type label of the concept in this case Group. The quantifier '@1:*' indicates that the cardinality of the set ranges from one to many (Sowa, 2000:2).

Rule 1: Every DMO must be registered and have at least one streaming camera, as shown in Figure 6.3 below.

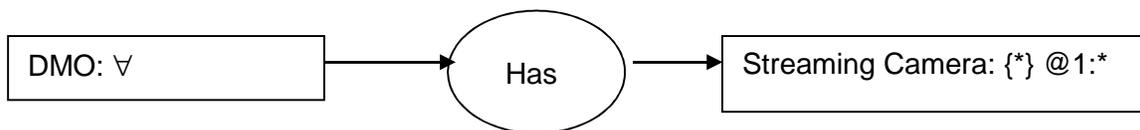


Figure 6.3: Conceptual graph on registered DMO

Figure 6.3 above shows that each registered destination has at least one or more cameras connected to the portal. Rule 1 was used to restrict DMOs with only induced and organic images from submitting destination attractions. A streaming camera must be assigned to a specific destination after verification by portal administrator.

Rule 2: There are two types of streaming in the framework: public or private streaming

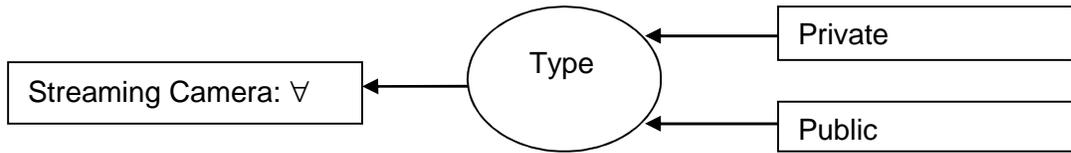


Figure 6.4: Conceptual graph on type of camera

Figure 6.4 above shows that DMO can stream destination data to users as a private or public camera. The cameras published as private are only accessible to registered user and public cameras are accessible to all users who have access the portal.

Rule 3: All users must have different access privileges to streaming cameras and online Booking Module

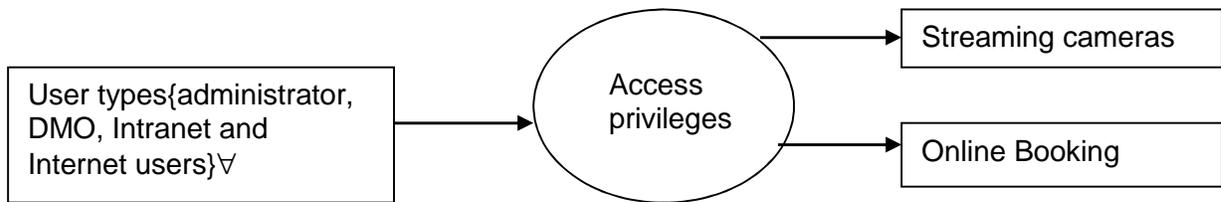


Figure 6.5: Conceptual graph on user types and access privileges

All system users have different access levels to streaming cameras and online reservation module as depicted in Figure 6.5 above. Access privileges to the streaming cameras were granted to portal administrator. DMO and all web users have access to the cameras as well as online booking module.

6.3 Framework implementation option

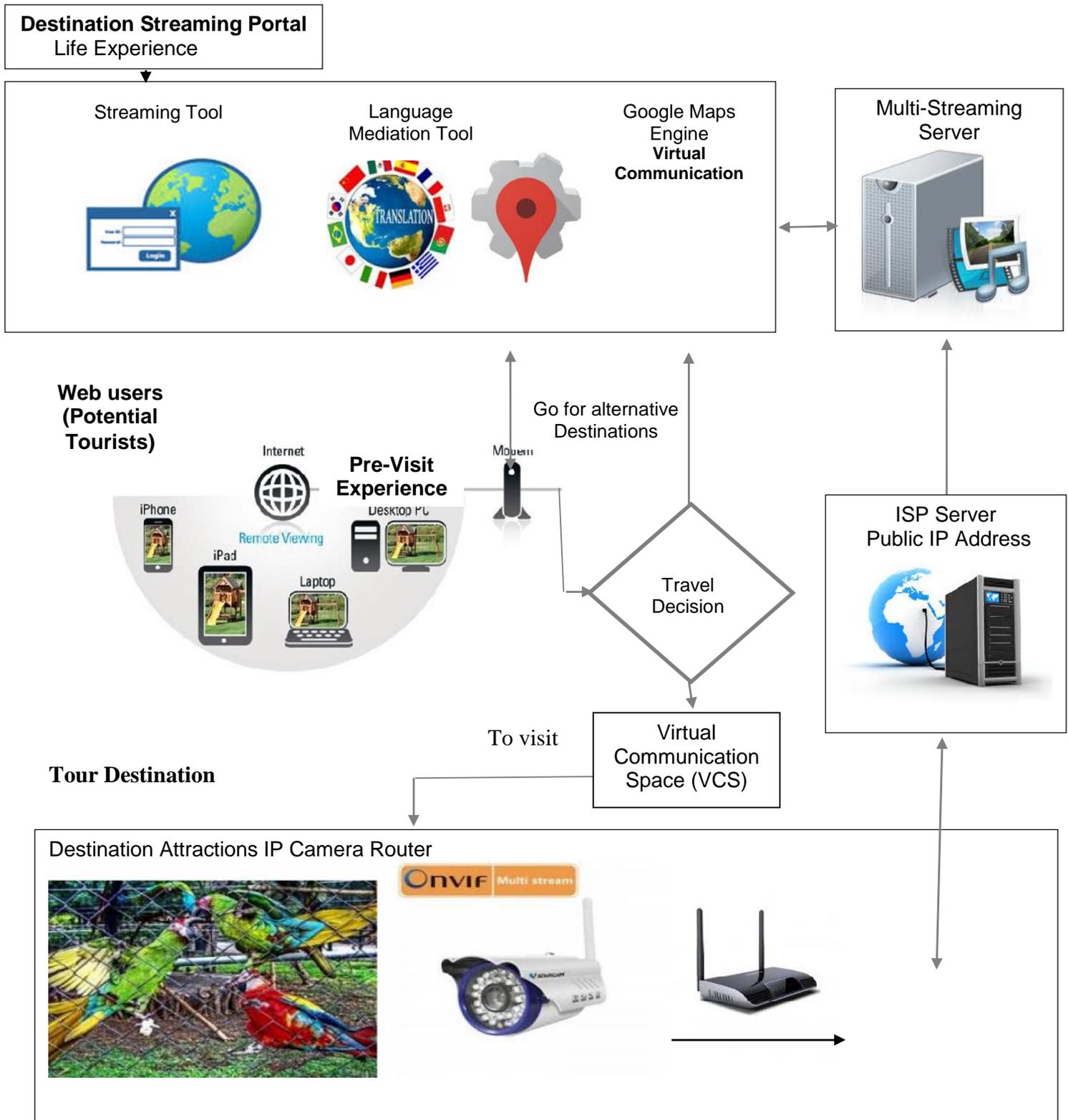


Figure 6.6: Framework implementation system architecture

This section presents framework implementation option for the proposed framework, which serves as 'proof of concept' that it can actually be implemented. Figure 6.6 above depicts the system architecture for implementation of conceptual framework. The system has the following components: streaming tool, language translator, and Google Maps engine multi-streaming Server, Internet Service Provider (ISP) Server, Virtual Communication Space (VCS) and streaming IP Camera. IP cameras are first connected to ISP using a public IP address. The public IP address of the camera is used to connect to the multi streaming server. Multi-streaming server enables multi broadcast where a single destination attractions stream is broadcasted to many users for better performances.

Google Maps engine component is used to map destination cameras, the multi-streaming server uses camera Public IP address to determine GPS coordinates of the camera that are used by the streaming portal to map the actual location of streaming camera and web user into Google Maps. Web users have access to the web interface of the portal from any web-enabled devices and the language translator acts as a mediation tool to allow users to change to their preferred language. Web users also have access to virtual communication space where any users can initiate direct communication to listed destinations.

6.4 Software and hardware platform

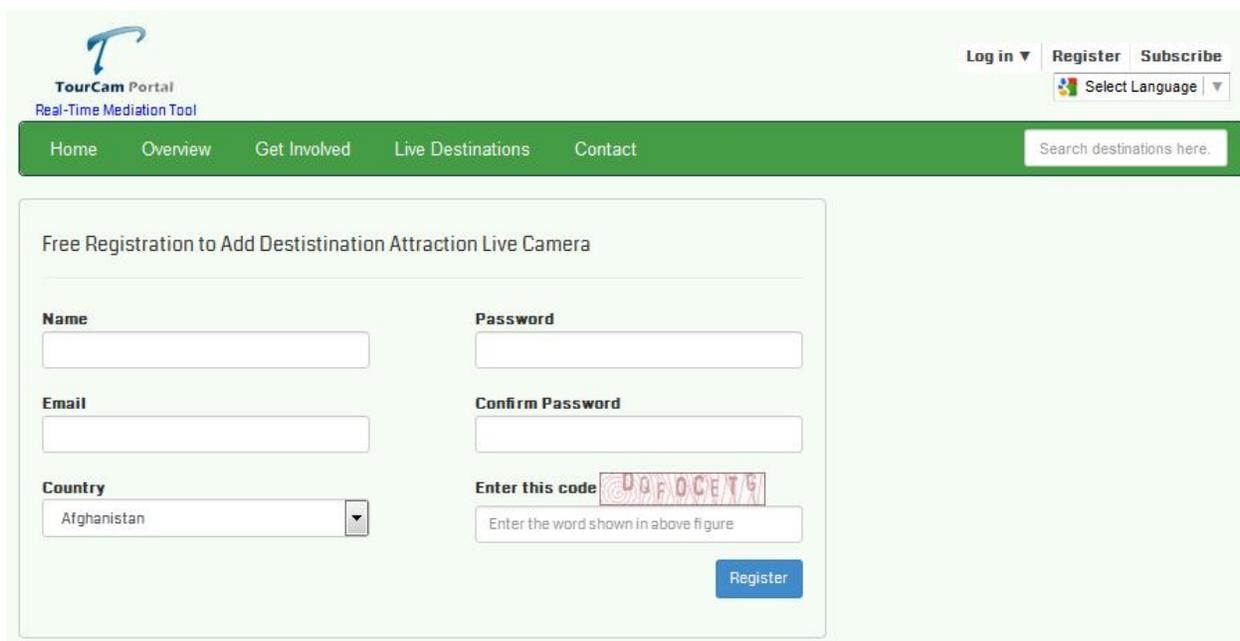
Table 6.1 below, shows the software and hardware platform for the development of prototype. The IP camera has a free public IP address that enables the camera stream to be viewed remotely. The interface was developed using Joomla and it provides a one-click install solution for database, and Content Management System (CMS) for publishing web content. The Angelcam multi streaming server was used to implement the prototype.

Table 6.1: Development tools

Software	Functions
Microsoft Windows 7	Operating Systems
MySQL	Database Server
PHP Framework - <i>CodeIgniter</i>	Rapid development web application framework
Angelcam	Multi-streaming Server
Kenic	Domain registration
Hardware	Functions
IP Camera	Multi-streaming camera
Orange Kenya	Internet Service Provider
Lenovo Laptop	To support streaming camera and orange fly box

6.5 Prototype functionality

The portal provides mechanisms to registered destinations to add destination cameras, manage destination information, perform queries, and navigate across the listed destinations and to perform administration retrieval operations about account activation. The portal was populated with destination attractions from existing streaming cameras in order to improve the validity of evaluation process on its performance and effectiveness. The following sub-sections present the main features of this prototype.



The screenshot shows the registration form for the TourCam Portal. The form is titled "Free Registration to Add Destination Attraction Live Camera". It contains the following fields and elements:

- Name:** A text input field.
- Password:** A text input field.
- Email:** A text input field.
- Confirm Password:** A text input field.
- Country:** A dropdown menu with "Afghanistan" selected.
- Enter this code:** A CAPTCHA image showing the code "00F0CET9" and a text input field below it with the prompt "Enter the word shown in above figure".
- Register:** A blue button at the bottom right of the form.

The page header includes the TourCam Portal logo, navigation links (Home, Overview, Get Involved, Live Destinations, Contact), and user options (Log in, Register, Subscribe, Select Language). A search bar is also present in the header.

Figure 6.7: DMO registration form

Figure 6.7 above shows registration form. The first step for new DMO is to create an account before being permitted to add destination-streaming cameras. They also have the option of selecting their preferred language. The researcher found it necessary to include visual code to combat form spamming. The visual image is a bitmapped image with random numbers and/or letters that must be entered before submitting registration to avoid spamming.

After submitting registration details, the system automatically sends registration details to user email account for verification purposes.

New Destination

Destination Name

Live Camera URL

Website URL

Google Map Link

Tagline

Description

Country

Destination Image
 No file selected.

Facebook

Twitter

I accept all the [terms and conditions](#).

Figure 6.8: Adding new destination live camera

After verification, users are directed to add destination page as in Figure 6.8 above. General information about destination and streaming camera is submitted using the form. To ensure integrity of submitted data, destination name, live camera URL (Universal Resource Allocator), tagline, destination description, country, destination image, terms, and conditions are all mandatory fields.

The screenshot shows the 'Tourcam Portal' administrator interface. The user is Stanley Githinji, Administrator. The main content area is titled 'Destinations' and displays a table of 4 entries. The table has columns for '#', 'Destination', 'Added By', 'Country', and 'Status'. All entries are marked as 'Approved'.

#	Destination	Added By	Country	Status
1	The Ark Kenya	sgithinji	Kenya	Approved
2	Holiday and rest in Viahhofen	sgithinji	Austria	Approved
3	Shearwater Marne Resort	sgithinji	Canada	Approved
4	Blue waters hotel	sgithinji	South Africa	Approved

Showing 1 to 4 of 4 entries

Figure 6.9: Registered destinations

The administrator module is shown in Figure 6.9 above. The administrator is able to view all registered destinations. Only DMO's with approved attractions are allowed to stream using the portal. Registered users (destination marketers) are allowed to manage user accounts, destination camera page and to view all reviews submitted by online users.

Web users are able to view all live destinations that have been approved by portal administrator as depicted in Figure 6.10 below.

Home Overview Get Involved **Live Destinations** Contact Search destinations here..

Live streams from **The Ark Kenya** in Kenya

Live from The Ark, Kenya camera
www.thearkkenya.com

Set in the heart of the Aberdare National Park, iconic and yes, quirky. The Ark overlooks a floodlit waterhole and salt lick, which attracts a host of awesome wildlife. Modeled after Noah's Ark, The Ark has four viewing decks with balconies and lounges to provide superb game viewing from the comfort of the lodge. The animals come to you!

Destination URL: [Visit](#) [Share](#) 1

Contact The Ark Kenya

Your Name

Email address

Subject

Message

Enter this code

Enter the word shown in above figure

Send

Figure 6.10: Live camera destination page

Based on defined rules, all users have rights to search for live destinations even if they are not registered. When web users click on live stream of any selected destination they are directed to destination page that contains streaming camera for pre-visit experience as depicted in the final conceptual framework. Live destination page contains a contact form and any enquiry is sent directly to destination email account. Figure 6.11 below shows demonstration information sent from the portal on 11th December 2014.

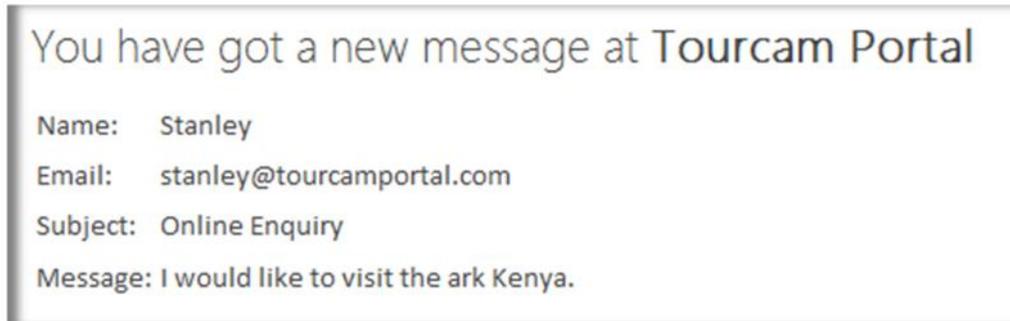


Figure 6.11: Online enquiry sent from the portal (Tourcam, 2014)

Other functionalities include online sharing of pre-visit experience using Facebook plug-in as depicted in Figure 6.12 below.



Figure 6.12: Sharing destination attractions using Facebook plug in


Welcome, sgtrhin | [Member Area](#) | [Logout](#) | [Subscribe](#)
[Select Language](#) ▼
Search destinations here...

[Home](#) | [Overview](#) | [Get Involved](#) | **[Live Destinations](#)** | [Contact](#)

Live streams from **Blue waters hotel** in **South Africa**
Contact **Blue waters hotel**



Affordable, luxurious, 3 star hotel accommodation. This famous retro-designed, recently renovated landmark hotel offers everything you'll ever want in a hotel.

Destination URL: [Visit](#) [Share](#) 0

Your Name

Email address

Subject

Message

Enter this code



[Send](#)

3 Reviews by our visitors [Write Review](#)

Excellent	<div style="width: 66%; background-color: green; height: 10px;"></div> 2
Very Good	<div style="width: 0%; background-color: #ccc; height: 10px;"></div> 0
Average	<div style="width: 33%; background-color: green; height: 10px;"></div> 1
Bad	<div style="width: 0%; background-color: #ccc; height: 10px;"></div> 0

Figure 6.13: Destination page with reviews

Portal users are allowed to submit reviews on specific destinations as depicted in Figure 6.13 above. There are three dummy pre-visit reviews for blue waters hotel ranging from excellent, very good, average and bad. The portal automatically classifies the reviews in form of bar graphs based on the number of reviews.

6.6 Performance testing

Phase 2 of the research process involved testing the performance of the prototype. Performance testing is used to check how fast the system can perform under specific workload. It is necessary in web applications to verify response time, throughput, disk usage, and memory utilisation (Jain & Goel, 2014: 158). According to Geetha and Monoka (2013:71), testing activities should be reliant on the implementation technologies of applications being developed since all web applications are heterogeneous and dynamic in nature. Performance testing tools are automated programs that are designed to test on load balance, stress test and capacity (Sharmila & Ramadevi, 2014:520).

According to Sharma and Ramadevi (2014:5259), load testing is used to validate web application behaviour under normal and peak load conditions, stress testing validates performance behaviour when the application is pushed beyond normal load conditions and capacity testing is used to find the number of users the application can support and still meet promised targets. For this study, the researcher used WAPT (Web Application Performance Tool) and load storm. They are free to use provide detailed information of the tests within a short duration of time.

The researcher found it necessary to improve the validity of the performance testing by including four destinations that had existing public IP cameras available online and terms of use allowed third party to stream data from them. The researcher performed the tests on 2nd December 2014 by simulating the portal with twenty virtual users for thirty minutes using selected tools.

