

**E-book usage in academic libraries: does the research indicate it is a tame solution or a  
“wicked problem”?**

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**COMPULSORY DECLARATION**

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## **Abstract**

Many academic libraries around the world are allocating large portions of their budget to the provision of electronic books (e-books). While circulation statistics provided by the e-book vendors indicate that the e-books are being used, they do not inform the libraries of the reasons behind use, how they are being perceived and user satisfaction. In recent years, academics and researchers have been investigating e-book usage and user satisfaction at their respective institutions.

This dissertation looks at e-book usage in academic libraries through a systematic review of the literature on research about e-books. Journal articles with subject matter concerning e-book usage in academic libraries in the United States and the United Kingdom were collected. Due to technological advances, only articles which had been published from 2004 to 2014 were collected. Other limitations of the study included language, solely using the literature to conduct research and the internet as a research tool.

Through the use of soft systems methodology, factors and commonalities were identified amongst the articles: factors such as questions asked, user response and the research methods that were used. Several areas of deficiency were identified in the research and, in order to contextualise the issues, the researcher makes use of Horst Rittel and Melvin Webber's (1973) characteristics of a wicked problem and a tame problem as a framework.

It was concluded that e-book usage is a wicked problem, and will remain so until further research has been conducted into the various aspects concerning e-book usage, such as reading and comprehension.

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## Chapter One: Introduction

### 1.0 Introduction and background to the study

As technology advances rapidly, significant proportions of acquisition budgets are being spent by libraries in many countries on electronic books or e-books or on the implementation of e-books in their libraries. Past research has shown that there are effects of screen-based reading on the human brain and that the ergonomic aspects of the various reading devices affect the way people read and understand. It seems that libraries, and people in general, have tended to ignore the research done and have gone with what their users want and need, which appears to be easy access to academic resources which is also continuously available. If libraries are to continue to play a strong role in education, it is of strategic significance to know whether the money spent by academic libraries and the effort put into such an endeavour is effective, how it is being used and what users think of e-books.

E-books take up no space, are continuously-available, subject to there being a stable internet connection with adequate bandwidth, and are (but not always) cheaper than their physical counterparts. When e-books first appeared in the 1990s, they were thought to be an answer to many of the problems of a library, including insufficient shelving space, insufficient funding and growing pressure to increase the availability of materials. Since then, research into e-books and their adoption by academic libraries has focused on numerous topics such as the cataloguing of e-books, strategies for e-book access and provision using the various platforms and vendors, the usage of e-book resources such as reference work, academic reading and leisure reading, as well as e-books usage statistics compared to usage of their print editions (Levine-Clark, 2006: 287; Folb, Wessel & Czechowski, 2011: 219).

Levine-Clark (2006: 286) notes that the assessment of user satisfaction with e-books has been somewhat neglected and that e-book research has been concentrated on the assessment of technologies such as vendor provision. However, how users perceive e-books and the reasons behind e-book use or non-use is an important factor for both libraries and e-book publishers and should not be neglected.

Upon reading the literature dealing with user satisfaction with regards to e-book usage, it becomes apparent that various issues are ignored by the researchers and that these issues have an effect on how the data collected is interpreted. For example a low response rate, the types

of questions asked, the method of research and location. By “location” is meant, for example, that some research refers to findings of research conducted in the United States when the focus of interest is primarily that of research reflecting on conditions in the United Kingdom; this is but one example of a potential erroneous conclusion. Confusion over the definition of an e-book is another major issue: can one really trust a questionnaire completed by users who have indicated at the outset that they do not know, or are unsure of, what an e-book is.

The above-mentioned issues may be considered as the making of a “wicked problem”. The term “wicked problem” can be described as the following,

[It refers] to that class of social system problems which are ill-formulated, where information is confusing, where there are many clients and decision makers with conflicting values, and where the ramifications in the whole system are thoroughly confusing (Churchman, 1967: B-141).

The term “wicked problem” was first introduced in 1967 by Horst Rittel. Rittel published a paper entitled “Dilemmas in a general theory of planning” with Melvin Webber in 1973. In this paper the authors spoke about how the sense of “wickedness” refers to the difficulty of determining a solution or solutions, rather than any assertion of intrinsic evil. Rittel stated that a wicked problem should have ten characteristics. The characteristics are the following (Rittel & Webber, 1973: 161-167; Ritchey, 2013:4-5):

1. There is no definite formulation for a wicked problem
2. Wicked problems have no stopping rules
3. Solutions to wicked problems are not true-or-false, but better or worse
4. There is no immediate and no ultimate test of a solution to a wicked problem
5. Every solution to a wicked problem is a “one-shot operation”; because there is no opportunity to learn by trial-and-error, every attempt counts significantly
6. Wicked problems do not have an enumerable (or exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan
7. Every wicked problem is essentially unique
8. Every wicked problem can be considered to be symptom of another [wicked problem]
9. The causes of a wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem’s resolution

10. [With wicked problems,] the planner has no right to be wrong

Ritchey (2013: 3) notes that the criteria for a “wicked problem” can be limited to four or five characteristics as some of the characteristics overlap or are closely related.

If the problem did not have these characteristics, it would then be classified as a “tame problem”. A problem is considered “tame” if it has the following characteristics (Conklin, 2005: 9-10; Ritchey, 2013: 2):

1. A well-defined and stable problem statement
2. Definite stopping point – we know when a solution has been reached
3. The solution can be objectively evaluated as right or wrong
4. Belongs to a similar class of problems which are solved in a similar way
5. Have solutions which can be easily tried and abandoned
6. Comes with a limited set of alternative solutions

Examples of wicked problems are the following (Conklin, 2005: 8; Ritchey, 2013: 2):

- Whether to build the highway through the city or around it?
- How should crime and violence be dealt with in schools?

The above two examples meet the ten characteristics of a “wicked problem” and they also have a human or social element to them that will affect any decision made. Other issues where wicked problems are commonly found are healthcare, poverty and terrorism, to name just a few (Batie, 2008: 1176).

One usually uses the soft systems methodology, pioneered by Peter Checkland (1981), when approaching problems that are thought to be wicked. Soft systems methodology (SSM) can be defined as the following:

It is an organized, flexible process for dealing with situations which someone sees as problematical, situations which call for action to be taken to improve them, to make them more acceptable, less full of tensions and unanswered questions (Checkland & Poulter, 2006: 4).

As we can see from the above definition, the soft systems analysis methodology is a good method to use when tackling “wicked problems” as the method specifically deals with situations that have a strong social element to them.

## **1.1 Research problem**

Many academic libraries around the world are allocating large portions of their budget to the provision of electronic books (e-books). While circulation statistics provided by the e-book vendors indicate that the e-books are being used, they do not inform the libraries of the reasons behind use, how they are being perceived and user satisfaction. In recent years, academics and researchers have been investigating e-book usage and user satisfaction at their respective institutions.

The literature is based on research that has been conducted around the world. However, research that has been conducted in the United States cannot be compared to the results of research that was conducted in the United Kingdom, even if it was conducted in the same year. The problem lies with the research done and the comparison of it. Each country and its individual states or provinces, is unique and cannot be compared, as the demographics of the population (such as age, education, culture and economic background) differ and hence cannot be compared and yet, attempts at comparison *are* made.

## **1.2 Objectives of the study**

The aim of this dissertation was to discover whether the issue of e-book usage in academic libraries constituted as a wicked problem or a tame problem. Research that was conducted in the United States and the United Kingdom spanning a ten year period was collected and analysed. While each article had the issue of e-book usage in common, the aims of the articles differed, resulting in a representation of a variety of research methods, target populations, questions and results.

This dissertation presents, firstly, an analytical investigation of the literature surrounding e-book usage and user satisfaction in academic libraries and then uses the characteristics of a “wicked problem” as a framework within which the question can be resolved: “Does securing a valid understanding of the relationship between user satisfaction and e-book use constitute a ‘wicked problem’?”

### **1.3 Research design and research methods**

Since technology has rapidly advanced, the analytical study was limited to the literature of the past ten years, beginning from 2004 to 2014. While there have been a few research studies dealing with e-book user satisfaction before this time, technology has advanced significantly, and so problems that users experienced then would be irrelevant to the problems experienced now. For example screen resolution was a huge deterrent for e-book usage in 1995, but is not generally considered a factor anymore.

After careful consideration, it was decided to limit the research to that of the United States and Europe, as an element of comparison is necessary to do the topic justice.

