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The contemporary era information streaming and developing nations deep isolated rural communities: A conceptual framework.

Preface

Access to information is at the very heart of contemporary era socio-economic development. Recently there is a growing trend of efforts by developing nations governments, developmental agencies, and other private organizations in trying to stream information to rural communities. What drives this trend are the critical need of relevant information such as economic developmental research outputs which are necessary to interact with rural economic sector production factors such as natural resources management skills, products value adding, etc., to assist rural economic sector players make informed and better decisions in order to increase productivity as well as sustainable in the mist of the global climatic challenges that confront especially developing nations rural communities.

The dawn of the digital era facilitated by an increased ICT-tools usage such as mobile phones, laptops, internet, etc changed the way information is disseminated and access to a point where without adoption or use of ICT-tools which underline modern information system achieving efficiency, effectiveness and higher productivity becomes a tall order. For instance, the use of ICT-tools makes it possible for developing nations deep isolated rural communities to access quality health services through virtual consultation with specialists in urban areas as well rural entrepreneurs can use ICT to create a global platform to promote their businesses and sell their products which can assist in solving the challenges these entrepreneurs faces in accessing the global markets and to overcome the physical barrier one faces in assisting developing nation deep isolated rural communities. But as noted by Gigler (2015), Okon (2015) and most scholars that the mere presence of ICT in an area is not a catalyst to offset development if the effective use of the ICT and attention to underlie variables that facilitates effective usage are ignored. The aim of this book is to propose a framework that can serve as a communication strategy tool to examine information exchange process among developing nations deep isolated rural communities to establish variables that affect or facilitates uptake and use of ICT application and tools so that specific intervention design can be made to ensure effective and efficient streaming, access of information on the ICT tools available to the community.

Scope of the book

To examine developing nations deep isolated rural communities' information exchange environment, some models that explains information search patterns, information needs, and perception on ICT is needed. The book begins by examining several models on information needs, information sources, patterns of seeking information, uptake, and use of technological innovations to establish and explain the constructs of the conceptual framework in chapter one.

Chapter two introduces the constructs underpinning the framework. The constructs include information needs, information seeking patterns and perception of ICT. Maepa (2000) assert that once individual outlined his or her needs with regards to the required information, then directly or indirectly the individual positions themselves to identify the source(s), media, or channels to access the information require. The framework give insight that by examining developing nations deep isolated rural communities' information needs, information seeking patterns will define the behavioural intention as to access to the types of ICT and usage. Again, assessing perception on ICT and whether they perceive its use to beneficial will lead to individual intention to access certain ICT innovation.

Chapter three details of the technical stages of the framework are given. It covers the generalisation of the framework, theorising the framework as well as the use of Design Science research paradigm in the development and evaluation of the framework.

In chapter four detailed explanation of the practical implementation of the framework in rural communities' communication strategies designs are outlined, along with empirical case studies of rural small-scale farmers in Amathole District Municipality (ADM) of South Africa.

The use of the book

This book has been derived from the author PhD work submitted to Nelson Mandela University South Africa. The book can be used as a support course material in graduate and undergraduate research work around conceptual frameworks design and analysis.

Chapter one: Information, its needs, searching, pattern and use conceptualisation for the study

In this chapter the concepts of information, the information needs, sources, searching patterns are outlined. It also looks at models used for information seeking.

Case (2007) emphasize that to be able to study and discuss a concept, it is critical to first define it. By defining it one can identify and define other concepts related to the study. According to Bitso (2011) and Mugwisi (2013) in the study of information exchange environment, information, information needs, information seeking patterns, information sources are among the terms that make up the concept.

1.1   Defining information

Benjamin and Zhang, (2007) highlights that the term "information" may have many underpinning meanings and perspectives owning to the fact that it derives its meaning from the context and the field in which it is being studied. As a result, no general and explicit definition exist for the term in the field of information science (Weller, 2007). According to Mutshewa, (2007) the complexity of defining the term "information" stem from the fact that several disciplines such as Information Science, Informatics, Computer Science just to mention a few has seen many studies done with different focus on information. However, as explained by Mugwisi, (2013:60), Wilson (2000) assumes in the context users of information in research studies to be:

- physical entity: where information can represent a phenomenon for example as it relates to the case of questioning within a period number of books read and journals accessed, etc.

- communication channel: as mediums or channels through which messages (written or oral) are transmitted.

In this book regarding the term "information" will only be guided by Wilson (2000) assumption explained above.

McCreadie and Rice (1999:46-48) gives four assumptions that can made about the term "information" to be:

- a physical commodity which can be produced, purchased, etc.

- data which can be accessed within individual's sphere

- Knowledge in the form of printed documents (such as books, posters, journals, etc.) representation

• communication process part where means are mostly inherent in people rather than in words.