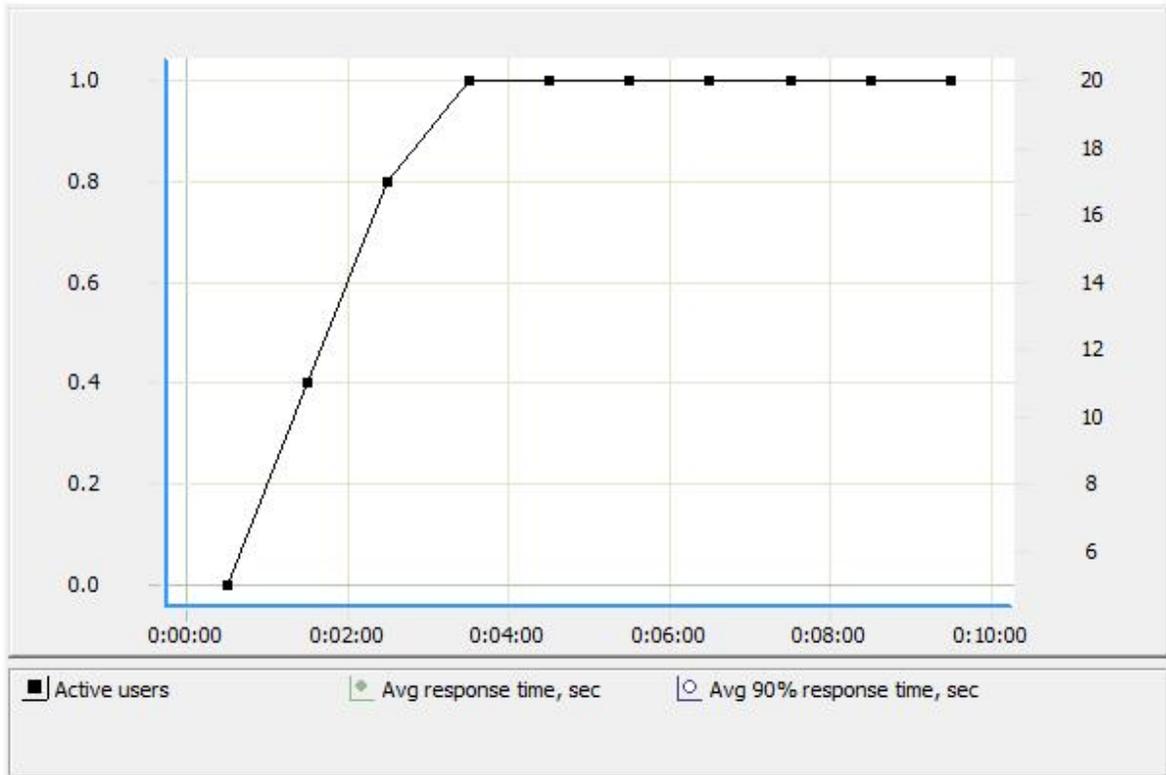


Figure 6.14: Average response time (Wapt, 2015)

Figure 6.14 above shows the average response time when streaming live images using the portal. The response time increases with the number of users connected to the portal. Every visitor to a website experiences a different response time, and the slowest 1% of response times represent the visitors having the worst experience. Pages with faster response times reduce bounce rate. With eight users, the response time was 0.2 seconds and with twenty users, the average response time is one second.

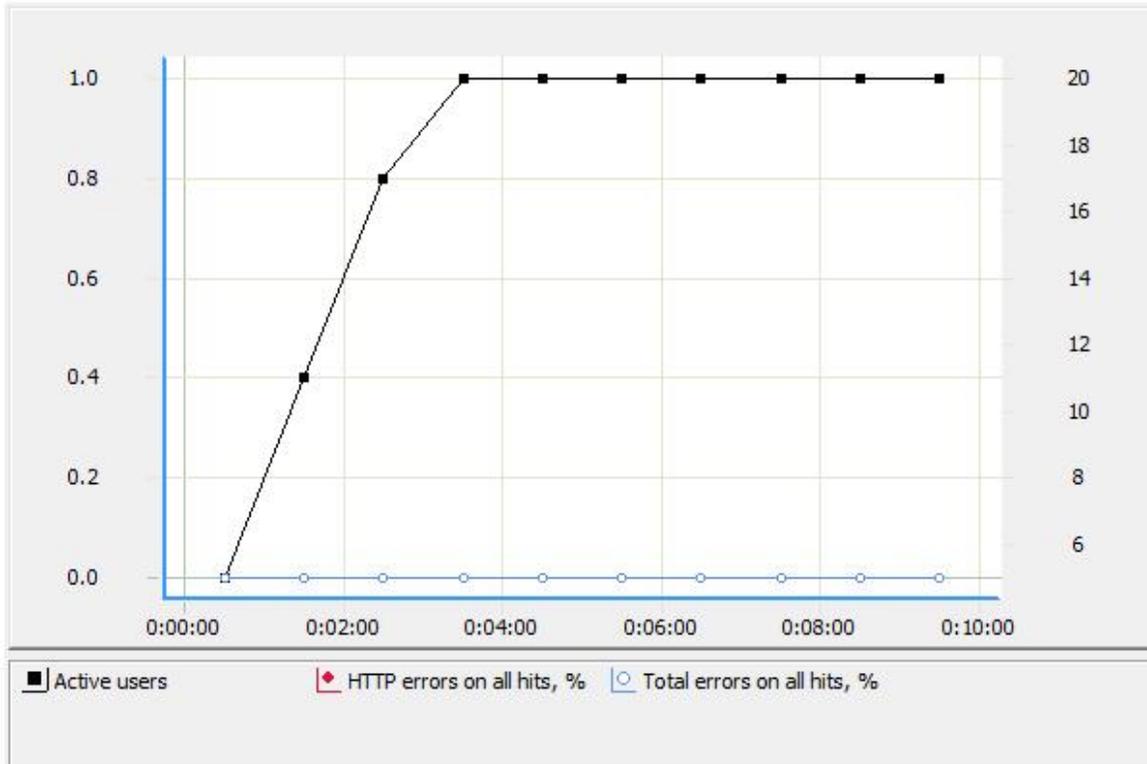


Figure 6.15: Endurance testing (Wapt, 2015)

The endurance test using WAPT was performed to determine the behaviour of the portal when pushed to a load of twenty users accessing the live destination page simultaneously. As the number of concurrent users increased, the response time also increased. Figure 6.15 above indicates that with twenty concurrent sessions there were zero errors in the streaming page, indicating that there were no failed sessions recorded during that period.

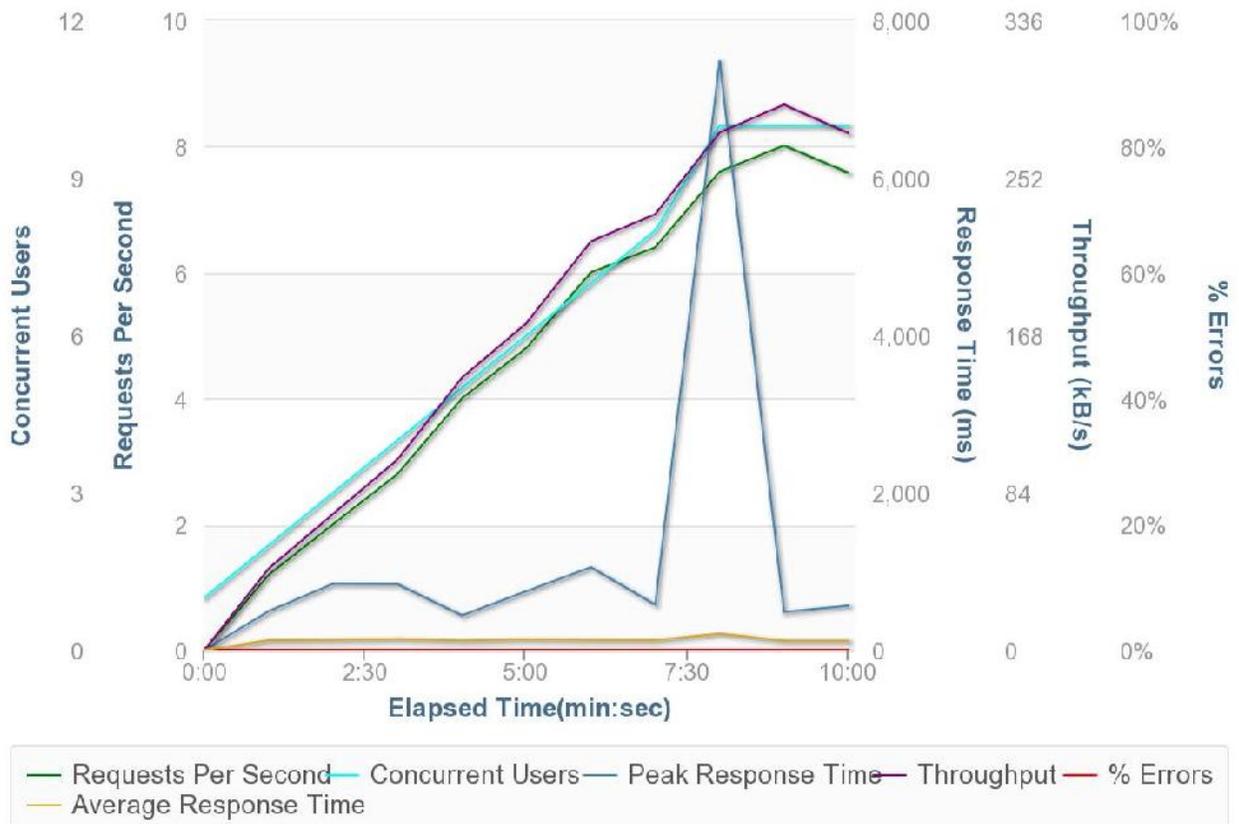


Figure 6.16: Overall performance of the prototype (Load storm, 2015)

Figure 6.16 shows a summary of the test run performed on the portal running on (www.tourcampportal.com). Performance testing result showed that the system attains an average response time of 0.116 seconds with 10 concurrent users, throughput of 276 kb/s and 0% of errors. Summary results on performance testing on Figure 6.16 above indicate that the portal was able to handle more than twenty concurrent requests from web users with a response time of 7.4 seconds when the peak load was high.

6.7 Realisation of research objective three

The main objective of this phase was to implement real-time data streaming technique for enhancing the effectiveness of tour destination selection. The researcher realised this objective by developing [tourcampportal.com](http://www.tourcampportal.com), tested the tool and implementing the solution using real-time data streaming technique in a real-world setting. There are five stages in the process involved for the development of the I solution invention, which are listed below:

- i) Grasping the problem situation.
- ii) Visualise and construct the artefacts – UML
- iii) Develop the solution
- iv) Performance testing
- v) Implementation of the solution in a real-world setting

The prototype provides a platform for destination marketers to stream and publish destination attractions. The prototype is accessible using the link (<http://www.tourcampportal.com>) and serves as ‘proof of concept’ that the framework can actually be implemented.

6.8 Chapter summary

This chapter presented the prototype design and implementation of tourcampportal.com. The prototype was designed considering three types of users, i.e. portal administrator, tour destinations and web users. Performance testing was conducted to determine how fast the system can perform under a specific workload. Performance testing results showed that the system attains an average response time of 0.116 seconds with 10 concurrent users, throughput of 276 kb/s and 0% of errors. Based on these findings, it is evident that the choice of development tools and implementation architecture enabled the systems to handle concurrent transactions at a commendable response time and without failure.

The prototype was developed based on the implementation architecture in Figure 6.6 to serve as proof that the conceptual framework depicted in Figure 5.6 can actually be implemented in a real world setting. In order to have effective results using the prototype, maintenance of streaming server need to be performed regularly. Having developed and tested the tool, the next chapter describes the evaluation of the prototype to determine the effectiveness and practicality of the developed tool.

CHAPTER 7

FRAMEWORK EVALUATION (PHASE 3)

The main objective in this chapter is to determine the effectiveness and practicality of the proposed conceptual framework using the developed tool in a real world setting. According to Bevan and Petrie (2009:2), effectiveness of an information system is the accuracy and completeness with which system users accomplish specified objectives. The evaluation process commenced after testing the prototype in Phase 2 while data collection was done using Google Analytics and a self-administered questionnaire, Appendix 4.

7.1 Evaluation criteria

The prototype was evaluated to determine its practicality and effectiveness. In order to evaluate a real-time data streaming technology mediator as an additional information source, the researcher found it necessary to focus on system quality, information quality, user satisfaction, perceived usefulness, individual impact during pre-visit before they make travel decisions as depicted in Figure 7.1 below.

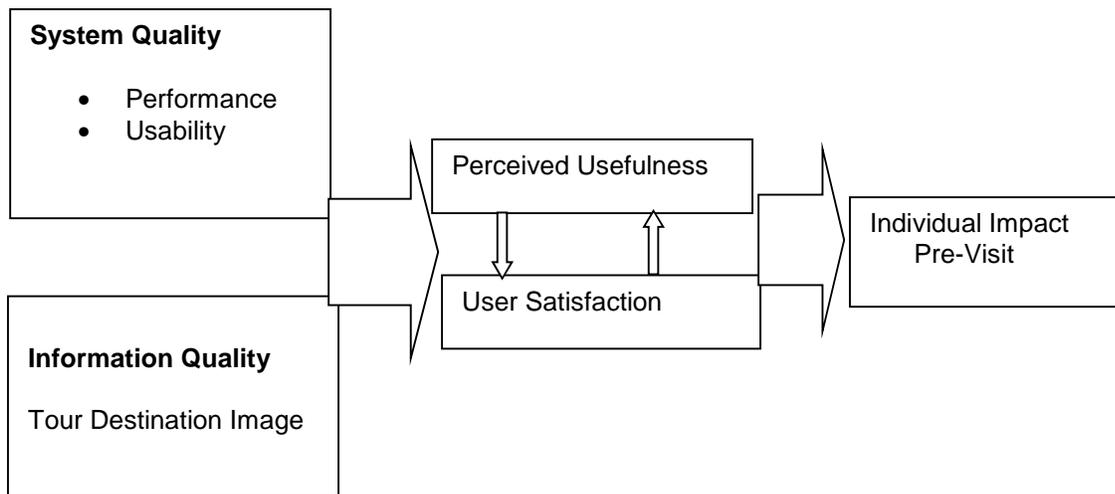


Figure 7.1: Evaluation framework for real-time data streaming mediator

7.2 Phase 3 research instruments

The Phase 3 questionnaire, Appendix 4, was designed based on evaluation criteria and comprised of respondent profile, system quality, information quality, user satisfaction, perceived usefulness, and individual impact. The questionnaire consisted of the following sections: system quality, real-time information quality, user satisfaction, perceived usefulness and individual impact. The questionnaire comprised of scaled questions, multiple-choice questions and open-ended questions.

Web analytics software was used to collect data from online visitors who accessed the web application and to identify areas that required improvements after performing Search Engine Optimisation (SEO) before practitioners' evaluation. The prototype was deployed on 14th December 2014 and the researcher performed Search Engine Optimisation (SEO) for a period of two weeks from 14th December 2014 to 2nd January 2015. Web analytic software tracks web application visitors and information request to determine and improve the effectiveness of implemented web application (Kent, Carr, Husted & Pop 2011:536).

7.3 Practitioners' evaluation process

The practitioners' evaluation took place over a period of three weeks in February 2015. The researcher made a presentation to all the participants to explain the evaluation procedure. All participants were provided with instructions on how to access the prototype using URL <http://www.tourcampportal.com>. They interacted with the portal to familiarise themselves with the system before responding to the self-administered questionnaires. This evaluation relied on users' experience and expertise to make informed evaluation of the prototype on its applicability and effectiveness.

7.4 Web analysis using Google analytics

Web analysis software's enable webmasters and technologists to analyse and interpret visitor traffic from the website by generating detailed statistics about website traffic and measures conversions and sales (Choi, 2014:3). Google analytics was used for web analysis. Online visitors' data was captured using a script depicted in Figure 7.2 below. The script was generated with a unique tracking code (UA-57291089-1) that was mapped to the home page of <http://www.tourcamportal.com> for the tracking to commence.

```
<script>
(function(i,s,o,g,r,a,m){i['GoogleAnalyticsObject']=r;i[r]=i[r]||function(){
(i[r].q=i[r].q||[]).push(arguments)},i[r].l=1*new Date();a=s.createElement(o),
m=s.getElementsByTagName(o)[0];a.async=1;a.src=g;m.parentNode.insertBefore(a,m)
})(window,document,'script','//www.google-analytics.com/analytics.js','ga');
ga('create', 'UA-57291089-1', 'auto');
ga('send', 'pageview');

</script>
```

Figure 7.2: Google analytics tracking code for tourcam portal (Google analytics, 2015)

Most of the search engine visitors do not go beyond 20-30 webpages while searching (Bedi & Singh, 2014:563). According to Beel, Gipp and Wilde (2010:177), SEO involves transforming a website in a way that makes it easier for search engines to collect information about web pages from the website.

Hubspot (2014:7) explains that search engines scan each page looking for clues about what topics your website covers by scanning your website's back-end code tags, descriptions, and instruction. The researcher used Google Meta descriptions and key words to optimise the portal. Meta description is a brief narrative about your website and keywords provide the keyword tags information to the search engine about the contents of (tourcamportal.com) (Nazar, 2009:10).

The Meta description and keywords were placed using the following lines of code at the index page of the portal. `<meta name="description" content="Tourcam Portal is a Real-Time Mediation Tool..." /><meta name="keywords" content="tour destination, tourism cameras, destination marketing, tour attractions..." />`. Google analytics crawled and captured information to determine demographic data of users, geographical reach, and information acquisition, number of visitors, language used to access the portal, user engagement and tools used to access the portal.

Google analytics dashboard provides a customised summary of the portal performance. According to Kent et al. (2011:536), the dashboard is a concept borrowed from business where informational graphics of Key Performance Indicators (KPIs) are arranged on a single page.

7.5 Web analytics results

This section introduces web analysis results. The researcher focused on the following dimensions: audience overview, information acquisition, online visitors and behaviour, geographical reach, language used and technological tools used to access the portal. The data was generated from (tourcamportal.com) Google analytic dashboard starting from 14th December 2014 to 9th February 2015.

7.5.1 Audience overview

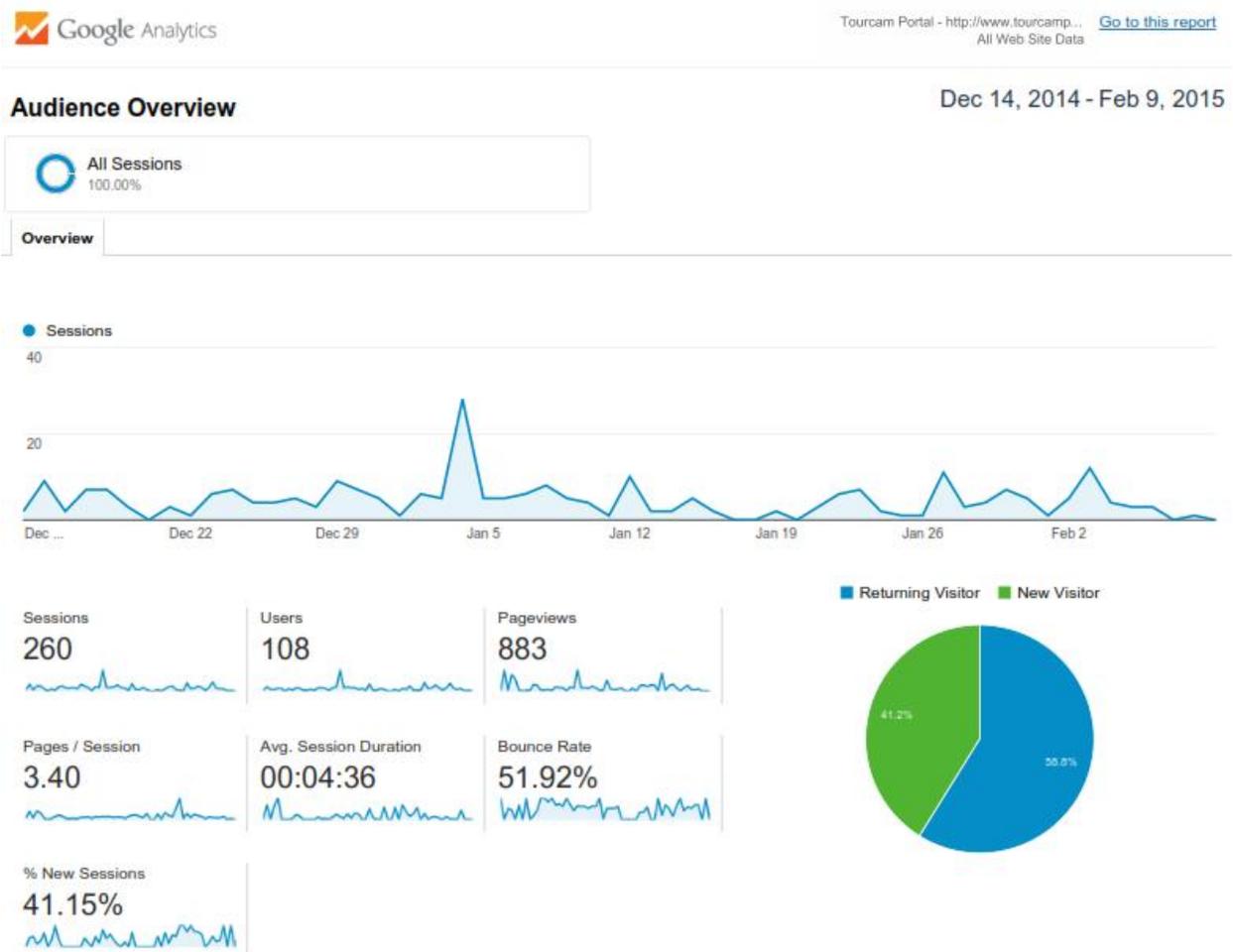


Figure 7.3: Audience overview (Google analytics, 2015)

Figure 7.3 above shows the audience overview of the portal. The portal had 108 users from nineteen countries. There were 260 sessions and 883 page views. The portal had an average of four sessions per day and the average streaming duration was four minutes and thirty-six seconds, which indicate that the users were engaging with the streaming component of the portal. This can be improved by having more content of live destinations. Portal sessions indicate that travellers are increasingly turning to the Internet for information search (Peng, Xu & Chen, 2013:281).