Journal articles are the main source for retrieving information on e-book usage and user satisfaction in academic libraries as the medium offers recent and current research. For this research, one dissertation was also included.

Once the relevant literature on e-book user studies had been collected, the research was analysed, looking for various factors and commonalities, such as:

- Location
- User response
- Demographics (age and gender)
- Method of research used to collect the data
- What part of the institution was surveyed (faculty or whole university)
- Questions asked
- Results and recommendations

Another important issue is that of the vendor-funded research. While research conducted by e-book platforms such as Springer and ebrary provide interesting results pertaining to user satisfaction, the question of whether they can be considered independent and reliable arises.

### **1.4 Limitations of the study**

The various limitations of the research are:

- The limiting of the research collected largely to journal articles published in the past ten years

- Only research published in English was consulted
- Relying solely on the literature to conduct the research. The thought processes of the researchers are unknown, so conclusions can only be drawn from what is provided in the literature

Using the internet to find research, and the majority of which were journal articles, is another limitation as articles with dead-links are encountered; also navigating the web can prove difficult due to the large content available.

### **1.5 Research that was excluded**

Some of the research discovered was excluded from the final selection even though it fits into the ten year period and took place in the United States or the United Kingdom. The reasons for exclusion were that some articles were based on usage of the institutional libraries as a whole, and while e-book usage was inquired about, the survey was not primarily based on e-book usage which was specifically being investigated. An example of such an article was the report on a survey conducted at the University of Chicago (2013).

Articles were also excluded due to their method of distribution. The majority of the selected research advertised for participants to help with the research via email or on the library website of the institution. One article, the Joint Information Systems Committee (JISC) eCollections (JISC eCollections 2013) report, specifically targeted users who logged onto the vendor platform to use a specific section of books from the collection. The article was removed from the research collected as the method of distribution was problematic as it only surveyed those who accessed the platform during the specific time frame and not the user population as a whole.

While Marques de Oliveira's (2012) article fits all the parameters, it was excluded from the overall research as it focused on the institution's book store and the students purchasing of e-textbooks or their physical counterparts and the reasoning behind the purchase.

Rojeski's (2012) study which consisted of a survey and a focus group was excluded from the overall research as the participants were a group of students who attended the same class.

While a classroom of students provides easy access to participants in a research study, the fact that they were a selective few was a deterrent.

Although Chu's (2003) study fell out of the ten year parameter, and the study was also based on a class of students, the article is worth mentioning as many of the articles from the research collected, such as Levine-Clark (2006), Abdullah and Gibb (2008), Shelburne (2009), refer to it as the results showed the participants, who were information and library science students and hence future librarians, had not used e-books.

## **1.6 Outline of the dissertation**

Chapter two looks at the literature of the research methods used in the collected research. These research methods are focus groups, interviews, observation and surveys. Each method is discussed individually however no comparison is drawn amongst them as to which method is the best and provides the most valid data.

Chapter three considered the research collected in relation to the research methods used, the questions asked and the problems identified above such as location, confusion over terminology and demographics.

Chapter four looked at the nature of a wicked problem and the characteristics of a wicked problem in relation to the research collected

Chapter five is the concluding chapter and reviews what has been analysed and discussed in the preceding chapters and makes some recommendations for future research.

## **Chapter Two: Research methods used in e-book studies**

### **2.0 Introduction**

This chapter identifies and comments on the various research methods used in the articles. The focus of interest is on considering how the application of the method used in each study may have influenced the validity of the reported results. While many books and journal articles have been written extensively on these research methods, the focus will be looking at their important characteristics in relation to the subject matter of the dissertation.

A variety of different research methods were used by the researchers of the selected articles in order to fulfil the various aims of their research. These methods are:

- Focus groups
- Observations
- Interviews
- Surveys<sup>1</sup>

The majority of the articles only used one method of research, which was the survey. This chapter presents a critique of the methods of research employed by the academics in their articles. The aim was not to judge the validity of each research method, but, rather, to state the strengths and weaknesses and look at each individual research method as a whole.

### **2.1 Quantitative and qualitative research**

In this chapter, terms such as quantitative and qualitative will be mentioned and so it is prudent to provide definitions for these two terms to avoid any confusion.

Quantitative research deals with numbers and the techniques used to analyse these numbers. For example calculating averages and examining the relationships between two numbers is quantitative research (Greener, 2011: 3). Surveys, observations and structured interviews are examples of methods that can make use of a quantitative approach.

Qualitative research deals with words, images or anything that is not in a numeric form. However, qualitative data can be converted into quantitative data by converting words or

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<sup>1</sup> The terms “survey” and “questionnaire” are often used interchangeably in the literature; however, a distinction between the terms is discussed later in this chapter.

expressions into numbers. The Likert scale is an example of this (Greener, 2011: 3). Focus groups and in-depth interviews are examples of methods that can make use of a qualitative approach.

Mixed methods research is when quantitative and qualitative research are both used: the advantages of a mixed methods approach is that it removes the weaknesses found in quantitative and qualitative research (Greener, 2011: 3).

In the past, the majority of e-book usage has taken on a quantitative perspective as e-book vendors freely supply libraries with usage statistics. However, within the past decade, researchers have taken on a more qualitative approach to the issue in order to discover people's preferences, attitudes and uses of the e-books that are provided by libraries.

## **2.2 Sampling**

Another term that requires further clarification, as it effects researchers conducting any type of research, is that of sampling. The literature on sampling is extensive, but for the purposes of this dissertation, a definition which will in turn highlight the importance of sampling will only be provided. A sample is defined as "to select a small subset of a population representative of the whole population" (Fowler, 1993: 4).

Sometimes a researcher's target population is too large and the researcher must compromise by only collecting data from a portion of the target population in the expectation that the data collected from the portion represents the population as a whole (Denscombe, 2007: 13). One cannot assume that this data will necessarily represent the population as a whole and various strategies have been developed to eliminate this disadvantage (Denscombe, 2007: 13); however that is not the focus of this dissertation.

The advantages and disadvantages of focus groups, observations, interviews and surveys will now be considered.

## **2.3 Focus groups**

Focus groups are a widely written about and discussed research method. Robert Merton, who first coined the term "focused interview" which later evolved into "focus groups", used the

procedure in the 1940s, during the Second World War, to measure people's reactions to training films, propaganda and radio broadcasts (Tipping, 1998: 150; Barbour, 2007: 6 ).

Focus groups can be defined as the following:

A research technique that collects data through group interaction on a topic determined by the researcher (Morgan, 1996: 130).

Focus groups are used in all fields and disciplines, such as marketing, communications, education, public health and political science (Morgan, 1996: 132).

A focus group must have the following characteristics or features, otherwise it is just a group of individuals (Krueger & Casey, 2000: 10);

- People (this may seem obvious, but some people refer to a focus group of companies or even animals)
- The individuals must possess certain characteristics. They must all have something in common with one another that is of interest to the researcher. This characteristic is also referred to as an homogeneous group of people
- A focused discussion (to the point on a particular subject)
- To help someone understand the topic of discussion by gaining knowledge

It was a method originally designed to provide qualitative interpretation to quantitative data or information (Asbury, 1995: 414). More often than not, focus groups are used in conjunction with another research method. Focus groups can be, and are, used in the various stages of research. For example, Barbour (2007: 16) states that the focus group is most commonly used "in the exploratory phase of a research project". If a researcher wants to conduct a survey they might decide to use a focus group to determine the design of the questionnaire and test the wording or rewording of questions that come across as ambiguous, as well as exploring potential reasons for non-response and the refusal to answer certain questions, depending on sensitive matters (Wolff, Knodel & Sittitrai, 1993: 120). Sometimes a focus group is held just after the completion of a survey which has yet to be analysed in order to discover the participant's comprehension and reactions to the questions.

### 2.3.1 The moderator

The moderator is the person who oversees the focus group and asks the questions. Sometimes the moderators are the researcher or the investigator themselves, but usually a third-party is brought in to moderate. Reasons for this can be because a skilled person in moderating focus groups is required. The researcher might also want someone who is impartial to the subject under discussion as the researcher might consciously or subconsciously contribute or affect the data that is being gathered in the focus group. The participants need to feel comfortable talking in front of the moderator, and they might not do so if they know the person.

### 2.3.2 Strengths and weaknesses of focus groups

In the literature, one does not find discussions of the advantages and disadvantages or the pros and cons of focus groups, and instead it refers to the use and misuse of focus groups or their strengths and weaknesses.