Gorry and Scott-Morton (in Mugwisi, 2013:60-63) relates information in a business environment and outlined seven groupings that relate to information as:

• wider information scope which is wider representation of information a business relies on for its operation

• information on time which represents information a business receives quickly and on time for example for decision making

• up-to-date information that is the current and appropriateness of information to make business decisions

• accumulated information which refers to collected information, for instance, raw data on markets of products

• correctness of formation which refers to accuracy of the output information to satisfy its intended use efficiently and effectively

• one-on-one information sources which refer to personal such as face-to-face conversations, telephone conversations, meetings, etc. contact with other individuals in a business environment

• non personal contact information sources refer to information which are written in nature normally generated by machines such as computer-generated reports.

1.2   Information theories

Shannon (1948), positions communication system basically in terms of transmitting and receiving information. Shannon then outlined the five parts of communication system to be:

• sources of information: originator of information/messages to be communicated to the receiving channel. The information may take the form of 1) teletype normally transmitted via radio or telephone; 2) as a functionality of variables and time transmitted via television and other three-dimensional sound transmission

• the transmitter: which convert the information to a suitable signal suitable for transmission over the channel

• channel: is the media/medium used to transmit the signal from transmitter to receiver.

• receiver: decode the signal into message

• The destination: the intended receiver of the message.

According to Mugwisi, (2013) quit several studies done on information in many disciplines adopted Shannon's communication model.

Nonetheless, American group of scholars called Palo Alto identified challenges to Shannon's information theories. The Palo Alto researchers unlike Shannon highlighted that the notion of communication is not isolated and it's not merely studying a few variables in isolation. To establish the whole communication processes, they posed three hypotheses:

1. the relationship between elements in communication is more vital than the elements themselves
2. all interactions and actions of human are part of a vast communication system
3. disorders such as psychiatric signifies a distortion in communication between those who has the disorder and the people around them.

1.3   Information needs

According to Derr (1983) two conditions highlights information needs that is a legitimate need or reason exists for the required information and that the information sought after will add to achieving the need. Case (2007: 76-77) then postulate information needs from two viewpoints that is the objective and subjective. To Case (2007) the objective viewpoint is attributed to a situation where the details and specifics of the information need is well established to avoid uncertainty with regards to facts needed. Making the information needs objective viewpoint more relatively fixed. A subjective viewpoint on the other hand is where the specifics and facts needed are not well established because these needs of information emanate from situations such as an empty feeling of unease, a sense of a gap in knowledge, or simply by anxiety. The subjective viewpoint explains the highly dynamics nature of human information needs stems from the fact that humans are always trying to make sense of situations. To Kaniki (2003), various factors affect the needs of information users. Some of the factors are level of education, user's economic power, where user is located geographically, awareness of information systems and services availability, ability of the user to do research, social life responsibilities, culture, recreation, the nature of profession, and others. From Ingwersen (2000) three mainstream exist when it comes to information needs:

1. the need of information to verify
2. the need of specific information and
3. the higgledy-piggledy type of information need

Different perspective has been proposed to help understand information needs study (Borlund, 2016; Waseem, 2017) and few have been mentioned below to shed light on the various perspective. According to Line (1969) several perspectives: subject at hand; nature (i.e., conceptual, historical, statistical); quality and quantity; medium of processing; packaging; accessibility; the age; specificity; its immediate use; and level must be considered when considering information user's needs.

The epistemological methods to viewing information needs was proposed by Sundin and Johannisson (2005) as:

• the structure approach: which explains how the role of social structures contributes to modelling of human behaviour.

• the individual approach: focuses on individuals instead of on structures.

• the communication approach gives precedence to communication.

Cole (2012) proposed two perspectives to explain information needs:

• computer science(input-output): the purpose is to find an answer.

• information science (information-knowledge): where information is available but may or may not address the need at hand.

Chowdhury (2004:194) explains that when it comes to an individual or organisation there are characteristics that defines the information needs:

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- because of many factors that define information need makes it a relative concept and dynamic in nature

- the variation of information needs is because the changes from person to person, from job to job, subject to subject, organisation to organisation, etc.

- the field or the environment determines the information needs, for instance, educators' information needs are different from entrepreneurs' information needs

- some of the time, information needs are either not clearly articulated or remains unarticulated

- there can be a change to information needs because of receiving other information

Information needs in this book is regarded as a knowledge gap needed by information seeker to solve or to make decision.

1.4   Information seeking behaviour

Information seeking behaviour definition by Ingwersen and Jarvelin (2005:21) ¨ explains information searching behaviour of people to be the human behaviour that concerns with how information need is generated, communicated, used and other activities such as interactive information retrieval.