7.5.2 Information acquisition

Google Analytics collected data on how viewers accessed the portal. Figure 7.4 below depicts information acquisition of tourcampportal.com.

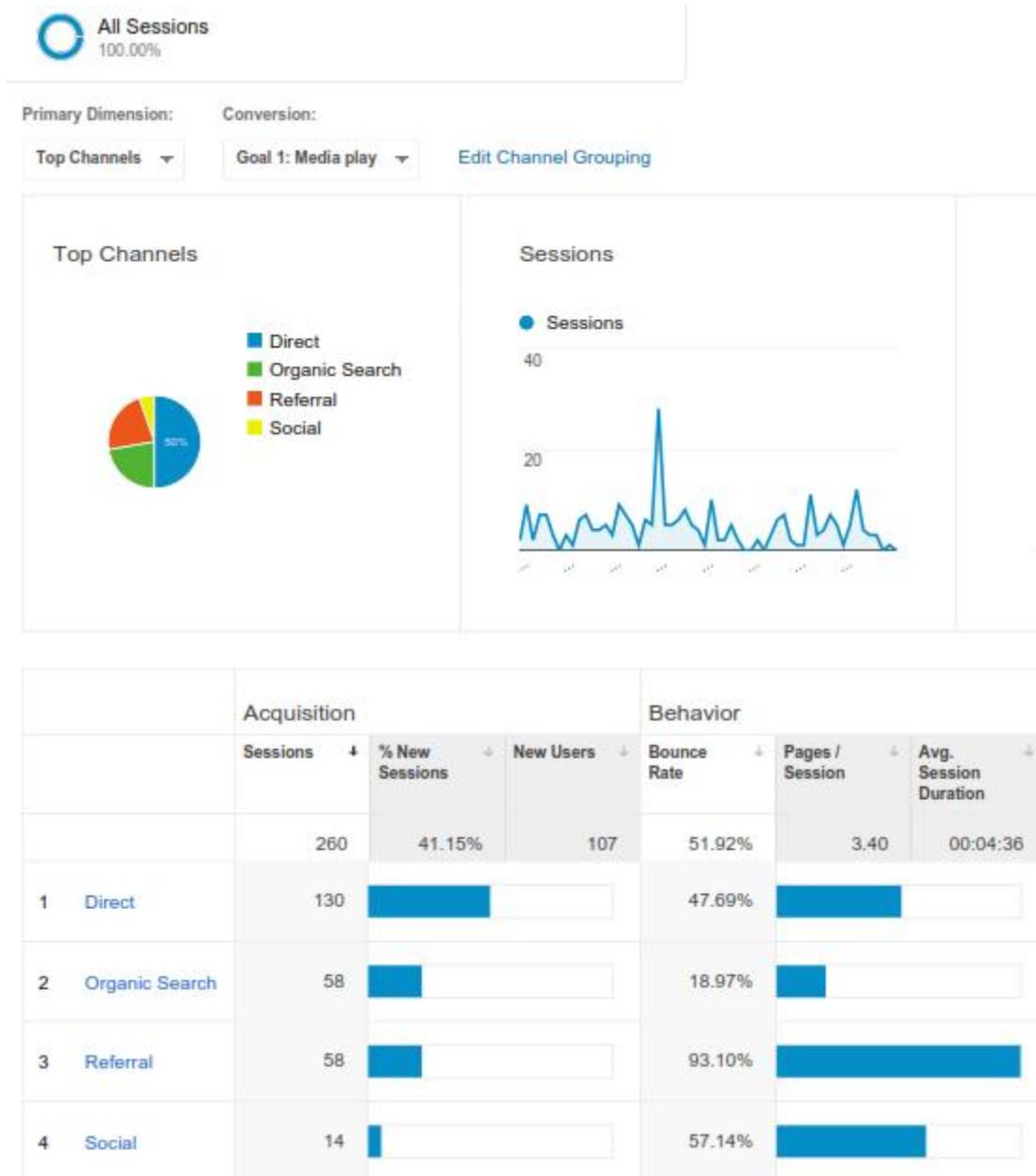


Figure 7.4: Information acquisition (Google analytics, 2015)

Direct channel are the online visitors that accessed the site by directly typing in portal URL <http://www.tourcampportal.com> into their web browser. Organic channel represents all requests from search engine such as Google, Yahoo and Bing, while referral traffic comes from other website traffic that comes to the portal (Bizboost, 2014:9).

Out of 260 sessions, 130 sessions were from direct channel. This was because of self-administered evaluation process where the researcher provided the URL to respondents to interact with the portal. Organic channel had 58 sessions, which indicate that the portal was available in search engine after adding the key words and Meta description. There were 58 sessions from referrals. Social media had the least number of sessions with only fifteen, which indicates that social media marketing was not fully exploited during evaluation phase. Bounce rate report presents how many people come to the portal home page and left without accessing any other web page (Verma, Seal & Pandey, 2015:5). The portal had a bounce rate of 51.92 %, which could be reduced, by having quality content at the home page with appealing description.

The findings in Figure 7.4 above, shows that potential tourists who wish to travel acquire online information about destinations from available information sources available with a view to developing a holistic imagery. Developed destination image from available information sources create expectations and once the tourist is on site, they compare the real-image with perceived image during pre-visit (Jenkins, 2009:2).

7.5.3 New and returning visitors

Google analytics collate information on whether the person visiting the website was a new visitor or a returning visitor (Bizboost, 2014:5).

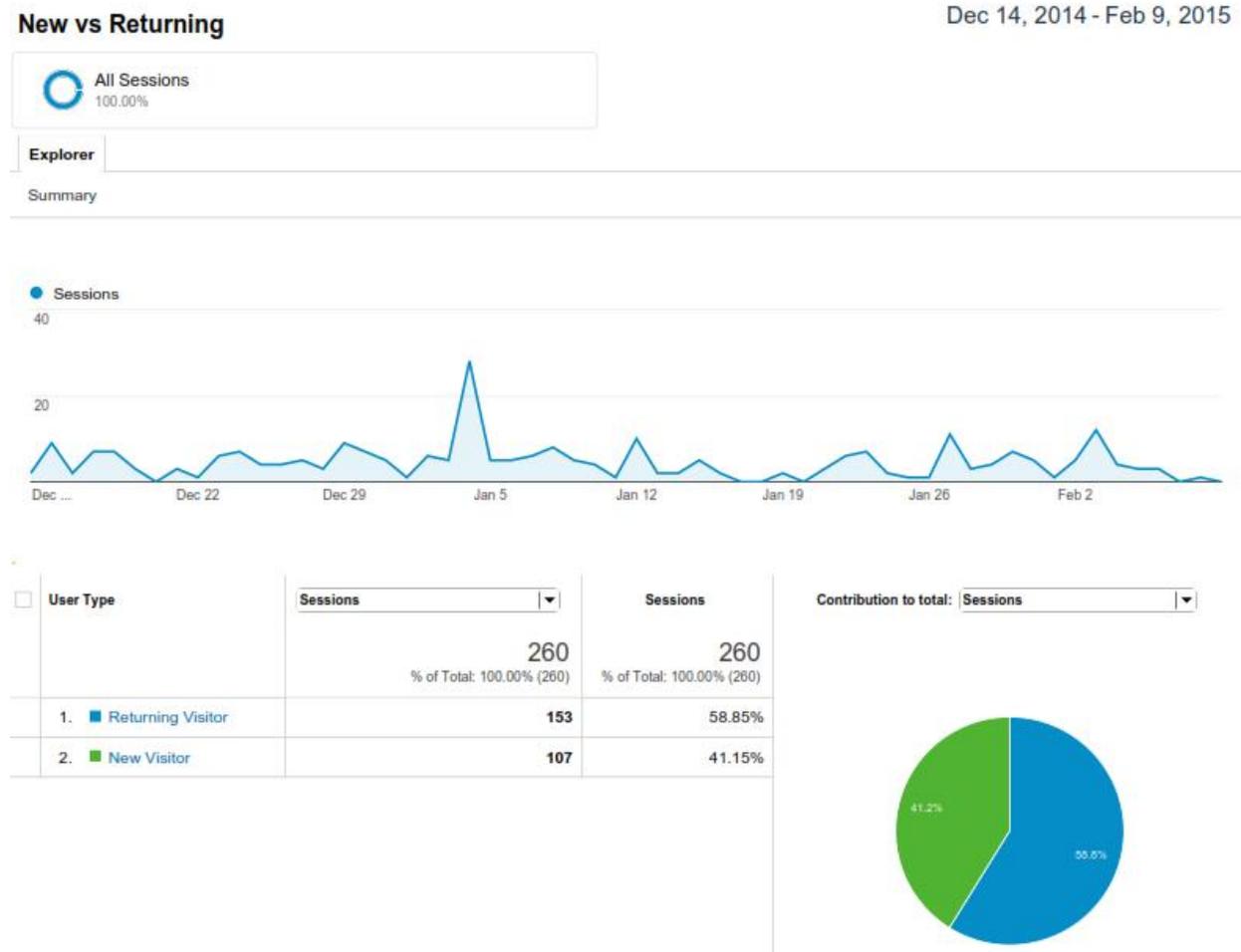


Figure 7.5: New and returning visitors (Google analytics, 2015)

Figure 7.5 above shows the number of returning visitors and new visitors. Out of the 260 sessions on the portal, 58.85 % (n= 153) were returning visitors and 41.15 % (n=107) of the sessions were users who visiting tourcampportal.com for the first time. The result indicates that the portal has the ability to attract new customers and retain customers. When the outcomes are not satisfactory during purchase evaluations, customers tend to

go back to search for other alternatives but when the outcomes are satisfactory they are more likely to visit or return to that destination (Suelin, 2010:2910).

7.5.4 User behaviour dimension

User behaviour dimension allows web technologist to analyse, which pages are more popular than others by showing the pages that users access when they reach the web application (Bizboost, 2014:4). Figure 7.6 below shows the behaviour of the audience.

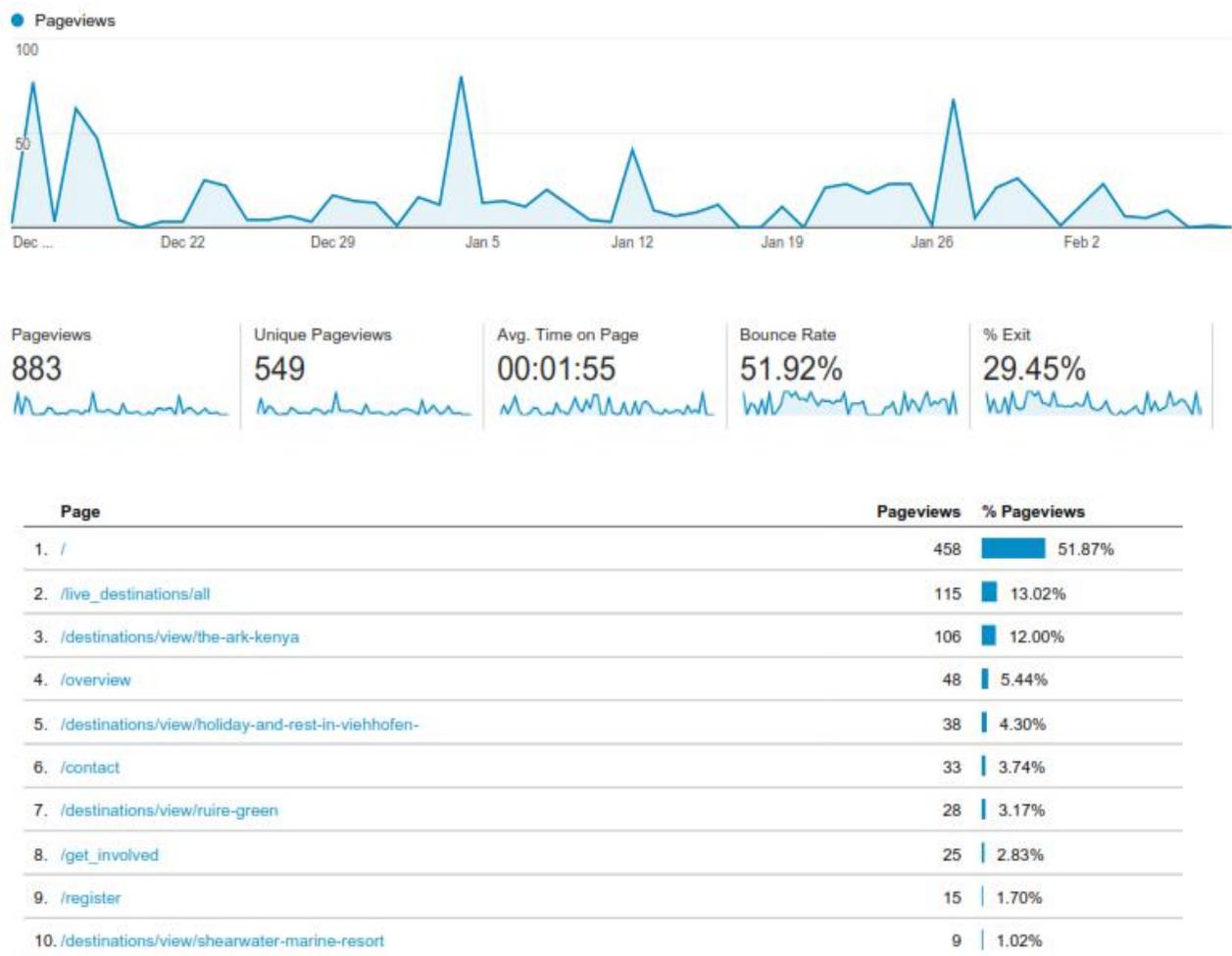


Figure 7.6: User behaviour when accessing the portal (Google analytics, 2015)

Out of 883 page views, the home page had 51.87 % (n=458) page views, followed by live destination page that had all the four live streaming cameras with 13.02% (n=115) page views. Visitors were interested in learning more about the portal from the overview page which had 5.44% (n=48).

The remaining six pages had page views of less than 4 %. The results on user behaviour indicate that perceived usefulness and perceived ease of use influence user behaviour and attitude towards the task technology fit (Surendran, 2012:175). Visitor engagement in the portal can be increased by adding more content on pages that have minimal user engagement and increasing the number of streaming destinations in live destination page.

7.5.5 Geographic reach dimension

Geographic reach dimension allows viewing how users access the portal from different countries. The results help users to identify the most lucrative geographic markets where the website is receiving more hits (Varma, et al, 2015:6).

Location

Dec 14, 2014 - Feb 9, 2015

All Sessions
100.00%

Map Overlay

Summary

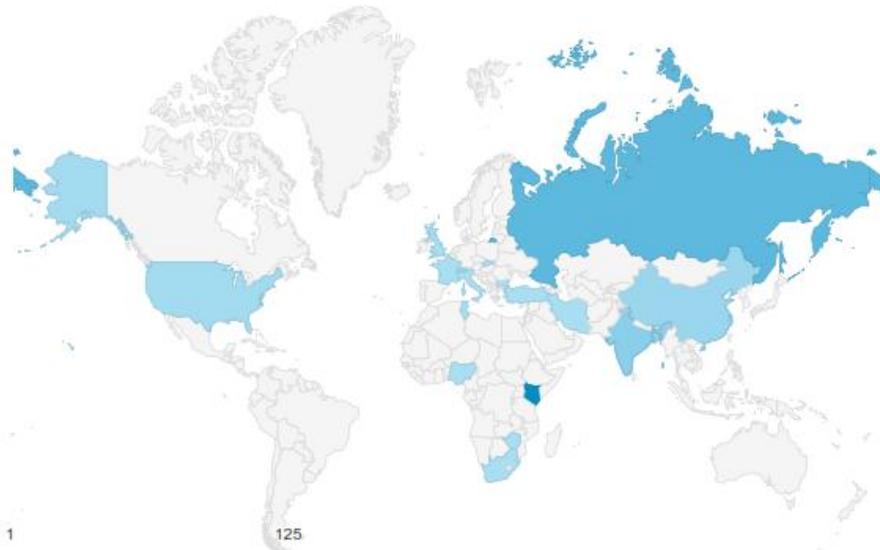


Figure 7.7: Geographical reach during evaluation period (Google analytics, 2015)

The portal had an overall reach dimension with 19 countries during evaluation process as highlighted in Figure 7.7 above. The top three countries were Kenya with 125 sessions, Russia had 58 sessions and India had 24 sessions. There is remarkably high number of visitors from Russia and India an indication that those regions are potential markets for this innovation if fully exploited.

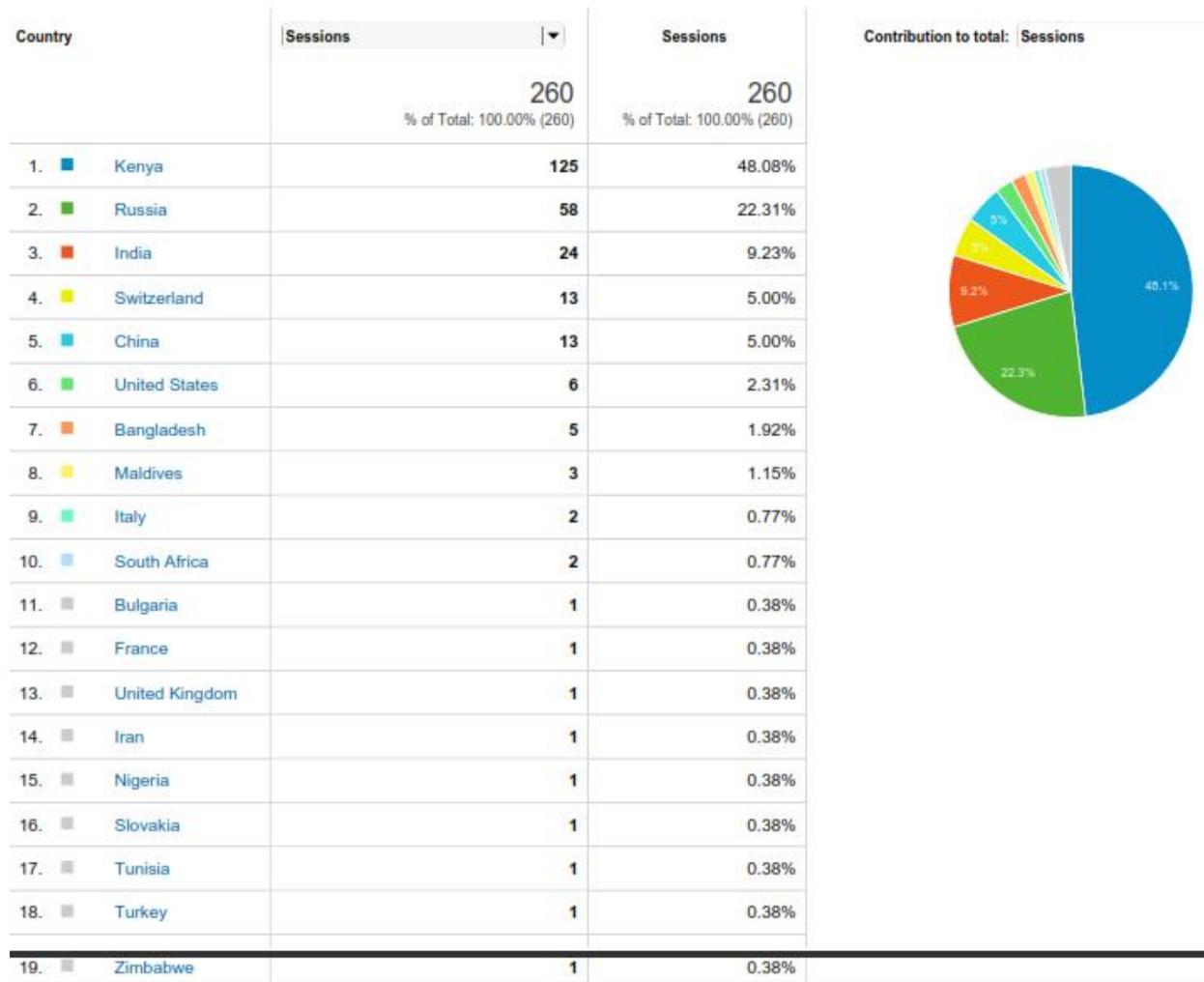


Figure 7.8: Sessions from countries (Google analytics, 2015)

Figure 7.8 above shows all the 19 countries that interacted with the portal and number of sessions. Out of 260 Sessions Kenya had 48.08 % (n=125) sessions, Russia 22.31% (n=58), India 9.23 % (n=24), and Switzerland had 5.00 % (n=13). The other countries had less than 3% of the total sessions. The sessions for countries with less than 3% can be increased by having a targeted marketing campaign in those regions, encouraging users to share pre-visit experiences on social media channel and improving on SEO.