The advantages of focus groups are listed as the following (Krueger, 1988: 44-45; Lankshear, 1993: 1987-1988; Kitzinger, 1995: 299; Morgan, 1996:139):

- Discovery and examination: The researcher is able to discover other people's knowledge and experiences on certain topics and, in doing so, to examine how these people think and their reasons for thinking about the topic
- Interactions: participants are able to question one another and explain themselves, which they cannot do in individual interviews and surveys
- Observation: The researcher is able to observe the interactions amongst many people on a specific topic for a certain period of allocated time
- Multiple viewpoints: The researcher is able to obtain a large amount of views from various people in the same time-frame as it would to do an interview with a single person
- Clarification: The researcher is able to ask a participant to clarify opinions offered on a certain subject or to draw on their own experiences and views rather than having to speculate on the reasons for differing opinions offered by participant's later
- Group support: There is support amongst members, if the speaker is uncertain or if it is a sensitive topic

- Flexibility: Similar to clarification, flexibility is an advantage because issues that may not have been anticipated, may be raised by the participants, allowing the moderator to further probe and discuss these issues

Babbie (1999: 227) quotes Richard Krueger (1988: 47) who states that one of the advantages of focus groups is they are low in cost. This can be construed as misleading, as Krueger (1988: 45) references Andreasen (1983: 75) who stated that focus groups were low in cost in comparison to conducting individual interviews. This is a perfect example of a statement taken out of context, resulting in a totally different meaning as well as the duplication of inaccurate and out-of date information.

The disadvantages of focus groups are listed as (Krueger, 1988: 46-47; Lankshear, 1993: 1988; Kitzinger, 1995: 299-300; Morgan, 1996: 139-140):

- Assembly: Focus groups are difficult to assemble as it requires participants to commit to gather on a certain day, at a specific time and place
- Transcribing: Transcribing the discussions in the focus group can prove to be difficult as people interrupt one another or talk over one another and sometimes there are multiple conversations happening
- Analysis: Analysing the focus group data may prove difficult as the researcher must interpret statements made within their relevant contexts. Referring to comments out of their given contexts can lead to inaccurate conclusions. The researcher must also keep in mind that participants may change their positions on certain topics throughout the sessions depending on what is being said
- Domination: One person might dominate the discussion, so instead of getting multiple viewpoints, only one viewpoint is obtained
- Silencing the individual: Focus groups can silence the individuals who oppose or disagree with something in the group. There is a loss of individuality, so to speak, which is not lost in other research methods as one does not feel peer pressure to conform with the responses of the group
- Confidentiality: There is a lack, or loss, of confidentiality in focus groups. Participants are not necessarily going to feel comfortable expressing their opinions or displaying ignorance on topics in front of their peers

- Group influence: The use of a group affects the data collected. The attitudes of the participants and their thoughts change and transform during the session. The opinion of one participant may affect that of another
- Moderator: The moderator or researcher can have an influence on what is being said, just by simply being there, making comments or just by directing the conversation. Another disadvantage with regards to the moderator is whether the moderator is unskilled or ill-equipped to oversee a focus group. A trained moderator is able to use techniques learned to move the conversation in certain directions or know how to introduce a new topic for discussion, thus producing relevant data

### **2.3.3 Size and number of focus groups**

The question concerning the number of focus groups to be conducted is often asked, and it is one of those questions that do not have a straightforward answer as it really depends on the data and the type of data collected.

Academics such as Asbury (1995) and Morgan (1997) refer to Calder (1977: 361) who states that the “rule of thumb” is that focus groups should be conducted until the moderator or researcher can anticipate what participants will say in the groups. So, ideally, when no new information or data is being generated the researcher has gathered enough and no more focus groups need to be conducted. Calder states that in the marketing sector, this usually takes three to four focus groups to achieve (1977: 361).

A focus group should be large enough to provide a variety of perceptions and at the same time be small enough for everyone to have an input in the discussion (Krueger & Casey, 2000: 10). The literature differs when discussing how many people make up a focus group. Barbour states that the ideal size for a focus group would be ten to twelve people (Barbour, 2007: 60). Morgan (1997: 42) states that the ideal size of a focus group should be six to ten individuals. He suggests that anything below six participants would make it difficult to sustain a conversation and gather a range of experiences and opinions and hence a lack of meaningful results (Morgan, 1997: 43). A large focus group requires a higher level of involvement from the moderator to instil order, and researchers might not want moderator involvement as it can affect the discussion taking place (Morgan, 1997: 42).

## **2.4 Observation**

This research method collects data by observing and recording the nonverbal behaviour of participants in their natural environment (Bailey, 1994: 242; Baker, 2006: 173). The technique allows the researcher to observe what a person actually does compared to what they think they do and, more importantly, what they would like others to think they do (Caldwell & Atwal, 2005: 42).

There are various types of observational method, such as participant observation and non-participant observation. They are defined as:

- Participant observation is when the observer or the researcher incorporates themselves into the group or action they are observing so they are essentially experiencing by seeing and feeling what the other members of a group are seeing and feeling (Kothari, 2004: 96)
- Non-participant observation is when the observers or researchers observe, but do not integrate themselves into the group of action (Kothari, 2004: 96)

Researchers will often talk about participant and non-participant observation or they will talk about structured and unstructured observation, but rarely both of them. Quantitative and qualitative observation are defined as the following;

- Quantitative observation: Also known as structured observation, is when all the observational procedures are deliberately designed (everything is decided in advance to ensure standardization and hence control over the situation (Adler & Adler, 1994: 378; Johnson & Christensen, 2012: 206).
- Qualitative observation: Also known as unstructured observation, is when the action occurs in its natural setting. Participants are not bound in a pre-determined manner such as in quantitative observation (Adler & Adler, 1994: 378; Johnson & Christensen, 2012: 206).

### **2.4.1 Advantages and disadvantages of observation**

Advantages of observation are listed as the following (Bailey, 1994: 243; Mulhall, 2003: 307);

- Non-verbal behaviour: The researcher can observe an individual's behaviour as it occurs. Their mannerisms, facial features and actions can be documented as well
- Can capture and illustrate the action as a whole: It can be observed and documented as it happens with the observer being privy to the surroundings and the events leading up to, and after, that moment
- Environment: One of the main advantages of observation in general is that it can occur in the natural environment of the participants, in which they feel most comfortable

Disadvantages of observation are listed as the following (Bailey, 1994: 245; Kothari, 2004: 96; Caldwell & Atwal, 2005: 45);

- Cost: Observation is very expensive, including time of the observer, the equipment and the data capturing at the end
- Lack of anonymity: The participant might know the observer as well as the fact that their actions, opinions and behaviour are being documented and scrutinized
- Accessibility or entry: Finding willing subjects can be quite difficult
- Small sample size: Since the technique is expensive and time consuming, only a small number of observations can take place
- Observer and validity: Observations rely on the observer's interpretations and perceptions of the actions happening around them, which makes the research open to bias. The observer can also inadvertently affect the subject's interactions and action. The observers can only observe so much, they cannot consistently document both verbal and non-verbal interactions

To counter the last point, in recent years observations have been recorded, which enables the action to be captured permanently (Caldwell & Atwal, 2005: 46).

Usually, with regards to e-book research, the observation method is only used when reading and comprehension from a computer screen is being investigated.

## **2.5 Interviews**

Researchers are often faced with the decision of whether to use a focus group or individual interviews, also known as one-to-one interviews. It is difficult to say accurately which is

better as it depends on the project or the research topic that the researcher is involved in and one has to weigh the strengths and weakness of using one or the other (Barbour, 2007: 42).

An interview is essentially a deliberate conversation between two people on a certain topic or research question where certain rules and procedures are adhered to (Leonard, 2003: 166).

Three types of interview are commonly recognised; however, some writers prefer a different typology. For example Yin (2011: 132) states that there are two types: structured interviews (quantitative interviews) and qualitative interviews, which is later defined as unstructured interviews. While, on the other hand, Leonard (2003: 167) states that there are three types of interviews: structured, semi-structured and unstructured.

Structured interviews, also referred to as in-depth interviews, are interviews in which the researcher will list the questions to be asked from a questionnaire and the interviewee is limited by the closed-ended question format that are usually used in structured interviews (Yin, 2011: 132). The interviewer also follows a pre-determined or scripted behaviour and demeanour throughout all the interviews. Structured interviews are designed to ask all interviewees the same set of questions, each having being designed to have a finite set of responses (Yin, 2011: 133). Researchers believe that this type of interview produces accurate data and hence can produce a more accurate analysis (Yin, 2011: 133). An advantage of this type of interview is that the primary focus is on a specific issue and so a large amount of detailed information is gathered (Klenke, 2008: 125). One of the disadvantages of this type of interview is that the researcher must understand and have background knowledge of the topic in question. Another disadvantage is that any other underlying concepts or idea related to the topic will not be discovered (Klenke, 2008: 125). Structured interviews are usually associated with quantitative studies and not qualitative research (Yin, 2011: 133).