Fisher and Julien (2009:317) also highlights that information seeking behaviour of people focuses on individual's information needs; with emphasises on searching behaviours, management of information, and how it is used, either decisively or passively, in their day-to-day life roles. According to Fatima and Ahmad (2008:141) information searching behaviour is a wider field which include a set of actions taken by an individual to articulate the need of information, searching of information, assess and choose information, and finally act upon the information to quench their information needs. To Majid et al., (2000:146) information searching behaviour of individuals can be defined as the ways that individual express their need of information and searching, rate, choose, and use the needed information. Wilson (1999:251) point out that the searching of information behaviour by individual or people is because of realisation of a need for information which then makes the individual or people to place demand on both formal and informal sources such as libraries, information centres, online services, or people to fulfil the realised need of information. Njoku (2004:302) highlights that individual's information searching behaviour and use of information are influenced by the information needs. Njoku further explains that the needs of information by individual are fuelled by:

- individual status in society

- the environment of the individual

- goals for searching for the information

- approaches/methods available to the individual to searching the information required

- the traits such as intelligence, pragmatism of the individual

According to Chowdhury (2004) information seeking behaviour can be considered as ways of utilizing the information systems as well as information centres which relies mostly on factors closely related to characteristics and personality traits of information users, the information centre and information system concerned.

1.5   Information seeking behaviour models

To conceptualise information needs and information searching for the book, some framework used in studying information needs and searching were reviewed to establish their relevance to the framework development. Belkin (1980:135) explains the Anomalous State of Knowledge (ASK)to be that individual or people information searching arises because of a feeling of a gap in a state of knowledge. An observation was made by Rosenfeld and Morville (2002:28) that people's information needs may be diverge thereby causing people to show various information searching behaviour. According to Chowdhury (2004:194), Ikoja-Odongo and Mostert (2006:147), an individual's need of information begins when the person realised that his or her current state of knowledge is not able to deal with the task at hand, or to resolve conflicts, or to fill a void in some area of knowledge.

According to Jaccard and Jacoby, (2010) models are concepts and the relationships between them are necessary in showing a conceptual understanding of phenomena. Case (2012) explains that unlike theories, the scope of models is restricted in the sense that they focus on more specific problems. To study people and organisation information searching behaviour have seen the development of various models. Many of these models primarily focus on information seeking and searching behaviour; examples include (Bates, 1990; Foster, 2004; Krikelas, 1983; Kuhlthau, 1991; Leckie, Pettigrew, & Sylvain, 1996; Wilson, 1981). Some of these models are reviewed below:

1.6   Wilson's model of information searching behaviour

Wilson's reveal to us in his model that there are stages to information searching behaviour.
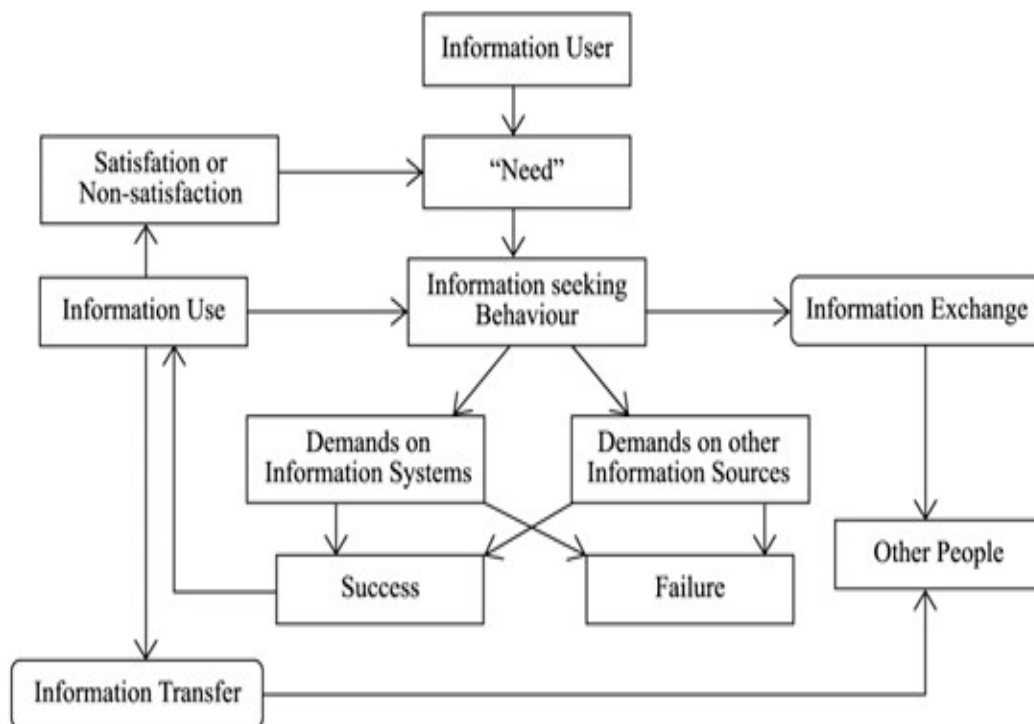

Figure 1.8: Wilson's model of information searching behaviour Source: Wilson, (1999)

To Wilson (1999:251) the searching behaviour of information starts once the user realised a need for information and in the quest to fulfil the need, makes demands on both formal and informal sources or services of information which either result in success or failure to find the required information.