The 5 % session in Switzerland was as a result of ENTER 2015 conference where the researcher demonstrated the prototype as proof of concept and requested participants to access and interact with the portal, see appendix 5.

7.5.6 Language translation dimension

Language translator component provided a multilingual information space as depicted in the conceptual framework. Language translation script enabled users to access the portal using their language of choice. Out of a possible eighty-nine languages in translator component, eleven different languages were used to access the portal.

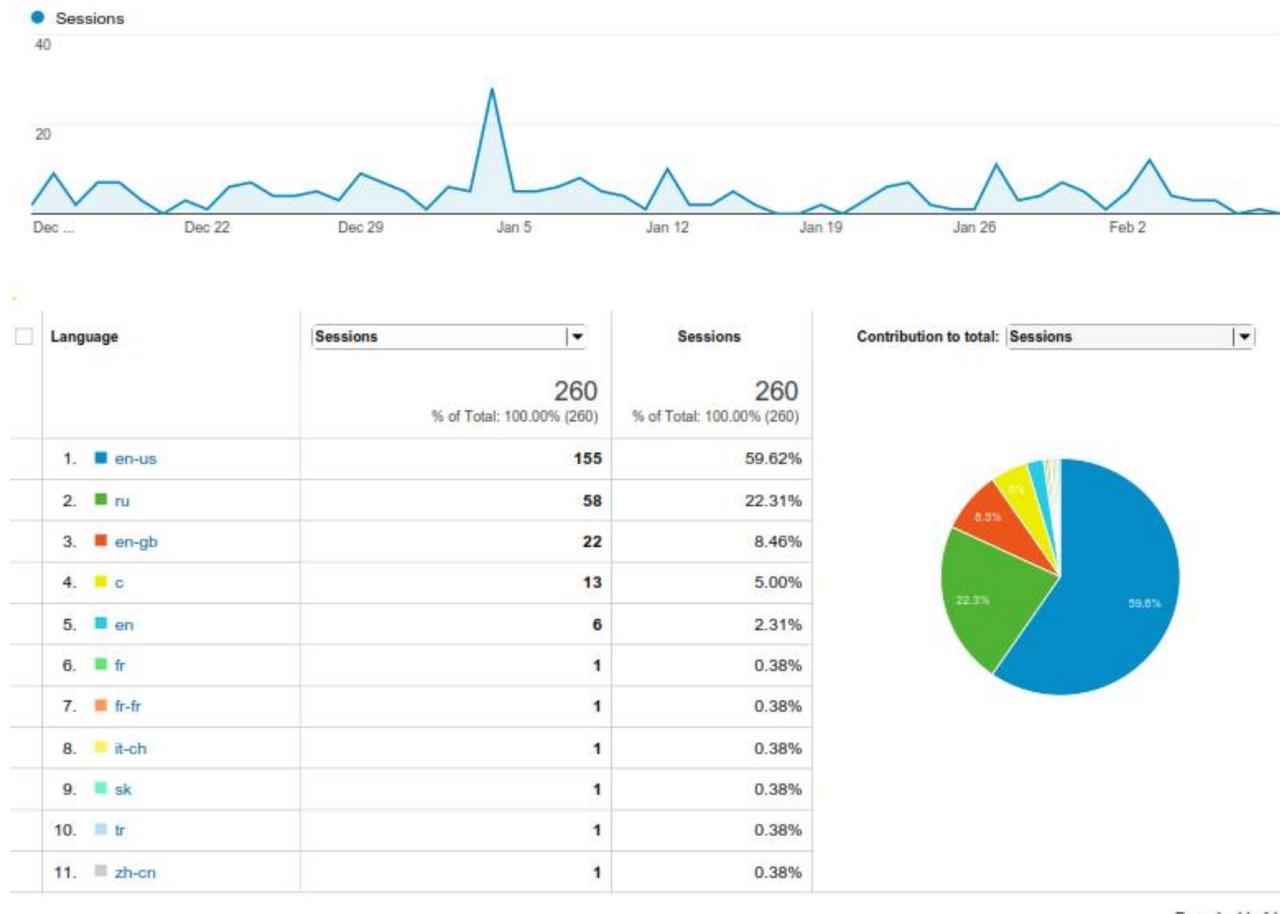


Figure 7.9: Language used to access the portal (Google analytics, 2015)

Majority of users accessed the portal using English had 68.08 % (n=177) a combination of American and British English. 22.31% (n=58) of visitors used Russian to interact with the portal as depicted in Figure 7.9 below. The results show the usefulness of having a multilingual web application when marketing DMO products and services. Destination marketers will have a wider geographical reach compared to single language web

applications. Language translator module played a strategic role by providing the same information in different languages to be able to reach to potential tourist who were not able to read the content of web applications (Chhatwani et al, 2013:74).

7.5.7 Web browser usability

Web browser usability involves ensuring that the content of the portal correctly works on various browsers and devices from the visitor’s perspective.

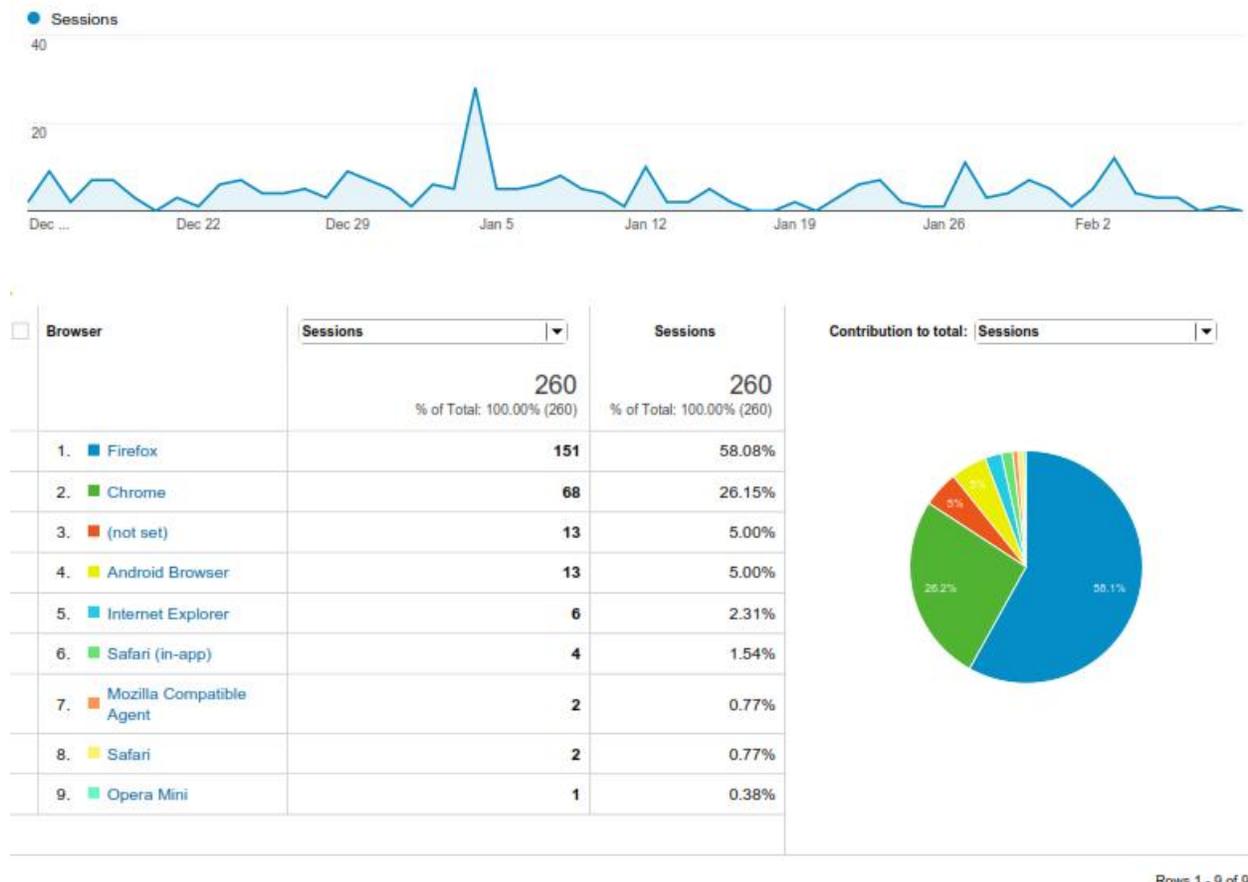


Figure 7.10: Web browsers and live sessions (Google analytics, 2015)

Figure 7.10 above shows that nine web browsers were used to access the portal during evaluation period. Firefox had 58.08% (n=151), Google Chrome 26.15% (n = 68) and the other seven browsers had less than 5% with opera mini recording the lowest usage at 0.38%.

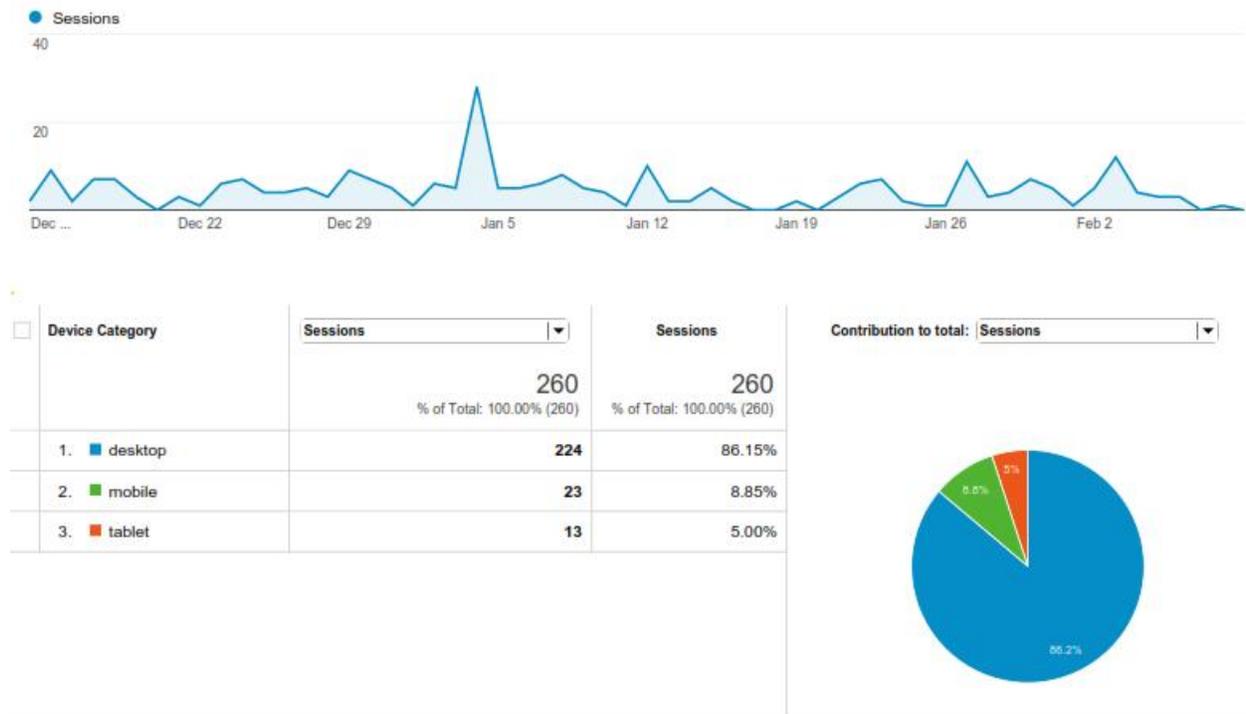


Figure 7.11: Devices used to access the portal (Google analytics, 2015)

Figure 7.11 above shows that desktop computers had the highest number of sessions with 86.15% (n=224). The portal was designed to be compatible with mobile devices and it recorded 8.85% (n=23) sessions from mobile users and 5.00% (n=13) sessions from Tablets. The results show that the portal provides cross browser and hardware devices compatibility making the (tourcampportal.com) a cross-platform tool.

7.6 Expert evaluation analysis and results

This section introduces prototype evaluation findings. The statistical information presented was derived from Phase 3 questionnaires. The data was gathered exclusively through self-administered questionnaires. The questionnaire was designed in line with the specific objectives of the study to collect quantitative data. To enhance the quality of data obtained, Likert's type questions were included whereby respondents indicated the extent to which the variables were practiced in a four and five point Likert scale.

The study targeted thirty respondents from tourism officers from Ministry of Tourism and Information technology professionals, out of which twenty responded and returned their questionnaires contributing to 66.7% response rate. This commendable response rate from practitioners was made a reality after the researcher made appointments to explain the objective of evaluating the prototype. The researcher gave respondents one week to fill-in and return the questionnaires.

Cronbach's alpha (α) coefficient was employed in order to test the reliability of the research instrument and its constructs (Morosan & Fesenmaier, 2007:24). Cronbach's alpha (α) is a measure of how well each scale correlates with the remaining items in a particular section; it is a measure of consistency within a particular scale. The overall reliability of the scale employed in the definition section was 0.815. This value constituted a high level of reliability within this section of the study considering an acceptable level of reliability for the coefficient would be any value greater than 0.7 (Law & Hsu, 2006: 297; Wong & Law, 2004:320).

7.6.1 Results

The results are presented based on the data gathered by means of the questionnaire in the following sub-sections: biographical information, portal usefulness and impact and finally the inferential statistics.

7.6.2 Biographical information of Phase 3 participants

The biographical information sought in this section includes variables such as gender and age and professional qualifications. It was important to ascertain the age of respondents in order to obtain a broad indication of their years of experience as employees in the organisation under study. This was important as understanding of the tour destination selection process varies according to levels of experience.

Table 7.1: Respondents' age

Age Group	Frequency	Percentage
18-24yrs	3	15
25-34yrs	11	55
35-44yrs	4	20
45-54yrs	1	5
above 55	1	5
Total	20	100

According to Table 7.1 the majority of the respondents (n= 11; 55%) were between 25-24 years, with 4 (20%) being 35-44 years. It is thus evident that most of the respondents were chronologically mature.

The study sought to describe respondents' level of expertise in using modern web applications. This study sought answers to the following question (1): What is your level of expertise in using modern web applications?

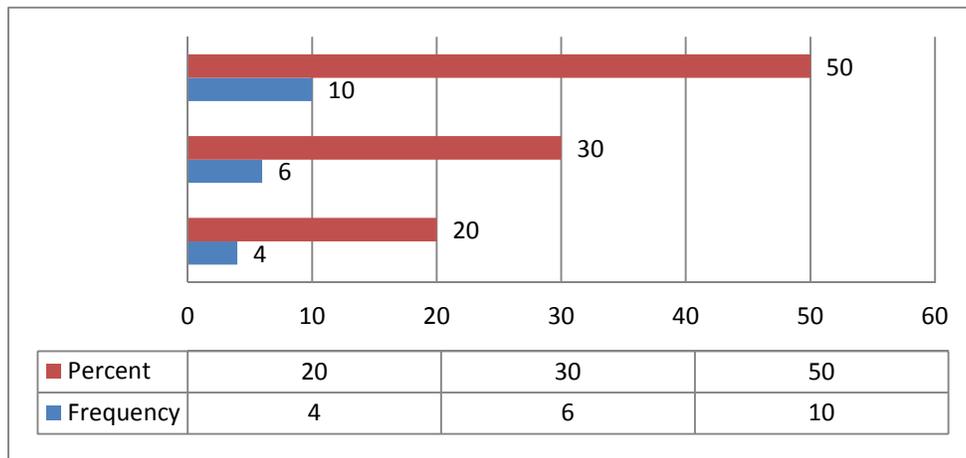


Figure 7.12: Level of expertise

From the findings in Figure 7.12 above, majority of the respondents, 50% (n=10) were advanced stage. 30% (n=6) of respondents were intermediate while 20% (n=4) were beginners. The study further sought to find out on how frequently respondents used online booking systems. The following question (2) was posed: How regularly do you use online booking systems?

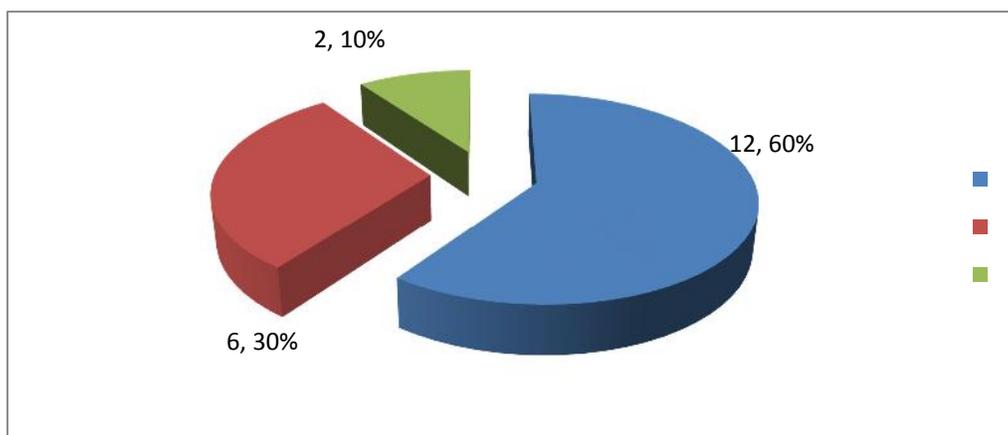


Figure 7.13: Online booking systems

According to Figure 7.13 the majority 60% (n=12) of the respondents indicated that they frequently use online booking systems. 30% (n=6) indicated they have often used online booking system and only 10 % (n=2) who rarely use online booking systems.

The study further sought the respondents' opinion on portal design, usability, performance and the quality of streaming. Respondents were required to answer the following question (4): What is your opinion in regards to portal design, usability, performance and the quality of streaming? The study used a scale of 1 to 4 where 1 was very poor, 2 was satisfactory, 3 was very good and 4 excellent.

7.6.3 Portal quality

Definition of website quality is how well a website is designed and how well the design meets with the user's satisfaction. Website Quality (or Quality of Websites) could be measured from two perspectives: Programmers, and End-users. The aspects of website quality from programmers focus on the degree of Maintainability, Security, Functionality, etc. Whilst the end-users are paying more attentions to Usability, Efficiency, Creditability, etc. Lai, Yang and Tang (2006:14) in their study on information quality explains that system quality has the largest total effect on system dependability, perceived usefulness and Intention to use.

7.6.3.1 Prototype portal design

This section sought to establish the end users' opinion regarding the quality of the website based on the various measurable website criteria: Table 7.2 tabulates the findings regarding the respondents' opinions regarding portal design, usability, performance and the quality of streaming. The respondents indicated that the quality of live streams, the performance of the portal, usability and navigation was excellent as shown by means 2.95, 3.20, 2.55 respectively. Further, the respondents indicated that the portal design and response time was satisfactory as shown by means of 2.80 and 2.65 respectively.

Table 7.2: Respondents' opinion about design and performance

	Mean	Std. Deviation
Portal design	2.80	0.83
Usability	3.20	0.83
Navigation	2.55	0.89
Performance	2.95	0.85
Response time	2.65	0.75
quality of live streams	2.05	0.89

The respondents were asked to give their opinion in regard to portal design.

Table 7.3: Portal design

	Frequency	Percent	Mean	Std Dev
			2.8	0.83
Very poor	1	5.0		
Satisfactory	6	30.0		
Very Good	9	45.0		
Excellent	4	20.0		
Total	20	100		

The findings in Table 7.3 above on portal design shows that the portal design is very good as shown by a mean of 2.8. Hartmann, Angeli and Sutcliffe (2008:860) state that different website designs are launched on a daily basis and the perceived quality and impact of a website depend not only on direct properties of the design, but also on external sources of judgement

Ones with similar content will not have the same degree of quality. If the design is poor, the user will simply leave the website and go elsewhere. Generally, there is no second

chance to get a user back to the website. Therefore, this study concludes that the prototype design was user friendly and accessible, and it offers useful and reliable information, providing good design and visual appearance to meet the users' needs and expectations.