Semi-structured interviews are interviews where the researcher or interviewer knows in advance the questions or topics that they want to raise (Leonard, 2003: 167). However, unlike structured interviews, the interviewer may decide to change the sequence of the questions or ask additional questions depending on the interviewee's responses in order to gain a better understanding (Leonard, 2003: 167). This type of interview allows the researcher to adapt the interview questions to each individual (Leonard, 2003: 167). The questions are usually open-ended allowing for the behaviour of the respondents and attitudes towards the topic to show, as well as allowing them to deviate off topic (Leonard, 2003: 167).

Gaskell (2000: 38-39) defines semi-structured interviews as qualitative as they typify an attempt to understand the world seen from the interviewee's perspective. An advantage of this type of interview is that a close relationship between the interviewer and the interviewee occurs during the interview (Klenke, 2008: 132). This type of interview is also able to address and clarify issues for both parties involved (Klenke, 2008: 132). Disadvantages of this type of interview have been noted as difficulty in generalizing from the data collected (Klenke, 2008: 132).

An unstructured interview, also known as a qualitative interview, is an interview in which the researcher has no predetermined set of questions and cannot predict the outcome of the interview (Leonard, 2003: 167-168). This type of interview also allows the interviewer to phrase the questions as they see appropriate or in ways that they might not have done if the questions were on a piece of paper (Leonard, 2003: 168). Unstructured interviews are considered more akin to conversations or two-way interactions, as the interviewee is also able to ask the researcher questions and seek opinions on the topic (Yin, 2011: 134). Yin describes qualitative interviews as a way of allowing the researcher to try and understand the interviewee's world through their dialogue (Yin, 2011: 135). An advantage of unstructured interviews is that important issues are uncovered that can develop into future enquiries and complex issues are able to be explored (Klenke, 2008: 126). A disadvantage of such an interview is that the interview is not focussed on the locus of the primary issue. (Klenke, 2008: 126).

### **2.5.1 Advantages and disadvantages of interviews**

While the advantages and disadvantages of the different types of interviews have been discussed, interviews in general also need to be considered as some advantages and disadvantages relating to all types of interviews, and not just one specific type can be apparent.

Advantages of interviews are listed as (Leonard, 2003: 168-169):

- Ambiguity: The ability to clarify any ambiguities or aspects that the interviewee is unclear about. For example, if they do not understand the question
- Non-verbal behaviour: The researcher is also able to analyse the interviewee's body language, gestures and facial expressions

Disadvantages of interviews are listed as (Leonard, 2003: 169):

- Cost: they can be quite costly as a lot of time, planning and incentives are involved
- Time consuming: Interviews take a lot of time to prepare as well as conduct and the subsequent data analysis may also be laborious
- Accuracy: Reliable and comparable data is not always collected and hence no accurate generalizations can be made
- Anonymity: Interviewees might feel less inclined to speak about certain topics as they might know the interviewer or just feel self-conscious

## **2.6 Surveys**

The use of a survey as a research method has been around for centuries, going as far back as the Ancient Egyptians (Babbie, 1999: 233). The one aspect of surveys that has evolved over the years, and more so in the past decade as technology has advanced, is the method of survey distribution. A survey can be defined as having the following three characteristics (Fowler, 1993: 1):

- The objective of the survey is to produce statistics (quantitative data)
- The information collected is done by asking people questions, and their answers are the data that will then be analysed
- The information is collected from a small portion (or sample) of the population

### **2.6.1 Difference between a survey and a questionnaire**

An issue that is evident in the literature is the usage by academics of the terms “questionnaire” and “survey”. Some academics use these terms interchangeably when writing their articles when the terms actually mean and refer to two different things. Many academics do not even bother trying to distinguish the two terms for the reader. Because the focus of research for this study includes surveys, it is considered important by the researcher to distinguish between the two.

A survey is a data collection technique or a research design that seeks to determine the opinions and practices of a specific group of the population (also known as a sample) at a single moment either in the form of a questionnaire or an interview (Bailey, 1994: 521;

Greener, 2011: 39; Thomas, Nelson & Silverman, 2011: 273). A questionnaire is a type of survey in which information is obtained by asking people to respond to a list of questions on a self-administered instrument in an electronic or physical (paper) format (Bailey, 1994: 518; Thomas, Nelson & Silverman, 2011: 273).

The literature on types of survey research methods primarily looks at the three main distribution methods which are by telephone, by mail and by the internet or online. This dissertation will only be looking at the mail and online method of distribution as these two methods were used in the selected articles. Each of these methods of distribution has its own advantages and disadvantages.

### **2.6.2 Advantages and disadvantages of mail surveys**

The mail survey usually entails data being collected from a questionnaire with an attached letter of explanation and self-addressed, stamped, envelope for returning the completed questionnaire (Babbie, 1999: 237). While this procedure was not used by the authors of the selected articles, this method does consist of the physical distribution of a questionnaire in a paper format which was done in three of the articles in question.

Advantages of mail surveys are listed as (Kothari, 2004: 100-101; Evans & Mathur, 2005: 203):

- Coverage: A large sample of people is reached with very little effort on the part of the researcher
- Absence of bias: It is self-administered. There is an absence of interviewer or third party bias and hence less pressure on the respondent
- Adequate time: Respondents have the time to think about their answers
- Anonymity: Respondents may feel more comfortable responding to a questionnaire because no one will know who is responding

Disadvantages of mail surveys are listed as (Kothari, 2004: 101; Evans & Mathur, 2005: 201-202):

- Time: This is one of the slowest methods of collecting data as enough time must be allocated for the questionnaires to reach their destination, as well as to be returned

- Low response rate: Questionnaires can be lost in the post, or the respondents have moved to a new address or simply have forgotten
- Non-response: This point relates to respondents skipping a question intending to go back later, and failing to do this, thus leaving a gap in the data collected
- Unclear instructions: Vague instructions and ambiguous questions can lead to incorrect answers, thus rendering the comparison of data difficult, if not impossible
- Sampling: It is difficult to know whether the respondents are a true representation of the group as a whole
- Illegible handwriting: Respondents handwriting can be illegible as well as them possibly committing spelling mistakes, making it hard for the researcher to capture and understand the data

### **2.6.3 The advantages and disadvantages of online surveys**

The academics, Van Selm and Jankowski (2006: 442) comment on the three main ways used by researchers to electronically distribute their questionnaires:

- Sending an email to the person which contains the entire questionnaire (also known as an email survey)
- Sending an email to the person which contains a letter of introduction and a hyperlink to the web-based survey
- Placing a general request for participants to complete the questionnaire on a web page

The last two procedures, namely sending an email with an introductory letter and a hyperlink to the survey website and placing a request on a webpage, are the two main methods used in the articles pertaining to this dissertation.

The advantages of online surveys are listed as (Fricker & Schonlau, 2002: 355-362; Evans & Mathur, 2005: 197-201):

- Convenience: Respondents can answer the questionnaire when it is convenient for them and at their own pace
- Speed and timeliness: Distribution of the questionnaire and collection is instantaneous. The storing of data is made more efficient as it is done electronically, which links to the next point

- Data entry and analysis: Responses of online surveys can be easily tabulated and analysed
- Range of questions: A variety of questions can be asked and easily tabulated: questions such as multiple choice, dichotomous question (yes/no questions), open-ended questions
- Cost: Cost in the sense of paper and travel expenses are eliminated. The cost of personally tabulating and analysing the data can also be eliminated as the data can be analysed and stored by a software program
- Flexibility: The type of format in which they can be distributed. For example an email with a URL link or an email that contains the questionnaire. They are also flexible in the sense that they can be tailor-made for that specific participant, either by language or simply by redirecting the participant to questions that are pertinent to them
- Control: The researcher can control the sequence or order of questions that the respondent must answer. They are unable to skip ahead or not answer a question
- Quality: A survey is only as good as the data collected, and if participants have missed out questions, the data cannot then be accurately generalized
- Absence of bias: It is self-administered. There is an absence of interviewer bias or an overall third party bias, allowing respondents to express themselves freely without any discrimination
- Coverage: A large sample of people is reached, which is important when the institution caters to distance learners
- Anonymity: Respondents are more likely to respond as they can interact with the researcher without the researcher being able to see them and know who they are

The disadvantages of online surveys are listed as the following (Evans & Mathur, 2005: 201-202);

- Low response rate: This is one of the main disadvantages of online surveys and reasons for low response rates are privacy issues or simply the email ending up in the junk mail folder. Another factor that influences a low response rate is that many individuals have more than one email address and if the survey is sent to an email address that is not frequently checked or is not linked to the other email address, the survey will not be seen until it is too late to complete it.