7.6.3.2 Prototype usability

Usability represents one of the most important acceptance criteria for interactive software applications in general and web applications in particular. According to Hitz, Leitner and Melcher (2006:219), usability is one of the most important quality factors for web applications and poorly usable applications cause users to reject them, especially on the Web. The respondents were asked to give their opinions in regards to usability.

Table 7.4: Prototype usability

	Frequency	Percent	Mean	Std Dev
			3.2	0.83
Satisfactory	5	25		
Very Good	6	30		
Excellent	9	45		
Total	20	100		

From the Table 7.4 above, the portal usability was excellent. According to Brinck, Gergle and Wood (2002:2), usable website is a one that allows users to accomplish their goals quickly, efficiently, and easily. Unusable web applications cause users to reject them. This study concludes that the web application was usable and users were able to achieve their goals effectively, efficiently and satisfactorily. From the Table the portal usability was satisfactory as shown by a mean of 3.2.

7.6.3.3 Prototype performance

The respondents were asked to give their opinions in regards to performance.

Table 7.5: Prototype performance

	Frequency	Percent	Mean	Std dev
			2.95	0.83
Satisfactory	7	35		
Very Good	7	35		
Excellent	6	30		
Total	20	100		

From the Table 7.5 above, the portal performance was satisfactory and very good as indicated by 35% (n = 7). Performance shows how fast the system can perform under specific workload. It is necessary in web applications to verify response time, throughput, disk usage, and memory utilisation (Jain & Goel, 2014: 158).

7.6.3.4 Prototype and navigation ease

Many features come together to create a quality website. One of the integral components is the website navigation. The website navigation is the act of moving around from the page to page within a website, and a good website provides people with the easy ways to navigate through to access the web content. The respondents were asked to give their opinions about the website navigation.

Table 7.6: Ease of navigation

	Frequency	Percent	Mean	Std Dev
			2.55	0.89
Very poor	2	10		
Satisfactory	8	40		
Very Good	7	35		
Excellent	3	15		
Total	20	100		

From Table 7.6, navigation was satisfactory as shown by a mean of 2.55. Zihou, Zhou and Yang (2008:115) cited that website navigation is very important as it creates the flow for the website's user to travel around the website. A good website should include the prominent and clear navigation elements, which contain the menu bar, images, text content, and so on. They are composed of the internal links and external links grouped together and provide a guiding of a user's location within the website at all times. The study therefore infers that if the navigation has not been designed well it can also easily hinder the users and they will not use the website again.

7.6.4.5 Prototype response time

The respondents were asked to give their opinions in regards to response time.

Table 7.7: Prototype response time

	Frequency	Percent	Mean	Std Dev
			2.65	0.75
Very poor	2	10		
Satisfactory	4	20		
Very Good	13	65		
Excellent	1	5		
Total	20	100		

From the Table 7.7 above, 65% (n = 13) indicated that response time was very good, 20% (n = 4) indicated that response time was satisfactory, 10% (n = 2) indicated that response time was very poor while a few (5%, n = 1) indicated that the response time was excellent as shown by a mean of 2.65.

7.6.4.6 Quality of lives streams

The respondents were asked to give their opinions in regards to quality of lives streams.

Table 7.8: Quality of live streams

	Frequency	Percent	Mean	Std. Deviation
			2.05	0.89
Very poor	5	25		
Satisfactory	11	55		
Very Good	2	10		
Excellent	2	10		
Total	20	100		

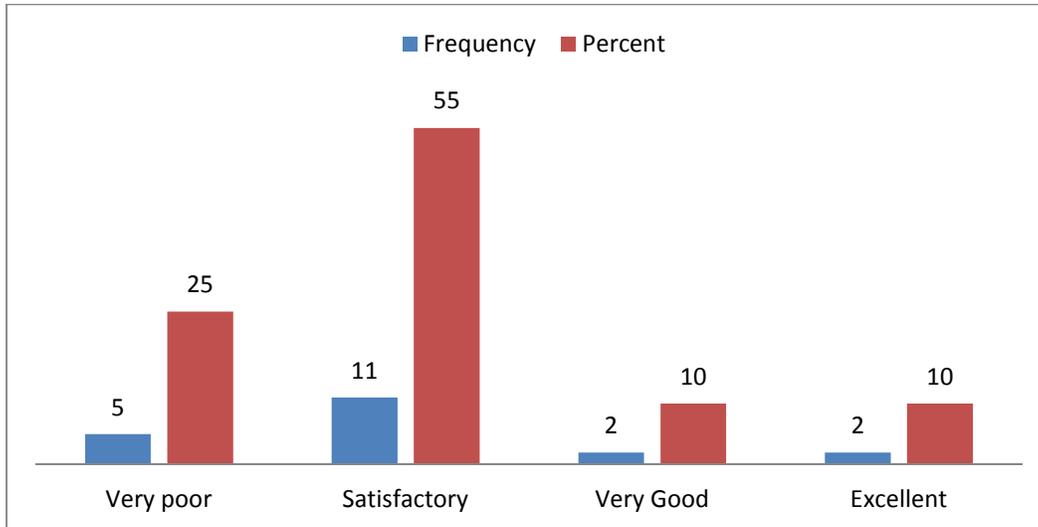


Figure 7.14: Quality of live streams

From the Table 7.14 above, 55% (n = 11) indicated that the quality of live streams was satisfactory, 25% (n = 5) indicated that quality of live streams was very poor, 10% (n = 2) indicated that quality of live streams was very good and excellent respectively. From the Table 7.8 above, the quality of live streams was satisfactory as shown by a mean of 2.05.

7.6.5 Difficulties encountered by respondents

The respondents were required to indicate the extent to which they encountered difficulties while interacting with the portal in regards to browser compatibility, stream availability, valid pages, and distortion in page contents, website errors and online reservations. Did you encounter any of the following difficulties?

7.6.5.1 Browser compatibility

Browser compatibility is the capability or flexibility of a website, web application, script or HTML design to function on different web browsers available in the market. The respondents were asked to indicate their opinions regarding browser compatibility.

Table 7.9: Browser compatibility

	Frequency	Percent	Mean	Std. Deviation
			2.25	0.79
Less compatible	3	15		
Compatible	10	50		
Neutral	6	30		
not compatible	1	5		
Total	20	100		

From the Table 7.9, the respondent indicated that the browser was compatible as shown by a mean of 2.25. Jianjun, Kang and Hongji (2008:719) state that all web browsers must function as a translator. Browsers translate the text written using HTML format, and then show the content in a webpage. Every browser features its own abilities and mode of text translation, which is the root of the main differences between browsers. Even though a standard set of rules exists for scripting HTML code, the interpretation or translation contributes to most of the differences. Besides the browser differences, another element that plays into browser compatibility is whether the online surfer is using a regular personal computer and whether the operating system is Windows, Mac or Linux. Mostly, the exact same browser may render the web pages slightly differently from all these platforms.

This study concludes that the website was compatible with every browser and all the varieties of operating systems and therefore suitable for destination selection marketing.

7.6.5.2 Consistency

The respondents were asked to indicate the extent to which they encountered difficulties regarding consistency.

Table 7.10: Consistency

	Frequency	Percent	Mean	Std. Deviation
			1.60	1.05
No difficulties	13	65		
Less difficulties	4	20		
Neutral	2	10		
Much difficulties	1	5		
Total	20	100		

From the findings in Table 7.10 indicated that they experienced no difficulties regarding consistency. This study infers that the respondents experienced less difficulty as shown by a mean of 1.60. Zihou (2009:18) suggest that the simple idea about consistency is that users can move around the website from page to page and find the similar content or information displayed in the similar ways. All pages should provide the consistent user interfaces that present the same options in the same way over the whole website.

The study concludes that users of a website need consistency so that they can find the information regarding a destination much quicker.

7.6.5.3 Page content

Today web content is the best tool for building relations between the potential customers and suppliers. For this reason, the respondents were required to evaluate the website page contents by indicating the level of page content.

Table 7.11: Page contents distortion

	Frequency	Percent	Mean	Std. Deviation
			.95	0.49
Less page contents distortion	1	5		
No page contents distortion	15	75		
Neutral	4	20		
Total	20	100		

According to Zihou (2009:49), rich website page content benefit users by providing information relevant to their search query, whether it is educational, entertaining, amusing or exciting. From the Table 7.11 above, 75% (n = 15) indicated no distortion in the page content while 20% (n = 4) were neutral. Rich content can be described as a gathering of many elements such as a search engine, bulletin board, information guide, Graphics and so on. These complete the website's functionality and accessibility requirements to meet the user's expectation.

7.6.5.4 Pages validity

The respondents were asked to indicate the extent to which they encountered difficulties regarding validity of the pages when respondents connect to specific streaming page.

Table 7.12: Pages validity

	Frequency	Percent	Mean	Std. Deviation
			2.3	1.08
Valid	5	25		
Very valid	7	35		
Neutral	6	30		
Less valid	1	5		
Not valid	1	5		
Total	20	100		

From the Table 7.12 above, 35% (n = 7) indicated that the pages were very valid, 25% (n = 5) indicated valid while 30% (n = 6) were neutral concerning the validity of the pages. This study infers that the page was valid as shown by a mean of 2.3.

7.6.5.5 Malicious website errors

The respondents were asked to indicate the level of malicious website errors.

Table 7.13: Level of malicious website errors

	Frequency	Percent	Mean	Std. Deviation
			2.15	0.49
No errors	1	5		
Less errors	15	75		
Neutral	4	20		
Total	20	100		

From the Table 7.13 above, 75% (n = 15) indicated that there were no malicious website errors, 20% (n = 4) were neutral while 5% (n = 1) indicated no malicious website errors. This study infers that there were less malicious website errors as shown by a mean of 2.15.

7.6.5.6 Online reservation

The respondents were asked to indicate the level of errors in the online reservation module.

Table 7.14: Level of online reservation errors

	Frequency	Percent	Mean	Std. Deviation
			1.55	1.04
No errors	13	65		
Less errors	3	15		
Neutral	4	20		
Total	20	100		

From the Table 7.14 above, 65% (n = 13) indicated that there were no errors in the online reservation component, 20% (n = 4) were neutral while 15% (n = 3) indicated they encountered less errors. This study infers that there were fewer errors as shown by a mean of 1.55. According to Brinck, Gergle and Wood (2002:2), usable web application is a one that allows users to accomplish their goals quickly, efficiently, and easily. Unusable web applications cause users to reject them. This study concludes that the online reservation component was usable and that users were able to achieve their goals efficiently.

7.6.7 Tourcam portal usefulness and impact

Throughout the last few years, the overall trend in travel businesses worldwide has been the adoption of new e-marketing strategies that utilise the ever-advancing Internet technology applications available today (Meriç, 2013:23). One of the foremost technology applications used in travel business promotion has been the use of online social networking websites. Social networking sites are defined as web-based services that allow individuals to construct a public or semi-public profile within a bounded system,

articulate a list of other users with whom they share a connection, and view and traverse their list of connections and those made by others within the system. The nature and nomenclature of these connections may vary from site to site (Boyd & Ellison 2007: 210).

The study sought to establish from practitioners the usefulness of the portal in enhancing the effectiveness of destination selection to answer question (6): What is your opinion in regards to the aim of the portal in enhancing the effectiveness of destination selection process? Table 7.14 below shows the overall effectiveness.

Table 7.14: Usefulness of the portal

	Frequency	Percent
Some impact	4	20
Very useful	9	45
Useful	6	30
Not useful	1	5
Total	20	100

From the findings in Table 7.14, 75% (n=15) of the respondents indicated that the portal is useful in enhancing the effectiveness of destination selection. 20 % (n=4) indicated the portal had some impact in enhancing the effectiveness of destination selection process while a few 5 % (n=1) indicated that the portal was not useful. One of the most important questions that need to be addressed is whether the portal actually influence travellers' decisions. A considerable percentage of online travellers who use social media believe that the social media have influenced their decision-making. The greatest impact is felt with respect to where to stay, which is not surprising given the dominance of travel reviews, which most often are written regarding hotels. However, activities and restaurant choices are also very much influenced (Yoo & Gretzel, 2012:197-198).

Tourists form an image of a tourist destination after undergoing a process, which, consists of the following stages. (1) accumulating mental images of the destination, thus forming an organic image; (2) modifying the initial image after more information, thus forming an induced image; (3) deciding to visit the destination; (4) visiting the destination; (5) sharing

the destination; (6) returning home, and (7) modifying the image on the experience in the destination.

This study therefore infers that travellers can use the portal before and during vacation trips to obtain information about the trips and to share their experiences related to the trip. Research has shown that 88 percent of leisure travellers report being influenced by online travel reviews (Meriç, 2013:24).

7.6.7.1 Portal provision of pre-tour experience

The study sought to establish whether the portal provided pre-tour experience to online visitors. The following question (1) was posed: Does the portal provide pre-tour experience to online visitors?

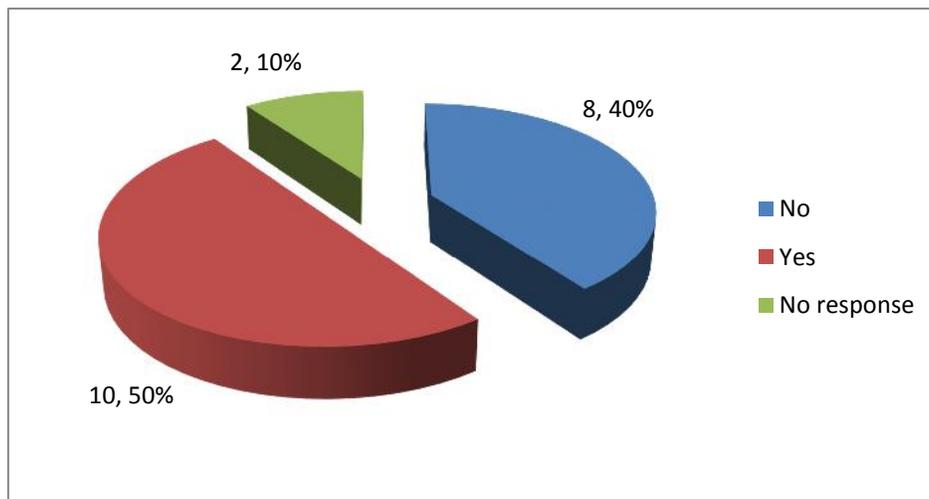


Figure 7.15: Response on pre-visit experience

From the findings in Figure 7.15, 50 % (n=10) of the respondents indicated that the portal provided pre-tour experience to online visitors, 40 % (n=8) indicated that it did not provide complete pre-tour experience due to lack of affective components, while 10 % (n=2) did not respond.

From a cognitive point of view, tourist destination image is assessed on a set of attributes that correspond to the resources or attractions that a tourist destination has at its disposal. In the tourism context, those attractions are the elements of a destination that attract tourists, such as scenery to be seen, activities to take part in, and experiences to remember (Martin, 2003: 624). This study concludes that the portal provided the motivations and the magnetism necessary to persuade an individual to visit a determined place.

7.6.7.2 Influence of the portal in decision-making process

A thorough understanding is required to comprehend the complexity in the traveller destination decision-making process. Due to the importance of decision-making in destination selection. This study further sought answers to the following question (2): Can the portal influence decision-making process when buying destination services? Majority of the respondents (90%, n = 18) indicated that the portal influenced decision-making process to a great extent.

This finding concurs with the hedonic (experimental) perspective on consumer behaviour. The focus is not on the decision-making process as such but rather on the consumption experience of products. However, it does have implications on decision-making and mental constructs. Hedonic consumption pertains to those facets of consumer behaviour that relate to the multisensory or example, tactile impressions and visual images, fantasy and emotive aspects of one's experience with products. Moreover, destination image contributes to forming a destination brand and to its success.

The starting point for developing and keeping a strong brand image is the fundamental understanding of the tourists' images of the destination and image studies are a prerequisite to an overall successful marketing strategy. Hence, it is clear that image is strongly related to tourism marketing issues and plays an incredibly important role for the touristic success of a destination (Tasci & Gartner, 2007:413). All the respondents indicated 'yes'. The above finding shows that destination marketers may well adopt real-

time images as a tool to create content and as a means of increasing interaction between DMOs and potential tourists (Munar, 2010:15).

This study therefore infers that consumers seek to make the decision that will maximize their pleasure and emotional arousal. This newer view of consumer behaviour focuses on product usage, consumption experience, and hedonic and symbolic dimensions of the product. Products are no longer considered as objective entities, but rather as subjective symbols associated with emotional responses, sensory pleasure, daydreams or aesthetic perceptions. This hedonic and experiential perspective is particularly relevant for class of products such as cultural manifestations, sporting event or vacation (Meric, 2013:5).

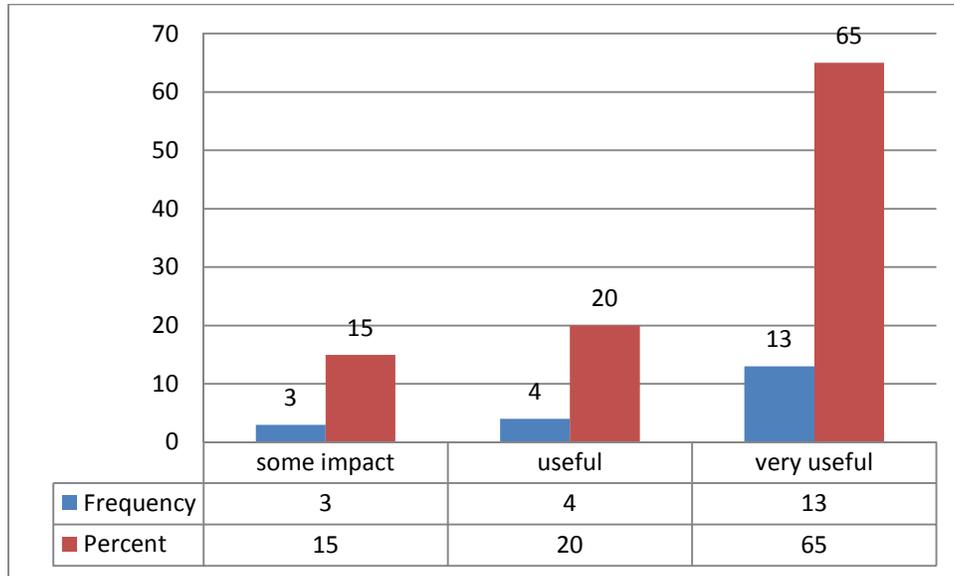


Figure 7.16: Real-time images as additional information source

The study sought to find out how useful were the real-time images were as additional sources of information when making travel decision. The following question (3) was posed: How useful are the real-time images as additional source of information when making travel decisions? The findings on Figure 7.16 shows that majority $n=13$ (65%) of the respondents indicated that the real-time images are very useful information sources when making travel decisions, 20% ($n=4$) indicated useful and only 15 % ($n=3$) indicated that it has some impact when making travel decision. From the findings in Figure 7.13 it is evident that real-time images on destination attractions provides access to realistic and imaginative tourist pre-visit experiences and provides mental pleasure to viewers by stimulating fantasies (Tussyadiah & Fesenmaier, 2009:37).

The respondents were asked to give their opinions about usefulness of the portal in destination marketing. The study used a scale of 1 to 5 where 1 was strongly disagree, 2 was disagree, 3 was neutral, 4 was agree and 5 was strongly agree.

7.6.8 Usefulness of the portal in destination marketing

Destination Marketing Systems (DMS) are used in the tourism industry for communication, information, marketing, transactions, and customer relation management (Wang & Russo, 2007:189). The study sought to establish the usefulness of the portal in destination marketing to answer the following question (4): What is your opinion on the following statements in regards to usefulness of the portal in destination marketing? From the findings in Table 7.15 below, respondents strongly agreed that the portal is ideal for destination marketers to market destination attractions and strongly agreed that the language translators play an essential role in enabling the portal to have a global reach as shown by means of 4.20.

Table 7.15: Usefulness of the portal to destination marketers

Opinions in regard to usefulness of the portal to Destination Marketing Organisations	Mean	Std. Deviation
The portal improves online visibility of listed destinations	3.20	0.89
The portal provides a competitive advantage to destinations that are already published	3.97	0.12
The portal is a powerful tool for DMOs to improving their online reputation	4.50	0.13
The portal is ideal for marketing destination attractions	4.14	0.13
Language translators play an essential role in enabling the portal to have a global reach	4.20	0.18

7.6.8.1 Online visibility of listed destinations

The respondents were required to give their level of agreement with the statement that the portal improves online visibility of listed destinations. Blumberg (2005:46) defined destination as 'an amalgam of individual products and experience opportunities that combine to form a total experience of the area visited.

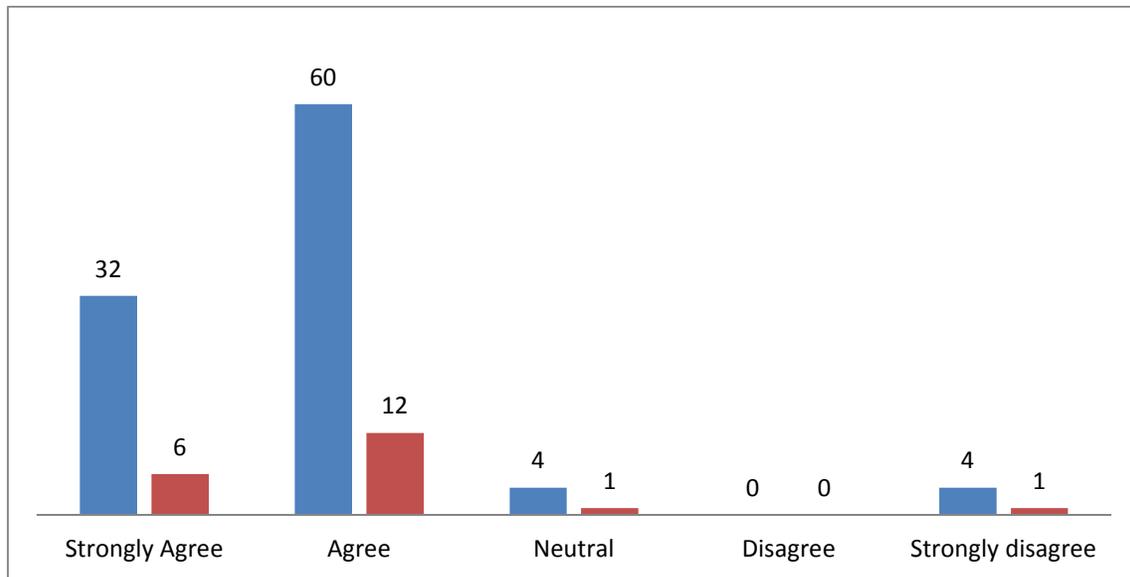


Figure 7.17: Online visibility

From Figure 7.17 majority 82 % (n = 18) agreed that the portal improves online visibility of listed destinations, 32% (n = 6) strongly agreed, 60% (n = 12) agreed while 11% (n = 2) were neutral.

7.6.8.2 Competitive advantage to destinations

Changes in the tourism sector, competition among products and tourist destinations and changes in tourists' expectations and habits, all means tourist destinations must be conceived as brands that have to be managed from a strategic point of view. From that perspective, destination image plays a fundamental role in the success of tourist destinations, since image, seen as a mental picture formed by a set of attributes that define the destination in its various dimensions, exercises a strong influence on consumer behaviour in the tourism sector.

The respondents were required to give their level of agreement with the statement that the portal provides a competitive advantage to destinations that are already published.

Table 7.16: Competitive advantage

	Frequency	Percent	Mean	Std. Deviation
			3.97	0.12
Strongly Agree	6	32		
Agree	12	60		
Neutral	1	4		
Disagree	0	0		
Strongly disagree	1	4		
Total	20	100		

From Table 7.16 majority 60% (n=12) agreed that the portal provides a competitive advantage to destinations that are already published, 32% (n = 6) strongly agreed, 4% (n = 1) were neutral over the same statement. Beerli and Martin (2003:624) state that tourists usually have limited knowledge of destinations they have not previously visited. Strong, positive and recognisable imagery offer greater probability for the destination to be selected by the tourist. Martin, Ercan and Wonae (2013:690) added that destination

image perceived post-visit also influences tourist satisfaction and intention to repeat the visit in the future, depending on the destination's capacity to provide experiences that correspond with their needs and fits the image they had of the destination. This study concludes that the portal provides a competitive advantage to destinations that are already published.

7.6.8.3 The portal as a marketing tool

A destination marketing organisation can be defined as 'any organisation that at any level is responsible for the marketing of an identifiable destination or 'a publicly funded body normally given the responsibility for coordinating the marketing activities within the boundaries of the destination (Elbe, Hallen & Axelsson, 2009:285). For DMOs, the adoption of online techniques has dramatically changed marketing over the last five years (Ruzic & Bilos, 2010:178). However, compared to the commercial sector, DMOs have been slow to adopt IT in their operations; which in most cases did not start until the increasing public awareness of the Internet in the mid-1990s (Hudson & Lang, 2002:156).

The respondents were required to give their level of agreement with the statement that the portal is a powerful tool for DMOs to improving their online reputation.

Table 7.17: Portal as a powerful tool for DMOs online reputation

	Frequency	Percent	Mean	Std. Deviation
			4.5	0.13
Strongly Agree	11	54		
Agree	5	25		
Neutral	4	20		
Disagree	0	0		
Strongly disagree	0	0		
Total	20	100		

Table 7.17 illustrates that majority 54% (n = 11) strongly agreed that the portal is a powerful tool for DMOs to improving their online reputation as shown by a mean of 4.5. This finding agrees with Nusair, Mehmet, Fevzi and Anil (2012:210), that an expansion of online social networks into travel has been witnessed and they can be useful as marketing tools.

7.6.8.4 Portal is ideal for marketing destination attractions

According to Baker and Cameron (2008:80), destination marketing is a place planning procedure concerning the needs of target markets. It could be successful when it fulfils two main parameters; the enterprises' and residents' satisfaction that the place provides and secondly the satisfaction of expectations of potential target markets (enterprises and visitors). As long as the goods and services the place provides are those that they wish to get' is understood as 'market orientated strategic planning and hence as a strategic approach to place development rather than a sales and image making tool.

The respondents were required to give their level of agreement with the statement that the portal is ideal for marketing destination attractions.

Table 7.18: Portal is ideal for marketing destination attractions

	Frequency	Percent	Mean	Std. Deviation
			4.14	0.13
Strongly Agree	6	31		
Agree	11	57		
Neutral	2	8		
Disagree	1	3		
Strongly disagree	1	1		
Total	20	100		

From Figure majority 57% (n = 11) strongly agreed that the portal is ideal for marketing destination attractions, 31% (n = 6) agreed while a few 1% (n = 1) strongly disagreed as shown by a mean of 4.14.

This study concludes that web applications about destinations, hotels and tourism have become important sources of information for travellers. The main reason for using the portal is the benefits (social, functional and psychological and hedonic) that the user can get. Social benefit is linked to the level of participation in the use of the website when planning vacation trips.

7.6.8.5 Language translators and global reach

The respondents were required to give their level of agreement with the statement that language translators play an essential role in enabling the portal to have a global reach.

Table 7.19: Language translator component

	Frequency	Percent	Mean	Std. Deviation
			4.20	0.18
Strongly Agree	6	32		
Agree	12	60		
Neutral	1	4		
Disagree	0	0		
Strongly disagree	1	4		
Total	20	100		

From Table 7.19 majority 60% (n = 12) strongly agreed that language translators play an essential role in enabling the portal to have a global reach. This finding agrees with Chhatwani et al (2013), that language translator module plays a strategic role by providing the same information in different languages to be able to reach to potential tourist who were not able to read the content of web applications.

7.6.9 Integrating streaming technology in destination selection

Decision-process stage is influenced by information input and external variables and individual reasoning and emotional interpretation can either positive or negative evaluation when potential tourist access available information sources (Suelin, 2010:2910; Salma, 2007:36). DMO's should go beyond traditional mainstream media when they are communicating their brand image, any organisation that fails to effectively communicate their brand image during destination selection will eventually not able to compete with other destinations that are offering competitive services (Fyall & Leask, 2006:59; Schaar, 2013:3). There is need for destination marketers need to develop effective and efficient marketing activities to promote tourism products (Choibamroong, 2005:2).

Streaming technology play an essential role in information processing and particularly in destination choice matters, tourism marketers are considering the integration of streaming technology to strategically establish, reinforce and, if necessary, change the image of their destination. Chi and Qu (2008:634), remind of the fact that not all elements contributing to the development of an image can be controlled.

Tourism advertising and promotion is only one existing possibility for manipulation, pursuing the ultimate goal to match the promoted and the perceived image to the greatest extent possible. Through advertising, image becomes an artificially created differentiation, because it strongly influences and forms beliefs about the offered tourism products (MacKay & Fesenmaier, 1997:540).

This study further sought answers to the following question (5): What is your opinion on integrating streaming technology in destination selection process as a way of marketing tour destinations?

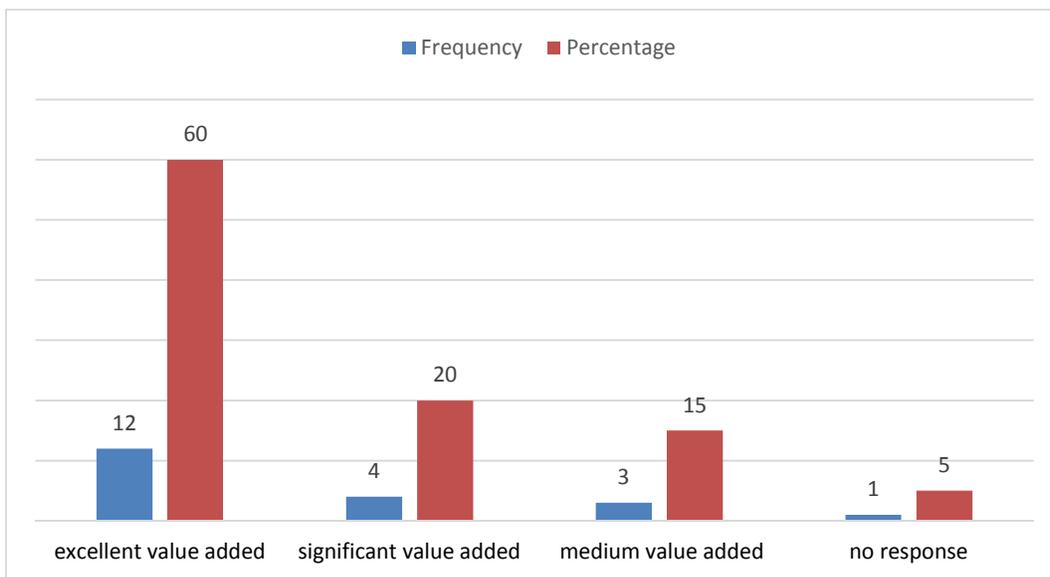


Figure 7.18: Integrating streaming technology in destination selection

From the findings in Figure 7.18, 60% (n=12) of the respondents indicated that the integration of streaming technology in destination selection process as a way of improving destination selection was an excellent value added, 5% (n=1) indicated it was a significant value added, 20% (n=4) indicated that it was significant value added.

The respondents were further asked to give their opinions about usefulness of the portal from a potential tourist level to answer question (6): What is your opinion on the following statements in regards to the usefulness of the portal from a potential tourist level?

Table 7.20: Usefulness of the portal to potential tourists

Respondent opinions in regard to usefulness of the portal from a potential tourist level	Mea n	Std. Deviation
Provides additional destination information	4.27	0.2070
Provide real time availability of destination	4.14	0.2160
Provides actual representation of tour destination	3.96	0.3382
Provides pre-visit experience before making an online reservation	3.20	0.1223
Reduces speculations destination attractions	4.06	0.1796
Provides accurate information source when making travel decision	3.74	0.2132
Live streams from selected destinations authenticates destinations attractions	4.43	0.2449

From the findings in Table 7.20, the respondents agreed that the portal provides additional destination information as shown by a mean of 4.27. Further, the respondents agreed that the portal provides real-time availability of destination, reduces speculations on destination attractions, and provides an actual representation of tour destination as shown by means of 4.14, 4.06 and 3.96 respectively. From this study, it is clear that the battle for potential tourists in today's destination marketplace will be fought not over price,

but over business process improvements that taps into emotions of customers when they are making purchase decisions. What persuades tourists to visit one similar place over another is the emotional connection they feel towards the destination (Schaar, 2013:3; Freire, 2007:1).

7.6.9.1 Provision of additional destination information

The respondents were required to indicate their level of agreement on whether real-time streaming technology provides additional destination information.

Table 7.21: Provision of additional destination information

	Frequency	Percent	Mean	Std. Deviation
Strongly agree	9	48	4.27	0.2070
Agree	7	35		
Neutral	3	13		
Disagree	1	4		
Strongly disagree	0	0		
Total	20	100		

The findings in Table 7.21 illustrates that 48% (n = 9) strongly agreed that real-time streaming technology provides additional destination information. Thirty-five percent (n = 7) also agreed over the same statement.

7.6.9.2 Provision of real time availability of destinations

Martin (2003:624) argues that tourist destination image is assessed on a set of attributes that correspond to the resources or attractions that a tourist destination has at its disposal. In the tourism context, those attractions are the elements of a destination that attract tourists, such as scenery to be seen, activities to take part in, and experiences to remember. To be precise, the attractions provide the motivations and the magnetism necessary to persuade an individual to visit a determined place.

The respondents were required to indicate their level of agreement with the statement that real time streaming technology provides a real time availability of destination.

Table 7.22: Provision of real-time availability of destination

	Percent	Frequency	Mean	Std. Deviation
Strongly agree	31	6	4.14	0.2160
Agree	57	11		
Neutral	8	2		
Disagree	3	1		
Strongly disagree	1	1		
Total	100	20		

The findings in Table 7.22 illustrates that 57% (n = 11) agreed that real time streaming technology provides a real time availability of destination. Beeton, Bowen, and Santos (2006:27) suggest that real time streaming technology portrays notions of quality in tourism experiences to the public.

7.6.9.3 Representation of tour destination

According to Hunter (2008:354), visual representations in tourism are “the means by which the original characteristics of a destination are transformed into simulations and conveyed by means of various media for the sake of destination promotion. Representations are considered the mechanism of tourisms discourses. Jenkins (2003:306) stated that tourism representations are “arranged into discourses or frameworks that embrace particular combinations of concepts and ideologies that vary between cultures, classes, and races”.

Morgan and Pritchard (1998:18) stated that tourism imagery is one element in the circuit of culture, reflecting and reinforcing the circuit of knowledge and power. Tourism representation is a key element in the circuit of tourism discourse. The role of the image creator is important to understand because of the meaning systems, which inform their

creations and in turn reinforce particular ways of seeing the world (Morgan & Pritchard 1998). Therefore, it is essential to understand how discourses are made and how its creators influence representations. This study required the respondents to indicate their level of with the statement that real time streaming technology provides representation of tour destination.

Table 7.23: Representation of tour destination

	Frequency	Percent	Mean	Std. Deviation
Strongly agree	2	12	3.96	0.3382
Agree	16	80		
Neutral	1	4		
Disagree	0	0		
Strongly disagree	1	4		
Total	20	100		

The findings in Table 7.23 illustrates that 80% (n = 16) agreed that real-time streaming technology provides representation of tour destination. Schroeder and Borgeson (2005:578) stated that images provide resources to shape and enhance understanding of the world, the identities of people and places. Behind the images lies a system of beliefs and representations that tells something not only about the culture being portrayed, but also about the values that underlie that culture. Therefore, this study concludes that the decisions about which images are shown, the context within which they are represented, and their purpose must to be understood from a rhetorical perspective.

The strengths of this prototype is on its influences on TDI that is developed from induced organic and real-time images in decision-making. TDI is now formed as a result of the knowledge the tourist acquired about the destination from pre-visit information sources, the feelings or attachment he develops towards the destination and his intention or behaviour in the future (Matos et al, 2012:111).

This study infers that visual representations are an essential part of tourism because it largely depends on their collection as well as their production and consumption.

7.6.9.4 Pre-visits experience

Experience is a complicated and multi-faceted issue. Experiences arise from activities, from the environment and the social contexts embedded in the activities (Ooi, 2013:30). According to Chhetri, Arrowsmith and Jackson (2004:31), experience is a term that covers various subjective reactions, moods and feelings. Caru and Cova (2007:38) discussed the immersion concept of consumer in the “experiential context” and argued that: An experience is a subjective episode that customers live through when they interact with a firm’s product or service offer. A firm can therefore offer experiential contexts that consumers each mobilize in order to immerse themselves and thus to (co)-produce their own experiences.

Technology have been transforming the tourism industry globally (Buhalis & O’Connor 2005:7). According to Pine and Gilmore (1999: 10) as early as 1999, the world economy has been moving towards to the so-called experience economy where technology powers experiences. “The Internet is the greatest force of commoditization ever known to man for both goods and services. Today, the Internet is a central channel for communications and transactions in the tourism industry.

The Internet gives the users the ability to access information, which is fundamentally changing the tourism industry in terms of how people use information sources. People use the Internet as their first place for information search, for buying products and services online, for connecting with friends and for obtaining information on the spot by using location based services (Goossen, Meeuwsen, Franke & Alterra, 2014: 897). According to Wang, Park and Fesenmaier (2012: 373) the Internet mediates the tourism at a more extended level than other media since “it provides interactive opportunities for the audience and the media”

The respondents were required to indicate their level of agreement with the statement that real-time streaming technology provides pre-visits experience before making an online reservation. The “tourist’s feeling and attitude” towards the visit can be compared to the levels of the experience that the tourist acquires. Further, in this study tourist experience is regarded as all that happens during a tourist event, including things happen before the tourist travels to site, on-site activity and the return travel.

Table 7.24: Pre-visit experience

	Percentage	Frequency	Mean	Std. Deviation
Strongly agree	13	2	3.20	0.1223
Neutral	25	5		
Agree	39	9		
Disagree	15	3		
Strongly disagree	8	1		
Total	100	20		

The findings in Table 7.24 illustrates that 39% (n = 9) agreed that real time streaming technology provides pre-visits experience before making an online reservation. However, 25% (n = 5) were neutral over the same statement.

7.6.9.5 Reduction of speculation on destination attractions

Image influences expectations, destination reputation and customer loyalty, and the more positive the preconceived image of a destination the higher level of loyalty to the destination (Bosque & Martin, 2008:559). A unique and strong image is needed to capture travellers' attention. The study required the respondents to indicate their level of with the statement that real time streaming technology reduces speculation on destination attractions.

Table 7.25: Reduction of speculation on destination attractions

	Percentage	Frequency	Mean	Std. Deviation
Strongly agree	45	9	4.06	0.1796
Agree	24	5		
Neutral	26	5		
Disagree	2	..		
Strongly disagree	3	1		
Total	100	20		

The findings in Table 7.25 illustrates that 45% (n = 9) strongly agreed that real time streaming technology reduces speculation on destination attractions. However, 26% (n = 5) were neutral over the same statement.

7.6.9.6 Provision of accurate information sources

The respondents were required to indicate their level of agreement with the statement that real time streaming technology provides accurate information source when making travel destination.

Table 7.26: Provision of accurate information sources

	Percentage	Frequency	Mean	Std. Deviation
Strongly agree	31	6	3.74	0.2132
Agree	49	10		
Neutral	6	2		
Disagree	2	1		
Strongly disagree	1	1		
Total	100	20		

The findings in Table 7.26 illustrates that 49% (n = 10) agreed that real time streaming technology provides accurate information source when making travel destination. Also 31% (n = 6) strongly agreed over the same statement. According to Hanefors and Mossberg (2002:240), real-time streaming technology allow tour traveller's to receive current state of a destination and show how the destination is.

The content of the images are of outstanding importance since they determine what kind of image the destination is attempting to create in the minds of potential markets (McDowall & Choi,2010:256). This study therefore infers that real-time streaming technology provides accurate information source when making travel destination because visual images appear to be more memorable and powerful in people's minds.

7.6.9.7 Live streams from selected destinations

Live streams play an essential role in destination choice matters, and the ultimate goal of any destination is to influence possible tourists' travel-related decision-making and choice through marketing activities. Although not all elements contributing to the development of an image can be controlled, tourism marketers want to strategically establish, reinforce and, if necessary, change the image of their destination (Chi & Qu, 2008: 634).

The respondents were required to indicate their level of agreement with the statement that real time streaming technology provides live streams from selected destinations authenticates destination attractions.

Table 7.27: Live streams from selected destinations

	Percentage	Frequency	Mean	Std. Deviation
Strongly agree	50	10	4.43	0.2449
Agree	43	8		
Neutral	7	2		
Disagree	0	1		
Strongly disagree	0	1		
Total	100	20		

The findings in Table 7.27 illustrates that 50% (n = 10) strongly agreed that real time streaming technology provides live streams from selected destinations authenticates destination attractions.