- Unclear instructions: If the instructions and, even, the questions are unclear or come across as ambiguous, the questionnaire will produce inaccurate responses and expressed confusion from the respondents
- Technological variations: The viewing of online surveys is affected by both the internet connection as well as the configuration of the user's computer which influences non-response as well as confusion amongst the respondents

Another disadvantage of online surveys that has been mentioned in the literature is that not everyone has access to the internet. However, this is not the case with academic institutions which provide access to computers with internet capabilities and any person affiliated with the institution is assigned their own personal email address.

One potential disadvantage of online surveys that has not been mentioned in the literature is that of the actual software packages used by the researchers in analysing the responses of the participants as well as human error. Autocorrect has the ability to change the word entirely and if the researcher's coding of terms is selective, important points can be missed by the software.

Sampling, with regards to the use of surveys as a research method, can be seen as an advantage and a disadvantage. It is an advantage as one can use an email list: for example a student's university email address, which involves very little effort on the researcher's part. A disadvantage of this type of sampling is the administrative procedures researchers would have to undertake in order to gain access to institutional email addresses which can be laborious and time consuming. Another disadvantage is that students who have enrolled at the university, but have not yet attended any lectures, may be inadvertently included.

There are some issues with mail and online surveys in general that are not mentioned in the literature. These issues are:

- People answer "yes" when they mean "no": Respondents may lie when answering the questionnaire rather than answering it truthfully
- Confusion over terminology: If the respondent does not understand a term that is used repeatedly, their responses are then not accurate

#### **2.6.4 Length of the questionnaire**

Over years it has been discovered, and what is now referred to by some academics as the “rule of thumb”, that the length of the survey determines a high or low response rate (Resnick, 2012: 9). A survey that only has a few quick questions for respondents will have a higher response rate than that of one that has a lot of questions (Resnick, 2012: 9). Usually an incentive is used for the longer surveys in order to get a higher response rate (Resnick, 2012: 9). However, as discovered by some researchers, the incentive does not ensure a high response rate no matter the length of the survey.

#### **2.7 Response rate**

The problem with any sort of research (not just specifically surveys) is obtaining a high enough response rate from the participants in order for findings to be a true and an accurate representation of the group as a whole. While every researcher aspires to a one hundred percent response rate, realistically it is impossible. Many researchers try to combat the issue of a possible low response at their institution by offering an incentive. As the literature, and in this dissertation, one of the articles revealed, this does not always work. There is no agreed-upon standard of percentage for an overall acceptable response rate (Fowler, 1993: 40). Babbie (1999: 240), who specifically looks at mail surveys, states that a fifty percent response rate is adequate, a sixty percent response rate is good and a seventy percent response rate is very good. Nulty (2008: 306) avoids giving a percentage as such and instead states that an adequate response rate depends on how the gathered data will be used. As ebook research is looking at the academic environment and academic libraries in particular, change will have an effect on the user population as a whole, so a large response is called for in order to accurately and comfortably make decisions. Nulty (2008: 302) states that generally paper surveys receive a substantially higher response rate than online surveys. In this dissertation, we see that the primary mode of distribution is online. For a web-based survey, the average response rate is between six and eight percent (Rowlands, et al., 2007: 492). From the above, we see that there is a big discrepancy amongst response rates, no matter the method of distribution.

Some researchers opt out of talking about their response rates by not mentioning them or just listing the number of responses. This action taken by the researchers can only lead one to believe that the response rate of their survey was very poor.

Out of the articles discussed in this dissertation, only one article reported a fifty-seven percent response rate, which was the highest out of all of them. Incidentally, this survey offered an incentive where the respondent could win an iPad. The lowest stated response rate was three percent.

Low response rate in general is a problem because if the literature on the subject discussed is limited, and the survey has a low response rate, you cannot contribute much to the literature as your research does not allow for generalisation and consists, instead, of a series of observations of limited extent.

There is also much discussion over the response rates of electronic surveys in comparison to the response rates of paper surveys: while this is an interesting topic, it is not the focal point of this dissertation.

## **2.8 Cost of research methods**

Cost affects the type of research used as well as the size of the sample. However, for such an important feature that influences a researcher's methods, surprisingly very little is spoken about it, especially when comparing the various research methods.

Out of all the research methods, the most expensive research method is observation, followed by in-depth (semi-structured) interviews. It is understandable why these two methods are the most expensive as they take the most time in planning, executing, and analysing. Electronic or web surveys are the least expensive and also the quickest to generate reliable data. It is the least expensive and quickest because there is no human element in the execution and analysing of the stages of the research as it is done automatically and electronically for the researcher.

## **2.9 Self-selection bias**

As with any research which deals with people, one gets self-selection bias. People can choose whether or not they will participate in the survey. For example, an academic will see that an email was received asking for responses to a questionnaire on e-book usage and, if the academic does not use e-books, the action may simply be to delete the email rather than answer it. The nett result is that only academics that have used e-books or are interested in the

topic will fill in the questionnaire and the people who do not use e-books will ignore it. This makes generalizing from the data collected difficult as this bias will have an impact on the judgements made by the researcher.

## **2.10 Ethical considerations and consent**

When conducting social research (such as surveys, focus groups, interviews and observation), researchers must follow the ethical guidelines put in place to protect the human subjects. Academic institutions have an ethics board where all research experiments dealing with living participants is analysed to determine whether any harm (physical or emotional) would occur to the participant without their permission or knowledge (Bailey, 1994: 454). This subject also links to self-selection bias as, if the participant is unhappy with participating in the research, they will not give consent or fill into the survey. All research requires prior consent on behalf of the subject who indicates that they have read and understood what is asked of them. This is usually included in the cover letter of the survey which states the aims of research and the fact that it has been validated by the institution's ethics board. With regards to electronic surveys, the participant can answer the questions only after providing consent. This cover letter provides protection for both the participant and the researcher or institution. In some cases, participants are asked whether they are willing to participate in any further investigation on the matter, such as an interview or taking part in an observed task.

## **2.11 Veracity**

One disadvantage of all the above mentioned research methods, except possibly for observation, is that the participants may unintentionally mislead or make up their own answers to the questions if they do not know or understand what is being discussed. Their peers may also have an influence on the answers they give.

## **2.12 Conclusion**

Each research method has its own strengths and weaknesses and it is up to the researchers to decide which method best suits their objective. It is usually advised to use more than one research method in research to help counter-balance individual weaknesses, thus producing accurate data. However, time and cost does play a significant role in the decision making process.

## **Chapter Three: Analysis**

### **3.0 Introduction**

In chapter two, the research methods employed by the researchers in the collected articles were discussed individually, examining the advantages and disadvantages. In this chapter, the collected research will be analysed and discussed in-depth in terms of the research methods used, the questions asked, the m that were raised by the researchers in the collected articles, as well as observations made the researcher while looking at the research as a whole. The collection of articles surveyed comprised of thirty-eight. The researcher constructed and tested a search statement that was then used consistently in exploring various databases. The main database search was Library and Information Science Abstracts and a further refinement was the use of “snowball” searching whereby the citations from several of the papers were also used to locate candidate papers. The process of analysis was based on the framework developed in chapter two, the results being tabulated.

### **3.1 Focus groups**

From the research collected, only three articles, Carlock and Perry (2008), JISC Collections (2009a) and Hoseth and McLure (2012), reported having convened focus groups as a method of research to discover the extent of e-book usage. It is also interesting to note that all three articles have different approaches for the use of focus groups as a research method, depending on the resources available, such as facilities and budget.

#### **3.1.1 Reasons for using focus groups as a research method**

In chapter two focus groups were mentioned as often being used in conjunction with other research methods in order to enhance the quantitative data collected. In the research, we only see this in the JISC Collections (2009a) article, which was part of a larger project.

Carlock and Perry (2008) acknowledge that the use of focus groups make their findings incapable of being generalized due to the small sample size, state that they wanted to explore faculty perceptions and experiences of e-books in detail and have the ability to clarify and expand on any issues that might arise. Hoseth and McLure do not mention the reason why they chose to use a focus group as a research method, only stating that they wanted to “explore the attitudes toward e-books” (2012: 278). The above two articles solely used focus

groups as a research method, with only one of the articles stating the limitations of using such a method.

### **3.1.2 Focus groups incentive**

While the JISC Collections (2009a) report fails to mention any incentive offered to the participants, Hoseth and McLure (2012) state that their incentive was lunch and the Carlock and Perry (2008) incentive was a gift card. With this information, we see that the use of an incentive does not seem to influence participation as the focus group with the least participants, received the most generous incentive.

### **3.1.3 Advantages and disadvantages of focus groups**

While the literature lists the moderator, confidentiality and transcription among other elements as disadvantages of focus groups, the one disadvantage that was encountered in the research was the low response rate which had not been mentioned in the previous chapter. The JISC Collections (2009a) report highlights the problems of low response rate to the request, people not showing up to the session and others who could not make the session, which resulted in individual interviews taking place and focus groups with only two members. In chapter two, the literature with regards to the size of a focus group was considered and the general consensus was approximately six to ten individuals being an effective group size. In the research, this was found to have not always been the case. While the generally accepted convention is that you conduct focus groups until no new data is generated, it is unclear whether this philosophy was followed. Carlock and Perry (2008) had a total of six participants; Hoseth and McLure (2012) had nineteen individuals; and JISC Collections (2009a) had sixty-one individuals divided over several focus groups.

While an advantage of focus groups is the expansion and clarification of statements made by individuals, it is never made clear whether clarifications are needed in the findings after the focus group has been conducted.

### **3.1.4 The moderator**

As has been discovered in the previous chapter, the moderator plays an important role in a focus group but can also hinder the discussion or become too involved in it. Two of the three articles, JISC Collections (2009a) and Hoseth and McLure (2012) do not clearly state

whether a third party was involved in the moderating itself or whether the researchers were acting as moderators. Carlock and Perry (2008) was the only article in which the services of a third party who specialized in social research was reported as having been employed. The use of a company that specializes in such research and had state-of-the-art facilities allowed the researchers to record the focus group session as well as observe it behind a one way mirror.

### **3.1.5 The inclusion of non-e-book users**

The JISC Collections (2009a) article was the only article from the research to report that a list of the questions was sent out prior to the appointed time. It is unclear whether the JISC Collections (2009a) article included non-e-book users in its focus group.

In the Carlock and Perry (2008) article, only faculty were invited to take part in the focus group. While the question concerning e-book usage was asked, it was not documented in the article; so one does not know whether non-e-book users formed part of the focus group. The main aim of the focus group was about discovering faculty's use and perception of electronic resources, but this article only covers the questions concerning e-books.

Hoseth and McLure (2012) questioned both graduates and faculty and reported that non-users formed part of the focus groups.

### **3.1.6 Provision of a definition**

It was unclear whether any of the moderators of the focus groups had defined what an e-book was for their participants or if any mention of the definition of the term occurred.

### **3.1.7 Misuse of the term “focus group”**

One article, written by Foote and Rupp-Serrano (2010) creates confusion by using the term “focus group” in its title: however this was not the method of research used, which was a survey followed by an interview and an observed task.

## **3.2 Observation**

Only two articles, Briddon et al., (2009) and Foote and Rupp-Serrano (2010), of those collected, used observation as a research method. This research method was used in conjunction with other methods, and so the findings were not based solely on the data

collected from the observation. In both articles we see that the authors were interested in discovering and understanding the students' information seeking behaviour.

The research reported in the Briddon et al., (2009) article consisted of an observed task in conjunction with a survey and a set of interviews. In the article, the authors state that the reason why observation was chosen as a research method to help them in their research was that they wanted to understand how students were “finding and using e-books on a practical level” (Briddon et al., 2009: 50). In this process of observation, not only were the participants actively observed, but also video recorded.

The Foote and Rupp-Serrano (2010) article reported on a survey, an interview and a process of observation. Participants were observed while interacting with various e-book platforms allowing the researchers to gain a better understanding on how people interact with online resources in general. The article does not state whether the observed task was recorded and instead focused on discussing the usability of the various e-book platforms observed.

### **3.2.1 Advantages and disadvantages of observation**

In chapter two, one of the advantages of observation that was discussed was that the action can occur in the natural environment while being observed. In this case we see that the observation, mentioned in both of these articles, has a mixture of both quantitative (structured) and qualitative (unstructured) observation. While there is standardization and control over the situation (a computer is provided with internet capabilities and is being recorded), there is no pre-determined manner on how the participants get to their results. The one disadvantage of this type of observation – where a participant is observed navigating the e-book platforms -- is that the computer or electronic device they are working on is not the same as the one they usually use.

Out of the many e-book vendors supplying libraries e-books, only one vendor (JISC) conducted a focus group report and published it for the public in the selected time period. This is interesting as the inclusion of observation and focus groups in an e-book vendor's research would help them to understand their users and how their users navigate their platforms. That is not to say that other vendors did not conduct observations, only one vendor made a focus group report available to the public.

In most cases, with regards to the interviews and observations, students would indicate in the survey, which came prior to these methods, whether they were willing to participate in any further investigation.

### **3.3 Interviews**

There were only five articles from the research reviewed in which the authors had conducted research. None of the articles specifically stated why they had chosen interviews as a research method as opposed to a focus group.

#### **3.3.1 Types of interviews**

All the articles, Briddon et al., (2009), Foote and Rupp-Serrano (2010), Bierman, Ortega and Rupp-Serrano (2010), Zhang and Beckman (2011), and the dissertation by Brown (2009), stated that they conducted face-to-face interviews. While this aspect of face-to-face interviews compared to non-face-to-face interviews was not discussed in the previous chapter, interviews can now be conducted via other means, such as over the telephone, via live-chat and any other number of methods.

Briddon et al., (2009) and Brown (2009) were the only literature to specifically state that they had used semi-structured interviews. While Bierman, Ortega and Rupp-Serrano (2010) did not use the term “semi-structured” it was implied in their description of the interview.

#### **3.3.2 Advantages and disadvantages of interviews in the research reviewed**

Briddon et al., (2009) and Brown (2009) were the only two literature items which stated that the interviews were recorded. However, this is not to say that the other interviews were not recorded; however, it was not reported whether they were recorded.

One of the advantages of interviews stated earlier was the clarification of any ambiguities on the part of the participant. An example of this can be found in the article written by Briddon et al., (2009). In the interview, the researchers encountered two participants who had stated that they had not used e-books but, after further inquiry, it turned out that they had actually used e-books. This would not have been picked up in a survey. Another less obvious example is that of Bierman, Ortega and Rupp-Serrano (2010) which is the only article to state specifically that a definition of what an e-book is was given to the interviewees.

### **3.3.3 Time**

As mentioned in the previous chapter, one of the disadvantages of interviews was that they were time-consuming and costly in relation to the period of time needed to construct the interview questions, conduct the interviews and analyse the data collected. Briddon et al., (2009) and Foote and Rupp-Serrano (2010) were the only two articles which reported the length of the interviews, with the shortest interviews being half an hour and the longest being over an hour.

Meanwhile, Bierman, Ortega and Rupp-Serrano (2010) interview times ranged from twenty minutes to an hour and a half; however, it can be argued that these results should be considered separately from the other sources because the large time difference depended on the participant and whether they had used e-books before. If they had never used an e-book, a demonstration was then provided on the capabilities of e-books and the e-book platforms, following which the participant could answer the rest of the interview questions. It is unclear whether the inclusion of the demonstration of e-books and the e-book platforms was consequent on the discovery that the majority of the participants had never used e-books before, or whether it had been planned from the beginning.

### **3.3.4 Cost**

None of the articles mentioned whether a third party was brought in to conduct the interviews. There was also no mention of an incentive for the faculties and students who participated in the interviews.

### **3.3.5 Small sample**

The number of participants included in interviews in small-sample surveys ranged from one (Brown, 2009) to twelve (Briddon et al., 2010). These were the only researchers who reported that their use of small sample size limited the scope of any generalizations from their findings.

## **3.4 Surveys**

The previously-discussed research articles were few and could be discussed individually; however, this is not the case with surveys, many of which tended to report on the same

phenomena with similar results and themes. The use of some selection criterion had to be employed to limit the task. The researcher scanned all the articles but has chosen to discuss only those that presented new facts or findings contrary to the general theme.