7.6.10 Respondents considerations about returning to the portal

The ultimate goal of any destination is to influence possible tourists' travel-related decision-making and choice through marketing activities and consequently attract them to their destination. It has been demonstrated by research that image is a valuable concept in identifying and comprehending tourists' destination image. Hence, there is a clear correlation between destination image and visitation intention.

The initial phase of forming an image before the actual visitation of the destination is considered the most important stage in destination selection (Baloglu & McCleary, 1999:868). Since tourism, products are mainly intangible and the potential traveller has no or only limited knowledge about them, image is believed to represent the destination and subsequently has the power to influence destination choice (Tasci & Gartner, 2007:419). Intent to use results shows that, pre-visit travel experience reshapes personal perception about the destination and may influence travel decision or any subsequent tourist choices (Budeanu, 2007:500).

The respondents were asked whether they would return to the portal to experience more live streams. The following question (7) was posed: After this survey would you consider returning to the portal to experience more live streams?

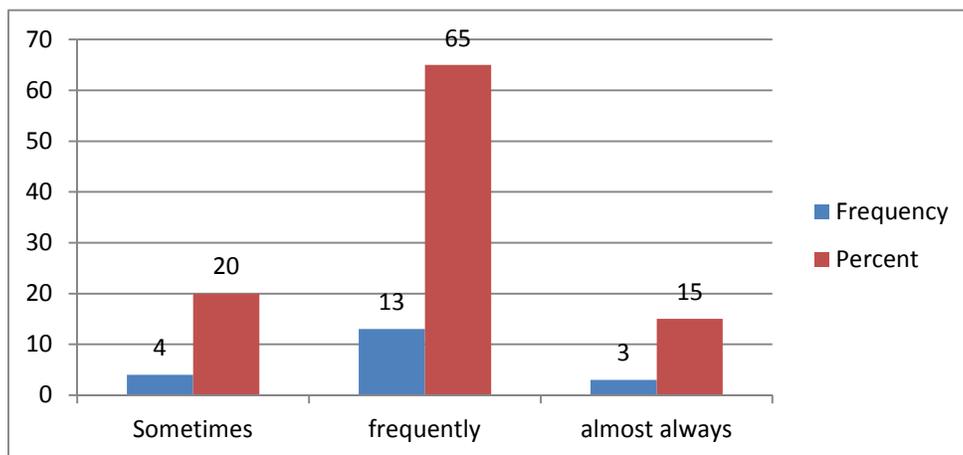


Figure 7.19: Responses on intent to use

From the findings as shown in Figure 7.19, 65 % (n=13) indicated that they would return to the portal. According to Budeanu (2007:500), intent to use results shows that, pre-visit travel experience reshapes personal perception about the destination and may influence travel decision or any subsequent tourist choices.

When it comes to destination choice, secondary information sources, providing the information for image formation before experiencing a destination, fulfil three functions. First, they create an image. They also minimise the risk that the destination in question might entail, and finally, they can serve as a mechanism for a later justification of the eventual choice made (Frias, Rodríguez & Castaneda, 2008:165). The importance of well-formulated marketing communication is widely recognized, based on the idea that this form of tourist information can generate awareness and interest, stimulate desire and finally results in choice action.

Sirakaya, Sonmez and Choi (2001:130) conducted a study with the aim of determining in how far images can predict the chances of potential travellers to select a certain place as vacation destination. In their research, they attempted to gain a deeper understanding of the role images can play in destination choice of a particular market segment. It was found that people could apparently compartmentalise their mental pictures and make an evaluation of each image according to its importance for the decision concerning the eventual choice.

This is important for destination managers, who should also be aware of the fact that not all images play equal roles and that some have to be managed more effectively and carefully than others. This study therefore concludes that image not only affects pre-visit behaviour and destination choice, but also the behaviour during and after a visit. Image has the power to influence the process of choosing a certain destination, the following evaluation of the trip there, as well as the tourists' future intentions.

The study further asked the respondents whether they would consider sharing their pre-visit experience on social media after interacting with the portal to answer question (8):

After interacting with (www.tourcampportal.com) would you consider sharing your pre-visit experience on social media? Meric (2013:30), defines social media as forms of electronic communication (as Web sites for social networking and micro blogging) through which users create online communities to share information, ideas, personal messages and other content.

Social Media is becoming increasingly crucial to hospitality and tourism businesses due to the intangibility and the experiential nature of tourism products and lowering of technological barriers for average tour traveller's enabling them to contribute information online. Different from the tradition one-way communication in most mass media channels, social media represents two-way communication between consumers. Social media has revived the older decision-making process prevalent before the emergence of mass media, when the exchange of opinions between one's peers was the basis for purchasing decisions. As the digital version of word-of-mouth, social media represents the materialization, storage and the retrieval of word-of mouth content online (Pan, 2012:73).

From the findings, all the respondents indicated they would share their experiences on social media. While current findings provide some important insights for understanding social media in tourism, there is still a lack of studies that have empirically investigated how social media is used and created by tour travellers. Further, the rapid changes in the social media field create a need for more theoretically grounded research that can describe and explain new consumer behaviour beyond a specific social media application (Yoo & Gretzel, 2012:190).

Given the growing dependency on Online Social Networks, it is essential to find out how social media determines decision making process in selecting a destination and the impact it have on existing decision-making models.

This study further sought answers to the following question (9): In your opinion, what will be most likely tourist experience when they make online reservation using the portal?

Table 7.28: Tourist experience during pre-visit when they make online reservation using the portal

		During Pre-visit	During visit
Realisation of expectations	n	17	16
	%	85	80
Non-realisation of expectations	n	3	4
	%	15	20

From the findings in Table 7.28, the 85 % respondents indicated that the most likely tourist experience during pre-visit when they make online reservation using the portal will be realisation of expectations and only 15 % indicated non-realisation. During visit, 80 % respondents indicated that the most likely tourist experience will be realisation of expectations and 20 % indicated non-realisation. The difference during pre-visit and during visit were as a result of conative component. Individual reasoning and emotional interpretation can be either positive or negative evaluation (Bosque & Martin, 2008:558; Pena, Jamilena & Molina, 2012:266; Salma, 2007:36). According to McCartney, Butler and Bennett (2008:184), perception of a destination are a result of personal realities that drive someone to travel to that destination and exposure to various information sources play a role during visit.

7.7 Inferential statistics

In addition, the researcher conducted regression analysis to determine the effects of real-time data streaming mediation technique on destination selection process. Regression predicts a numerical value. There is usually dependent (outcome) variable and independent variable (predictor value). The effect of one or more independent variables combines to determine the outcome (Gharehchopogh, Haddadi & Khaze, 2013:26).

The researcher applied the statistical package for social sciences (SPSS) to code, enter and compute the measurements of the regressions for the study. Table 7.28 below shows the summary of regression model.

Table 7.28: Regression model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.851(a)	.724	.676	.77048

A. Predictor: (Constant), real-time data streaming technique

Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (destination selection process) that is explained by the independent variables (real-time data streaming mediation technique). From the findings, 67.6% of destination selection is attributed to real-time data streaming technique. A further 32.4% of destination selection is attributed to other factors not investigated in this study. Information received during pre-visit influences cognitive component of image formation process and eventually the choice of destination to visit. According to McCartney, Butler and Bennett (2008:184), perception of a destination are a result of personal realities that drive someone to travel to that destination and exposure to various information sources play a role during pre-visit, during visit and after visiting.

The R-square range from 0-1, the smaller the value of R-square indicate that the model does not fit the data. The model had two variables model with R square of 0.724, which implies that the above regression model fits the data.

Analysis of variance (ANOVA) is used to check how the model fits the data. Table 7.29 below shows results of analysis of variance.

Table 7.29: Analysis of variance

	Sum of Squares	df	Mean Square	F	Sig.
Regression	.436	1	.436	3.716	.030(a)
Residual	2.114	18	.117		
Total	2.550	19			

- A. Predictors: (Constant), real-time data streaming technique
- B. Dependent Variable: destination selection

According to Sinn (2015:2) when significance value is ≤ 0.05 it implies that the relationship is reliable and can be used to make predictions. The significance value is 0.030, which is less than 0.05, thus the model is statistically significant in predicting independent variables. This shows that the overall model is significant.

7.8 Coefficient of determination

The study conducted regression analysis and from the above regression model, holding (real-time data streaming technique) constant at zero, the destination selection process will be 2.250. A one percent (1%) change in real-time data streaming technique will lead to zero point one eight two percent (0.182%) variation in tour destination selection.

Table 7.30: Coefficients (a)

		Unstandardised Coefficients		Standardised Coefficients Beta	t	Sig.
		B	Std. Error			
1	(Constant)	2.250	.221		10.172	.000
	Real-time data streaming technique	.182	.094	.414	1.928	.021

A. Dependent variable: destination selection

The unstandardised beta coefficients column in Table 7.30 was used to obtain the overall equation as suggested in the conceptual framework. The t-test statistic shows that the B coefficient of real-time data streaming technique is significant (since $p < 0.05$) at 95% level of confidence.

According to Sykes (2015:5), the task of regression analysis is to produce an estimate based on information contained in the data set. Relationship between dependent and independent variable is expressed with the equation $Y = a + bX_1 + e$, where Variable Y is the dependent variable, X_1 is the independent variable, a is the constant term and e the coefficient and e is the error term.

When these beta coefficients are substituted in the equation, the model becomes $Y = 2.250 + 0.182X_1 + e$ where Y = Destination selection, X_1 = real-time data streaming technique and e is the error term, which are other factors that may influence destination

selection. This shows that there is a positive relationship between real-time data streaming technique and destination selection.

7.9 Realisation of research objective four

The main objective of this phase was to evaluate the practicality and effectiveness of the proposed destination selection framework using real-time data streaming technique. Framework evaluation phase, practically demonstrated how to improve the effectiveness of destination selection using real-time images as additional information source technology. The results indicates that improving current tour destination selection using real-time data streaming technique as an additional information source was an important process improvement. 60% of the respondents indicated that the prototype is an excellent value added in improving destination selection.

The prototype provides an opportunity for potential tourist to access real-time images on what they expect to experience at selected destination. Real-time images from the portal create assurance of quality of expected experiences, reduce visitor search costs of destination information and offer a way for destinations to establish a unique selling proposition. Real-time images an additional information source provide potential tourist with accurate and unbiased destination image, aid potential tourist in buying destination product and provide an effective way of marketing a destination by building and maintain meaningful relationships with potential visitors.

The respondents indicated that the quality of live streams, the performance of the portal, usability and navigation was excellent as shown by means 2.05, 2.95, 3.20, 2.55 respectively. Further, the respondents indicated that the portal design and response time was satisfactory as shown by means of 2.80 and 2.65 respectively. 75% of the respondent also indicated that the portal is useful in enhancing the effectiveness of destination selection. These findings indicate that the most likely tourist experience during a visit will be the realisation of expectations when they make travel decisions based on technology mediator. The increased utilisation of the tool intends to enable potential tourist to make

informed decisions. The developed regression model indicates that there is a positive relationship between real-time data streaming technique and destination selection. A one percent (1%) change in real-time data streaming technique will lead to zero point one eight two percent (0.182%) variation in tour destination selection.

The evaluated tool tourcampportal.com was used to implement developed conceptual framework. The prototype provides an opportunity for potential tourists to make travel decisions based on organic, induced and real-time images as additional information source. During pre-visit potential tourist, accessing the portal will have access to organic, induced and real-time images. They then use combination of the three information source to develop Tourist Destination Image (TDI). Potential tourists' final choice is now based on evaluation of the advantages and disadvantages of each possible outcome from developed TDI, which is influenced by cognitive component, and affective component that results to conative component on individual reasoning and emotional interpretation.

From the findings in Phase 3, it is evident that tool can be implemented in a real-world setting and it is an effective way of improving tour destination selection.

7.10 Chapter summary

This chapter presented an evaluation of the prototype, based on web analytics and practitioner feedback. Web analytics results indicate that the prototype provides real-time images to potential tourists to assist them in decision-making. It also revealed the importance of language translation and SEO when developing and marketing web applications. The results show that streaming technology, as an additional information source in destination selection is an excellent process improvement.

It is inevitable that real-time data streaming technology will play a growing role in travel related behaviour and decisions. From the findings, it can be concluded that the usage of a tourcam portal aids potential tourists in their decision making processes and sharing of their experiences. With the exponential increase in devices that are compatible with web applications such as smartphones, it is foreseen that local access will become easier and more efficient. The widespread presence of the Internet and the application of a tourcam portal that incorporates live streams will definitely make travelling decision easier and quicker, but also more competitive. However, for the tourism sector in Kenya to make significant socio-economic contributions from ICT innovations in tourism sector, the cost of developing ICT platforms and high cost of broadband need to be addressed (Waema (2013:1).

The findings from this phase show that the quality of live streams, the performance of the portal, usability and navigation were excellent. The portal had some impact in enhancing the effectiveness of destination selection process and therefore can influence decision-making process when buying destination services. Furthermore, the study has shown that the portal authenticates destination attractions in addition to providing real-time availability of destinations. It reduces speculations on destination attractions and provides authentic representations of a destination. 75% of the respondent indicated that the real-time-data streaming mediation technique is useful in enhancing the effectiveness of destination selection and enable potential tourists to make informed travel decisions.

CHAPTER 8

CONCLUSION AND FUTURE WORK

This thesis investigated pre-visit information sources used by potential tourists and streaming mediation technology as additional information source to enhance destination selection. A summary of the overall thesis is provided, research contribution, the limitations and constraints of this research, direction for future work as well as final remarks.

In this thesis, the study provided research background, research problem and motivation behind this research. The researcher presented an overview of tour destination selection, consumer buying process, information sources and consumer psychology and technology mediators. The researcher identified and grouped theories and concepts that were relevant to this study and how they integrate to the final conceptual framework to solve underlying research problem.

There was a recognised gap in existing information sources, where organisations market their destination attractions with incorrect information with the aim of attracting more visitors. The destination experience of tourists who make travel decisions based on incorrect information sources is a non-realisation of expectations, which affects overall customer satisfaction and destination reputation.

An overview of the selected research philosophy, research paradigms and research approach was provided. The research approach adopted in this study was DSR. The researcher developed a research process for this study, which was divided in three phases that aimed at achieving research objectives for this study. Phase 1 focused on acquiring knowledge on current tour destination selection and pre-visit information sources. Phase 1 findings together with findings in the literature review informed the development of destination selection framework. Phase 1 results were used to improve the conceptual framework and for tool development.

Framework building and validation provided key findings resulting to an improved conceptual framework as depicted in Figure 5.6. Phase 2 involved the development of a prototype tool to prove by demonstration. The researcher developed a prototype as an implementation option for developed conceptual framework. The objective was to develop a tool using Real-Time Data Streaming Technique that served as proof of concept that the framework can actually be implemented. The prototype can be accessed using the URL (<http://www.tourcamportal.com>). The researcher empirically evaluated the prototype at Phase 3 to determine the effectiveness and its practicality in a real world setting.

8.1 Research contribution

This research made theoretical, methodological and practical contributions in the field of information systems. As stated earlier, research paradigm adopted for this research was socio-technologist paradigm that allowed development of conceptual framework and shaped development and transfer of technology to the tourism sectors. The next subsections present theoretical, methodological and practical contributions of this study and offers direction for future work.

8.1.1 Contribution to theory

The major theoretical contribution of this study is the development of conceptual framework for destination selection using real-time data streaming mediation technique. The researcher improved the relationship between the components as research progressed. The initial conceptual framework in Figure 3.9 was used in Phase 1 to get practitioners' inputs. The final conceptual framework in Figure 5.6 emerged after framework building and validation and had additional components of technology mediator, conative component, virtual communication space and multilingual virtual information space.

The conceptual framework starts from the anticipatory phase and ends at post-visit. During pre-visit, potential tourists are in a position to make travel decisions from organic images, induced images and real time images from a technology mediator. Tourists

access real-time images using the technology mediator to authenticate destination attractions. With the knowledge derived from organic, induced and real-time images about selected and alternative destinations, travellers are in a better position to make informed decisions. The extended 'conative' component allows users to perform emotional interpretations resulting from cognitive and affective components. After travel decisions are made, a multilingual virtual communication space is used as a language mediator to interact directly with the selected destination itineraries before making online reservations and enquiries.

The new process is an improvement that addressed the gaps using a technology-based mediator in the form of a Real-Time Data Streaming Technique. RTDST refers to technology-based tools that are capable of streaming images or videos in real-time. The findings indicate that, during visit the most likely tourist experience of tourists when they make travel decisions based on technology mediator will be realisation of expectations.

TDI is then formed as a result of the knowledge the tourist acquired about the destination (cognitive component), the feelings or attachment he develops towards the destination (affective) and his intention or behaviour in the future (conative). After that, potential tourists create an overall image comprehending functional and psychological characteristics of destination image, which creates expectations (Matos et al, 2012:111). This study made improvements to customer journey theory and destination image theory by introducing new additional information source that intends to create a holistic Tourist Destination Image. The strengths of new information source is on its influences during decision-making stage and post-visit effects.

This study further made improvements to Destination Marketing Systems (DMS) that are used in the tourism industry for communication, information, marketing, transactions, and customer relation management (Wang & Russo, 2007:189). The prototype provides objective evidence that, Virtual Information Space (VIS) provides high attraction information. The conceptual framework also provides important advancement on how

DMOs can deploy VIS as a way of marketing destination using information systems that create mental imagery of the destination (Luo, 2002:35).

8.1.2 Contribution to methodology

The research approach adopted in this study is Design-Science Research (DSR). From this approach, the researcher developed a research process depicted in Figure 4.3 to address the aim of this study. This research process allowed the researcher to have close contact with practitioners to grasp what was going on in the tourism sector. The researcher involved practitioners in framework validation, prototype development and evaluation. This approach was rigorous but ideal for researchers who want to realise technology acceptance of their solution invention by the stakeholders.

The researcher adopted a mix of two different approaches, marketing and information systems. This research design approach is ideal for researchers who want to make improvements that focus on Destination Marketing Systems.

Framework implementation architecture as depicted in Figure 6.6 was developed to guide implementation of conceptual framework. It shows a method for integrating various components necessary to effectively implement the conceptual framework in cost-efficient way. In this thesis, UML for the prototype were designed in chapter 6 (use case and sequence diagram).The designs can be used to visualise and construct any other artefact that may be developed based on this conceptual framework.

The researcher demonstrated use of software testing tools to conduct performance testing of web-based information systems. Load testing showed how to validate web application behaviour under normal and peak load conditions. Stress testing demonstrated use of simulation methods in measuring the behaviour when the application is pushed beyond normal load.

Destination marketers need to consider use of Web analysis tools to analyse and interpret visitor traffic, which may be used to improve effectiveness and usage of web applications. This study demonstrated the importance of Search Engine Optimisation (SEO) and implementation of SEO techniques such as Meta description and keywords. The researcher further demonstrated that language translators plays an essential role in enabling the portal to have a global reach by providing the same information in different languages. It is therefore necessary for DMO to deploy DMS that are able to reach to potential tourist who were not able to read the content of web applications.

A major challenge in development of information system evaluation is to develop frameworks that are universally applicable to a wide range of applications (Stockdale & Standing, 2005:1091).The researcher made improvements to Delone and McLean information system success model (2003:12), and Technology Acceptance Model (Chen et al, 2011:125). According to (Palmius, 2007:13), one criticism of these models is that they are bloated with too many areas to measure effectiveness that it is not practical to handle everything.

The researcher found it necessary to evaluate the prototype on end user impact during pre-visit as depicted in Figure 7.1. The researcher adopted elements from DeLone and McLean model for evaluation of Information Systems (Delone & McLean 2003:12) and Technology Acceptance Model (Chen et al, 2011:125). The revised evaluation model focused on system quality (performance and usability), information quality (Tour Destination Image), user satisfaction and perceived usefulness before they make travel decisions. The revised model contains important variables for evaluating any information systems that need to measure technology acceptance and overall impact to the end users and can be universally be applicable to evaluate wide range of ICT applications in tourism.

8.1.3 Contribution to practice

The developed artefact in the form of tourcampportal.com is a tangible outcome of this research. Empirical studies and the final conceptual framework derived after framework validation in Phase 3 were used to identify domain requirements for the prototype. The researcher designed the prototype considering three types of users, i.e. portal administrator, tour destinations and web users. Although the framework implementation option was domain specific on three types of users, other users can be added.

The prototype using real-time mediation tool provides pre-visit experiences to potential tourists on what they expect to experience during visit as a way of tapping to their emotions before making travel decision. Analysis on prototype evaluation shows that streaming technology, as additional information source in destination selection is an excellent process improvement. There is a positive relationship between real-time data streaming technique and destination selection.

The conceptual framework provides a guideline for destination marketers to holistically understand the influence of pre-visit information source on destination selection. The solution invention provides a cloud-based platform for tour destination marketers to publish destination attractions.

8.2 Limitations and directions for future work

Streaming real-time images may interfere with privacy of visitors who are already at the destination. This study recommends an investigation on security implications of using technology based mediators as additional information source and controls that can be implemented to accomplish confidentiality in such systems.

There is need to generate new theories on destination selection from emerging sensor-based technologies. Examples of emerging sensor-based technologies are motion-sensing and voice-recognising input system. Voice-recognising input system may be

used to enrich real-time images as an additional information source and motion sensing may be incorporated in framework implementation architecture to provide a mechanism for anonymising visitors already at destination. Such research by individual or institutional researchers will greatly improve this study.

This study focused on evaluation of the prototype by practitioners', there is need to evaluate the performance of destinations that are adopting real-time data streaming as an additional information source. There is need to evaluate technology based mediators beyond Kenya and with prospective travellers. This study also recommends evaluation of potential traveller emotion responses that are derived at conative stage during pre-visit and investigation of satisfaction levels of travellers who make travel decisions based on real-time data streaming technique as a technological mediator.

As depicted in Figure 6.6 on framework implementation architecture, real-time data streaming requires high definition IP cameras, multi-streaming server and reliable Internet connection. Implementing such systems may be too expensive. Future research is recommended on how DMO's can outsource Virtual Information Space (VIS) to minimise on implementation and operational cost, and maximising operational efficiency.

There is no single, one-size-fits-all conceptualisation of technology that will work for all studies. The framework implementation architecture and the portal require continuous improvement on existing functions and new techno-social processes in destination selection.

8.3 Final remarks

The focus of this research was to develop a framework using a real-time data streaming technique as an additional pre-visit information source to address identified gaps in destination selection. Conceptual framework was developed, implemented and evaluated in a real-world setting to determine its effectiveness and applicability.

The contributions and implication of this research to the body of knowledge and practice is of paramount importance in e-tourism sector and information system field. Future directions were identified for researchers to further this interesting research area. Most importantly, the researcher hopes that the results of this study will encourage decision makers and other stakeholders in destination marketing to pay closer attention to real-time data streaming mediation technique as an additional information source, which positively influences tour destination selection.

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APPENDICES

Appendix 1: Ethical clearance



Mr Stanley Muturi Githinji (48991120)
College of Science, Engineering and Technology
UNISA
Johannesburg

2014-05-29

Permission to conduct research project

Ref: 130/SMG/2014

The request for ethical approval for your PhD research project entitled "Real Time Data Streaming Technique for Enhancing the Effectiveness of Destination Selection Process" refers.

The College of Science, Engineering and Technology's (CSET) Research and Ethics Committee (CREC) has considered the relevant parts of the studies relating to the abovementioned research project and research methodology and is pleased to inform you that ethical clearance is granted for your study as set out in your proposal and application for ethical clearance.

Therefore, involved parties may also consider ethics approval as granted. However, the permission granted must not be misconstrued as constituting an instruction from the CSET Executive or the CSET CREC that sampled interviewees (if applicable) are compelled to take part in the research project. All interviewees retain their individual right to decide whether to participate or not.

We trust that the research will be undertaken in a manner that is respectful of the rights and integrity of those who volunteer to participate, as stipulated in the UNISA Research Ethics policy. The policy can be found at the following URL:

http://www.unisa.ac.za/content/Departments/ies_policies/docs/ResearchEthicsPolicy_app/Counc_21Sep07.pdf

Please note that if you subsequently do a follow-up study that requires the use of a different research instrument, you will have to submit an addendum to this application, explaining the purpose of the follow-up study and attach the new instrument along with a comprehensive information document and consent form.

Yours sincerely

Chair: College of Science, Engineering and Technology Ethics Sub-Committee

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Appendix 2: Authorisation to conduct research in Kenya



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3rd July, 2014

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SOUTH AFRICA.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "*Real Time Data Streaming Technique for enhancing the effectiveness of Tour Destination Selection Process*," I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for a period ending **30th June, 2015**.

You are advised to report to **the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.


SAID HUSSEIN
FOR: SECRETARY/CEO

Copy to:

The County Commissioner
The County Director of Education
Nairobi County.



National Commission for Science, Technology and Innovation is ISO 9001:2008 Certified

Appendix 3: Phase 1 questionnaire

Introduction

I take this opportunity to thank you for agreeing to participate in this research. I am a student at University of South Africa studying Doctor of Philosophy in Information Systems. The research title is '*Designing a Real time data streaming technique for enhancing the effectiveness destination selection*' and my supervisor is by Dr.Izak van Zyl from South Africa.

The results from this research, I believe will greatly benefit your organisation. Phase 1 focus on acquiring knowledge from practitioners on current tour destination selection process, pre-visit information sources and how to evaluate proposed framework and tool.

General objective

The main objective of the study is to develop and evaluate a framework for improving tour destination selection process using real time data streaming technique

Instructions

- i) Please indicate your answers clearly
- ii) There are no wrong answers
- iii) Answer questions in section A,B and C
- iv) Please tick () in the corresponding

RESPONDENT PROFILE

- i) What is your name?
- ii) What is your email address?.....
- iii) Gender Male Female
- iv) Age Bracket 18 -24 25 – 34 35 – 44 45 – 54 55 +
- v) Where is your main county of residence?.....

Section A: FRAMEWORK BUILDING

1. Organisation

Name.....

2. What is your responsibility in the organisation?.....

3. How long have you worked in tourism sector?.....

4. What is your level of expertise?

Beginner Intermediate Advanced

5. Does your organisation have a customer journey framework? Yes No

6. Please outline the potential customer journey during destination Selection process.

.....
.....

7. In your own opinion, what are the main factors that affect to travel decisions during tour destination selection process?

8. What are the main activities involved in tour destination marketing?

9. Which of the following information sources do you mainly use to market your destination?

*1 Strongly disagrees, 2- Disagree, 3-Neutral, 4-Agree, 5- Strongly agree
Please tick () in the box that corresponds with how much you agree or disagree*

Information Sources	1	2	3	4	5
Word of Mouth					
Documentaries					
Print media					
Facebook					
Twitter					
Youtube					
Any other information sources?					

10. Information sources portrayed by real travellers, which are not primarily meant to be marketing tools affects customers who have never been there Yes [] No []

11. Does your organisation have an interactive website Yes [] No []

12. If you answered yes in question three, how often do you update destination information?

Daily Weekly Monthly Annually

13. Does your organisation utilise the following systems

- a. Online reservation systems Yes No
- b. Virtual Information Systems Yes No
- c. Third party online reservation Yes No

(e.g. booking.com, tripadvisor.com)

Section B: CONCEPTUAL FRAMEWORK VALIDATION

Introduction

Destination Selection Process conceptual framework is depicted in Figure 1 below was developed by researcher, it include the three phases starting from pre-visit, during visit and post –visit. The old processes show the current destination selection process based on literature review. The new processes are a re-design that aims at addressing the gap using a new framework and a tool using real time data streaming technique.

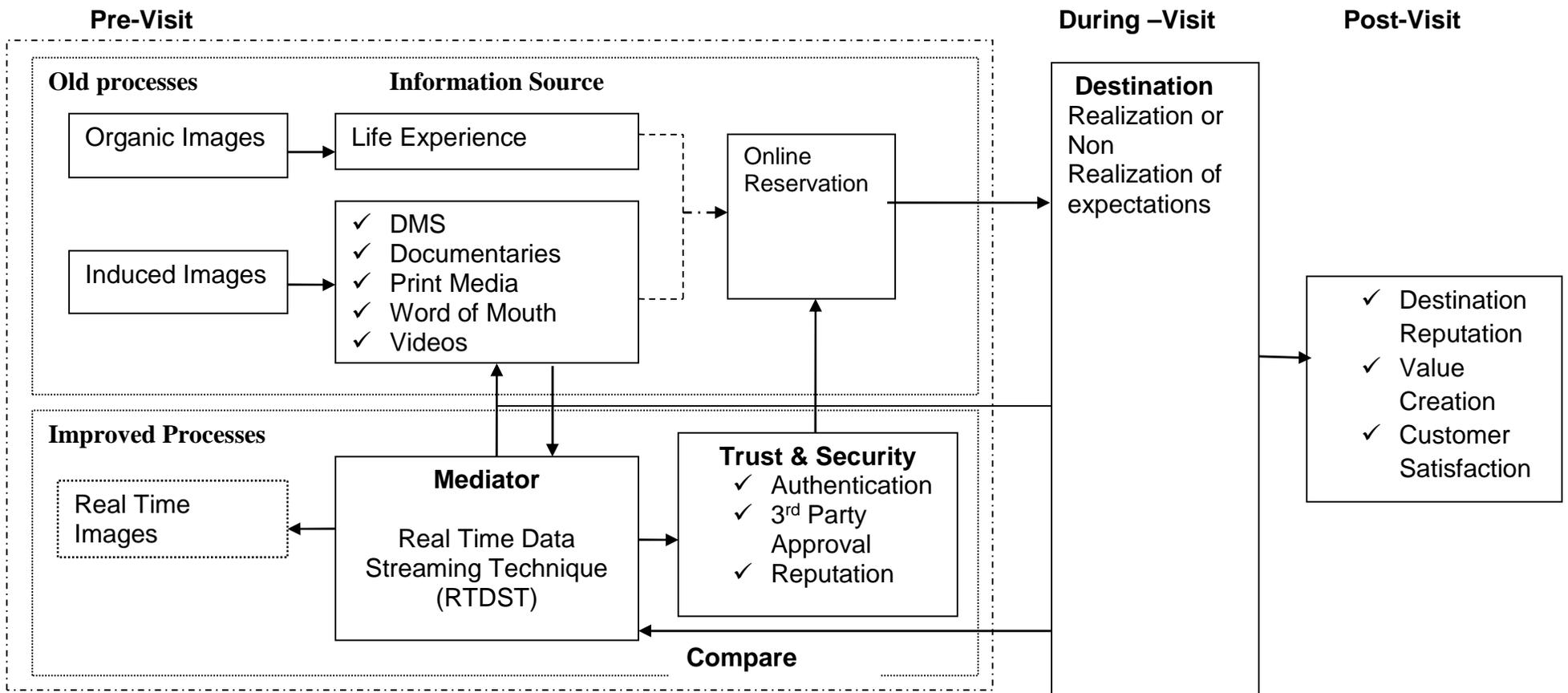


Figure 1. Proposed Conceptual Framework for Tour Destination Selection Process using Real-Time Data Streaming Technique (RTDST) (Self.2014)

1. In your opinion, does the diagram represent tour destination selection process?

.....

2. Identify components and statements in the framework that are not correct and relevant in destination selection process.

.....

3. In your opinion is the conceptual framework complete?

Yes No Not sure

4. If your answer to question 3 above is 'No', please identify and suggest changes that in your opinion will improve proposed conceptual framework

.....

5. Please give your opinion on the following statements regarding the conceptual framework.

1-Strongly disagree, 2- Disagree, 3-Neutral, 4-Agree, 5- Strongly agree
Please tick () in the box that corresponds with how much you agree or disagree

		1	2	3	4	5
i	Conceptual framework represents information sources in destination selection process					
ii	Conceptual framework is complete					
iii	All statements in the framework are understandable					
v	Pre-Visit information sources influences choice of destination to visit					

6. Proposed conceptual framework is applicable in the following tour destinations?

1-Strongly disagree, 2- Disagree, 3-Neutral, 4-Agree, 5- Strongly agree
Please tick () in the box that corresponds with how much you agree or disagree

Tourism Sectors	1	2	3	4	5
National parks					
Animal orphanage					
National museums					
Archaeological sites					
Any other places?					

7. Kindly weight the additional component of streaming technology depicted in Figure 1 during pre-visit.

1-Strongly disagree, 2- Disagree, 3-Neutral, 4-Agree, 5- Strongly

agree

Please tick () in the box that corresponds with how much you agree or disagree

Proposed aims of streaming technology as additional information source	1	2	3	4	5
Provide additional Destination Information Source					
Provide product information					
Provide real-time availability					
Provide actual representation of tour destination					
Increase online visitors					
Helps potential customers to buy destination product					
Provide tourist experience before online reservation					
Customer needs are met during pre-visit					
Add value to tourist pre - experiences					
Authenticate tour destination before visit					
Reduce imaginations					
Improve destination reputation to potential customers					
Stimulates customers to have travel intention.					
Moving real time images arouse mental pleasures					

8. What are other aims on streaming technology as additional information source not in above list?

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9. In your opinion, what will be most likely tourist experience during -visit when they make travel decision based on additional information source of real time data streaming as a mediator?

1- Agree 2- Disagree, 3- Neutral,

Please tick () in the box that corresponds with how much you agree or disagree

Tourist experience during visit	1	2	3
Realisation of expectations			
Non Realisation of expectations			

10. Kindly weight the information sources contained in the new process (with real time data streaming technique).

1-Strongly disagree, 2- Disagree, 3-Neutral, 4-Agree, 5- Strongly

agree

Please tick () in the box that corresponds with how much you agree or disagree

Proposed aims of streaming technology	1	2	3	4	5
Provide accurate information					
Provide actual representation of tour destination					
Helps potential customers to buy destination product					
Provide Real-Time Availability					
Satisfy customer needs during pre-visit					
Authenticate tour destination					
Improve destination reputation to potential customers					

11. In your opinion, what will be most likely tourist experience during visit when they make travel decisions by using information sources contained in old process?

1- Agree 2- Disagree, 3- Neutral,

Please tick () in the box that corresponds with how much you agree or disagree

Tourist experience during visit	1	2	3
Realisation of expectations			
Non Realisation of expectations			

Section C: Evaluating the effectiveness of proposed framework and tool

The objective of section of section C of the questionnaire is to determine the main areas to be considered during evaluation of proposed conceptual framework and tool.

1. Please indicate how strongly you agree or disagree on determining the effectiveness of proposed conceptual framework and tool.

1-Strongly disagree, 2- Disagree, 3-Neutral, 4-Agree, 5-

Strongly agree
(Mark with an x)

Areas	1	2	3	4	5
DMO					
Content					
Freshness - up to date					
Content accuracy					
Intent to visit					
Geographical reach					
Streaming quality					
Number of shares					
Number of visits					
Performance					
Usability and navigation					
Reliability					
Revenue Generation					
System Management					
No of Registered Users					

2. What other areas you would consider significant when evaluation effectiveness of proposed framework?

Thank you for filling in the questionnaire. For more information on research study kindly feel free to contact me (Email: stanleygithinji@yahoo.com).

Appendix 4: Phase 3 questionnaire prototype evaluation

Dear Respondent,

I take this opportunity to thank you for agreeing to participate in this research. I am student at University of South Africa studying Doctor of Philosophy in Information Systems. The research title is “*Designing a Real-time data streaming technique for enhancing the effectiveness of tour destination selection*” and my supervisor is Dr. Izak Van Zyl

The aim of this questionnaire is to evaluate framework implementation option in a real world setting and use collected data to determine the effectiveness of the prototype hence the framework.

For more information on this study, kindly email me at stanleygithinji@yahoo.com.

Kind Regards

Stanley Githinji

INSTRUCTIONS

- v) Ensure you are connected to the internet
- vi) Interact with the prototype for ten to fifteen minutes
- vii) Please indicate your answers clearly
- viii) Please tick [] in the corresponding box.

RESPONDENT PROFILE

- vi) Name
- vii) Profession.....
- viii) Email address.....
- ix) Gender Male Female
- x) Age Bracket 18 -24 25 – 34 35 – 44 45 – 54 55 +

SECTION A: USER EXPERIENCE

1. What is your level of expertise in using modern web applications?
Beginner Intermediate Advanced
2. How regularly do you use online booking systems?
Frequently Often Rarely
3. Open your browser and enter the URL www.tourcampportal.com. Interact with the portal for at least twenty minutes and access at all the listed live streams.
4. What your opinion in regards to portal design, usability, performance and the quality of streaming?

Areas	Very poor	Satisfactory	Very Good	Excellent
Portal Design				
Usability				
Navigation				
Performance				
Response Time				
Quality of live streams				

5. Did you encounter any of the following difficulties?

	Yes	No	Rate
Browser compatibility	[]	[]	Less compatible compatible Neutral not compatible
Accessing live stream	[]	[]	No difficulties Less difficulties Neutral Much Difficulties
Invalid page fault	[]	[]	Very valid valid Neutral Less valid Not Valid
Distorted page contents	[]	[]	Less page No page Neutral
Malicious website errors	[]	[]	No Errors Less Errors Neutral Much difficulties
Online Reservation	[]	[]	No Errors Less Errors Neutral Much difficulties
Others			

6. What is your opinion in regards to the aim of the portal “enhancing the

Not useful	Some Impact	Useful	Very Useful
[]	[]	[]	[]

effectiveness of destination selection process “?”

Please comment on reason for your answer above

SECTION B: TOURCAM PORTAL USEFULNESS AND IMPACT

1. Does the portal provide pre-tour experience to online visitors?

Yes [] No []

2. Can the portal influence decision making process when buying destination services?

Yes [] No []

3. How useful are the real-time images as additional sources of information when making travel decision?

Not useful	Some Impact	Useful	Very Useful
[]	[]	[]	[]

4. What is your opinion on the following statements in regards to usefulness of the portal in destination marketing?

1-Strongly disagree, 2- Disagree, 3-Neutral, 4-Agree, 5- Strongly agree

Areas	1	2	3	4	5
The portal improves online visibility of listed destinations					
The portal provides a competitive advantage to destinations that are already published					
The portal is a powerful tool for DMOs to improving their online reputation					
The portal is ideal for marketing destination attractions					
Language translators play an essential role in enabling the portal to have a global reach					

5. What is your opinion on integrating streaming technology in destination selection process as a way of marketing tour destinations?

An excellent value added	A significant value added	A medium value added	A small value added	No Value added
[]	[]	[]	[]	[]

6. What is your opinion on the following statements in regards to the usefulness of the portal from a potential tourist level?

1-Strongly disagree, 2- Disagree, 3-Neutral, 4-Agree, 5- Strongly agree

Please tick in the box that corresponds with how much you agree or disagree

Real-Time Streaming Technology	1	2	3	4	5
Provides additional Destination Information					
Provide real-time availability of destination					
Provides actual representation of tour destination					
Provides pre-visit experience before making an online reservation					
Reduces speculations on destination attractions					
Provides accurate information source when making travel decision					
Live streams from selected destinations authenticates destination attractions					

Hardly ever	Occasionally	Sometimes	Frequently	Almost always
[]	[]	[]	[]	[]

7. After this survey, would you consider returning to the portal to experience more live streams?

8. After interacting with www.tourcampportal.com would you consider sharing your pre-visit experience on social media? Yes [] No []

9. In your opinion, what will be most likely tourist experience when they make online reservation using the portal?

Tourist experience	During Pre-visit	During- visit
Realisation of expectations	[]	[]
Non Realisation of expectations	[]	[]

Please comment on reason for your answer above.

.....
.....
.....

Appendix 5: IFITT ICT4D scholarship



Date: 10 November 2014

Embassy of Switzerland in Kenya

Letter of invitation for Mr. Stanley Githinji
ENTER2015 - eTourism Conference participant
IFITT ICT4D scholarship winner
www.enter2015.org

Dear Honorable Consul,

IFITT is organizing ENTER2015 - international eTourism conference (www.enter2015.org) that will be held from 3d to 6th February 2015 in Lugano.

We acknowledge that Mr. Stanley Githinji (Kenyan passport A2278491, issued on 09.10.2014, valid until 08.10.2024) is going to present his PhD thesis proposal within the ENTER2015 conference PhD track.

Mr. Stanley Githinji is the winner of IFITT-ICT4D scholarship, which will cover his conference tuition fee, travel and accommodation expenses.

We will be happy to welcome Mr. Stanley Githinji in Lugano next year as an ENTER2015 Conference participant.

Your kind consideration to this request will be greatly appreciated.

Kindest regards,

A handwritten signature in black ink, which appears to read "Lorenzo Cantoni".

Lorenzo CANTONI
IFITT President
Professor, Università della Svizzera italiana