The collected research illustrated two methods of survey research: the first being electronic surveys and the second being mail surveys.

### **3.4.1 Electronic surveys**

The majority of the surveys in the collected research were distributed electronically. Many reports of research stated that emails were sent with a URL link to the questionnaire, inviting participants to take part in the survey. Excluding the vendor-funded articles, all the articles contacted participants via their email addresses. Some articles specifically stated that other methods which marketed the survey were employed, such as via the institution's student portal and library website; however, this does not mean that those who did not state it in their articles did not market their surveys as such. Some academic institutions have their own survey software packages that were used, but in the collected research, SurveyMonkey was the software package of choice.

### **3.4.2 Mail surveys**

In chapter two, mail surveys and the advantages and disadvantages of such a method were discussed. It was also stated that, while the mail survey was not actually used in the selected research, the research did consist of the physical distribution of a questionnaire. Of the selected research, there are only three articles that documented studies in which a paper survey was physically distributed to participants.

Walton's (2013) method of distribution is unique, and separates this from the other research, as the questionnaire was handed out to students who were attending a chapel service. The resulting sample was small and select. Sampling was listed as a disadvantage of mail surveys in the previous chapter and we see here that only people of a certain faith were surveyed. While Walton (2013: 6) does acknowledge that the "ethnic makeup" of the institution was a limitation to his study, he does not clarify why he chose that method of distribution. One can only speculate on the reasons behind this action, as he had conducted a previous survey (Walton, 2007) which was distributed electronically. One such speculation is that he was under a time constraint and wanted to collect data in a quick and efficient manner.

The next article is one that actually falls outside of the scope of the research. While the research focuses on e-book usage in academic libraries, Perry's (2005) article is on a survey conducted in order to gauge the students' reactions to e-books if the library were to provide them. There is also a follow up survey (Makin, 2008), which will be discussed later, that looks at the students attitudes towards e-books now that the library concerned provides them.

The method of distribution in the Perry (2005) article was done in the form of a printed questionnaire that was distributed through pigeonholes that were allocated to students. There were two factors that would have prevented students from submitting the completed questionnaires. However, they are not disadvantages as such, just poor timing on the researcher's part. The first factor is that the survey was distributed during exam time, so students may not have been on campus or necessarily have checked their pigeonholes for any mail. However this was not listed as a limitation in the article. The second factor was not actually mentioned in the article, and that was the method of collection. Usually with a mail survey, an envelope and stamp are provided, but when the questionnaire is physically distributed there has to be some sort of drop-off location for the completed surveys, and if that is out of the way for a student, the survey may not be handed in and the volume of responses is reduced, accordingly. However this was not listed as a limitation in the article.

Makin's (2008) report on the follow up survey was also distributed via the pigeonholes. While Perry (2005) had not given a reason for why physical distribution of the questionnaire was decided upon, Makin (2008) provides a reason, it being that the researcher believed that the participants would have difficulty with completing the form if it was electronic. While not actually stated, from the reasoning it is deduced that Makin was talking about an email survey (which was briefly mentioned in the previous chapter) and not a link to the survey website which was the method used by the majority of the research selected. However, Makin (2008: 2) states that an email was sent to the students notifying them of the questionnaire in their respective pigeonholes.

### **3.5 Coding**

Once data has been collected with the research method chosen by the researcher, it needs to be analysed in an effective manner in order for accurate interpretation and extraction of meaning to take place. For this to happen, the collected data (the answers or comments) are

coded or categorised in order to identify patterns that may emerge (Moser and Kalton, 1971: 414; Iarossi, 2006: 188). While much has been written about coding, for the purposes of this dissertation, only a description of what coding is will be provided. Coding is when tags or labels are allocated to descriptive or inferential information collected in the research (Basit, 2003: 144). They can represent a single word, a phrase, a sentence or even a paragraph (Basit, 2003: 144). The researcher can either create the code prior to the data collected and analysed or can create the code after the data has been collected and been analysed for any reoccurring features. Coding is not a new practice, and researchers had been manually coding their data before technology made it easier. Now researchers can use various types of computer software designed specifically to analyse qualitative data. Some survey software offers coding, while other software requires the researcher to either do it manually or use a coding software package. Many of the articles in the collected research do not mention the coding aspect of their collected data. In the Jamali, Nicholas and Rowlands (2009: 36) article, in which they analyse the 16 000 comments made by participants in a JISC Collections survey, which was reported by Nicholas et al., (2008) and JISC Collections (2008), they stated that the research software package QSR was used to aid them in their analysis. Nicholas et al., (2008: 315) states that the Statistical Package for the Social Sciences (SPSS) was used to help them in their analysis. In comparison, Briddon et al., (2009: 49) did not use any coding software package and stated that MS Excel was used for analysis.

The one disadvantage of coding qualitative data, which cannot be remedied, is that an individual's comments may be discarded if the code has not been programmed to include it, or the researcher overlooks it when manually going through the comments.

### **3.6 Use of incentives in the research reviewed**

In chapter two, the use of an incentive to ensure a large response rate was mentioned and it was pointed out how the use of an incentive does not always work. A researcher may not necessarily have the budget to offer an incentive. Some of the articles do not mention whether an incentive was offered.

An example of an incentive not working is seen in Makin's (2008) article. An incentive was offered in order to increase the response rate. However, even with the incentive, the response rate was ten percent lower than the previous survey, reported by Perry (2005). While the use of the incentive does not always work, in the research reviewed, the article which received

the highest response rate out of all the articles was an article on a survey funded by Springer which had a fifty-seven percent response rate: the incentive was an iPad or a gift voucher (Springer, 2013).

### **3.7 Response rate**

In the section above it was mentioned that the highest response rate out of all the collected research was fifty-seven percent. This is true amongst the surveys in which a large sample was distributed either physically or electronically.

As stated earlier, it is important for any type of research to obtain a high enough response rate in order for the data that is collected to be a true and accurate representation of the selected population as a whole. Earlier Babbie (1999) was quoted as stating that a fifty percent response rate was adequate: only one article achieved over fifty percent. However there are articles that can be understood as having a one hundred percent response rate if the participants were personally selected, as can be seen in the articles which have focus groups or a small number of participants. Examples of such can be seen in Foote and Rupp-Serrano (2010) and Bierman, Ortega and Rupp-Serrano (2010). Many of the articles from the research neglected to include the response rate. The exclusion of the response rate in some of the articles is understandable, especially with the vendor-funded articles in which surveys were conducted worldwide or surveyed more than one university. Examples of such articles are ebrary (2007a) and Nicholas et al. (2008).

One can only speculate why many articles omitted the response rate. As noted above, in some cases it would have been impossible to work out the response rate. However, with regards to other articles, a simple calculation reveals the response rate that the authors do not state. An example of such an article is one that reports on a survey of e-book usage conducted by the University of California Libraries (Li, et al., 2011). The article reports that a “significant” response rate was obtained, which was a total of 2 560, with responses representing all of University of California’s ten campuses. However, what the article neglects to mention, is the total number of people who either work or study at University of California. Once calculated, it is discovered that the survey had a one percent response rate and obviously does not represent the academic population as a whole. Out of all the research gathered, the article that disclosed the lowest response rate was three percent, reported by Shelburne (2009).

At 22 437 responses, Nicholas et al., (2008) has been credited as the survey that has received the most responses. The article is based on the findings of a vendor-funded project by the JISC Collections (2008), who conducted a follow up survey a year later which received 28 709 responses (JISC Collections, 2009b). However this large response rate has garnered very little attention. While Nicholas et al., (2008) achieved the most responses, a statistical response rate cannot be calculated as the population of the institutions in which the survey was distributed was unknown.

### **3.8 Vendor-funded research**

During the ten year period, a number of vendor-funded research projects took place. These articles and reports documenting the findings of the research should have been excluded, as while they did fall within the time period, it was a global distribution, so countries other than the United States and the United Kingdom answered. They were included because their surveys were longer than the institutional ones and a wide range of questions such as computer literacy (ebrary, 2007b), awareness of resources being trustworthy and untrustworthy (ebrary, 2008; ebrary, 2012), was asked. One must be careful when reading vendor-funded surveys as the report may be unfairly biased towards their own product. Out of three vendor platforms, Springer, ebrary and JISC, which conducted research in the ten year period, ebrary was the only vendor to have not asked about its provision of e-books in its surveys. None of the vendors asked the patrons about problems they experienced while on their platforms or using the e-books hosted by them. Out of the collected research, Brown (2009) was the only source to ask whether participants had trouble viewing, downloading or printing the e-book. The data collected from vendor-funded surveys is often reproduced by academics; for example Shelburne (2009) uses data collected from a survey conducted by Springer who published the original data in a separate report (Springer, 2008). Another example is Nicholas et al., (2008) and Jamali, Nicholas and Rowlands (2009) who wrote about the data collected from the JISC National e-books Observatory Project (JISC, 2008).

### **3.9 The questions**

There are three factors that impede the discussion and the judgement made by the researcher in this section. The first factor is that not all the articles provided a sample of their questionnaire. The second factor is that not all the questions asked are discussed in the article

and the third factor is that in some cases the question was reworded when spoken about in the article compared to the questionnaire provided.

### **3.9.1 Number of questions**

The literature does not state the ideal number of questions a researcher should ask. Instead the literature focuses on decline in response rates in relation to the length of time it takes a participant to complete the survey. The general consensus amongst researchers is that the longer the questionnaire, the lower the response rate. While the evidence in the research supports this statement, some researchers have disclaimed this argument.

Many of the articles in the collected research do not provide the reader with the number of questions asked. This is understandable as electronic questionnaires have redirecting or branching out capabilities that automatically direct the participant to the relevant questions, depending on their answer. For example, in the collected research, Cassidy, Martinez and Shen (2012) have thirty-one questions. But a participant will not necessarily answer all thirty-one especially if they have never used an e-book.

The number of questions asked or the branching and redirecting capabilities also depends on the survey software that the researcher uses. For example, Zhang and Beckman (2011) state that the survey website that they used, SurveyMonkey, offers survey software where the researcher can ask ten questions before having to pay a fee for the software use and they chose not to extend beyond the free option.

### **3.9.2 Target population**

The subject of e-book usage can be vastly narrowed down by the choice of the target population. There is no right or correct target audience for the investigation of a topic such as e-book usage, especially when the resource is provided by the institution's library.

In the selected articles, the target audience was determined by the researcher and the intended aims of the research. Many of the researchers do not provide reasons in their articles for why only certain population samples were surveyed, such as faculty being questioned and not students. By contrast, Hoseth and McLure (2012: 281) state that the reason why faculty and graduate students were questioned and undergraduates were excluded was that they believed

that this selected population were more “invested” in the use and acquisition of e-books than undergraduates.

Many of the articles chose to conduct an institution-wide survey which required faculty, graduate and undergraduate students to answer a survey on e-book usage in order to obtain an overall look at usage. While conducting an institution-wide survey draws people from all faculties in responding, the data collected may not accurately represent individual faculties if one faculty provides double the responses compared to another. This also produces unreliable data as each faculty’s needs and usage of e-books varies. An example of how a faculty’s use of e-books is minimized in an institution-wide survey is Levine-Clark’s (2007) article, which specifically looks at the Humanities faculty e-book usage using data collected from Levine-Clark’s (2006) institution wide survey. While the institution-wide survey depicted that the main reason why e-books were used was because of their search capabilities, this is in contrast to the Humanities faculty respondents who stated that the main reason for use was because the print version was not available (Levine-Clark, 2007: 9).

Some researchers direct their attention to specific academic departments and their e-book usage and user preferences, such as education (Brown, 2009), social work (Shepherd and Arteaga, 2014) and health sciences (Folb, Wessel & Czechowski, 2011). One article (Brahme & Gabriel, 2012) narrows down their target population to distance learners who use the library’s interlibrary loans services and their preference and use of e-books. Generally this specificity is due to the fact that the researcher either works or has an invested interest in the department surveyed, and thus conducting research would be beneficial; however this is not always made apparent in the article.

### **3.9.3 Types of questions**

As each research project is unique, the questions researchers ask their participants are also different. As the collected research is too large to discuss each questionnaire and individual questions, only certain questions that the researcher thought important and relevant are discussed.

To determine e-book usage and attitudes, a variety of topics were covered, such as:

- the advantages and disadvantages of e-books
- the participants’ reading habits

- what device did they read from?

These topics featured as questions in the majority of the collected research, just the format of the question differed from article to article.

Understanding the advantages and disadvantages of e-books helps the researcher understand a participant's use and non-use of e-books. These two questions did not appear as open-ended questions in any of the research collected. Only a few articles, such as Rowlands et al., (2007) and Shelburne (2009) use these specific terms. Other articles, such as Abdullah and Gibb (2008), ask about the reasons why participants use or do not use e-books and provide the same set of answers as one would find with advantages and disadvantages. These two questions produced the expected answers, such as accessibility and searchability, for the advantages or the usefulness of e-books and difficulties of reading on screen and annotation as disadvantages or reasons for non-use. Folb, Wessel and Czechowski (2011) and Shelburne (2009) ask the participants whether they found e-books to be "useful". Both articles offer a Likert scale where very useful to not very useful is the range offered. The key problem is that "useful", as a measure, lacks definition and the provision of a scale does not clarify what each respondent might understand by the term.

One disadvantage or reason for non-use, which only came up in Carlock and Perry (2008)'s focus group and the article by Bierman, Ortega and Rupp-Serrano (2010), was the problem with the e-book vendor itself. For example, some e-book vendors, such as ebrary, require the user to have an account in order to use their e-books. Due to copyright laws, some vendors do not allow a user to download the whole book or view it offline. This proves to be an inconvenience to users, especially when you require the information where no internet is available.

The marketing or advertising of e-books was another question asked by a few of the researchers. Only three articles, Perry (2005), Rowlands et al., (2007) and Makin (2008) inquired about possible advertising methods on how to market e-books in order to generate greater awareness and usage. Folb, Wessel and Czechowski (2011: 220) state that educating the users, in the form of tutorials and lecture sessions, would increase awareness as well as usage of e-books. Only a few articles, such as Croft and Davis (2010) and Foote and Rupp-Serrano (2010) specifically ask about whether participants learned about e-books and e-resources in the library instruction sessions. One of the questions ebrary asks faculty (ebrary,

2007b) is on library instruction and the most selected option was online tutorials provided by the library (ebrary, 2007b: 29). While in-class instruction was the second most selected answer, the data collected indicates that faculty do not have the time in their teaching curriculum for an information literacy session, which is important for a student's overall academic learning.

Articles such as ebrary (2008) and (2012); Shelburne (2009) and the University of Liverpool (2010) ask participants the number of times that they use e-books. One question that featured in both of ebrary's above mentioned surveys, was how often participants used e-books provided by the library. In both surveys, which were conducted three years apart, it was discovered that the majority of the students had never used e-books provided by the library. In Shelburne's survey (2009), participants had a choice between daily, weekly, monthly and less often. The less often option was selected the most. The results of the University of Liverpool (2010) indicated that participants used e-books monthly. E-book usage would fluctuate with the deadline of assignments and projects.

Many articles asked about the participant's reading habits – whether they read the whole e-book or only parts of the e-book. While this question is important, and the results from this question asked by Levine-Clark (2006), Nicholas et al., (2008) and Springer (2012/13), show that the participants only read a chapter or “several consecutive pages”, the researchers do not explore the meaning behind such answers or state that further research needs to be conducted.

While eye-fatigue is one of the common disadvantages of e-book usage, only two articles (JISC Collections, 2008; JISC Collections 2009b), asked participants the length of time they read from a screen. One article, (JISC Collections, 2009b) specifically asks the length of time one spends reading from a screen “in one session”. However, “screen” can be interpreted as any one of multiple electronic devices, such as cellphone, computer, e-reader or television. This question had the potential to reveal the amount of time spent in front of a screen actively reading something. However, the options participants could choose from, ranged from “more than twenty minutes” to “less than three minutes”. This selection of answers would not have revealed accurate data, due to the fact that when one researches or is writing an assignment, one will spend at least an hour reading from a screen.

Before preference for e-books or their print counterparts is discussed in the section below, a question that only a few researchers asked, such as Levine-Clark (2006), Rowlands et al.,

(2007), Nicholas et al., (2008), was whether participants read the e-book on the computer screen, or whether they printed a copy. In light of the fact that many listed reading from the screen as a disadvantage of e-books and the inability to annotate, the majority indicated that they read from the screen instead of printing out a copy. There are many reasons for why this answer was chosen, however the researchers never explored these in their articles. A few respondents expressed a dislike for wasting paper, and hence they were saving trees by not printing, while others expressed the cost of printing as a deterrent. Another factor to consider is that of time. If the respondent has a deadline, it is quicker to read from the screen than it is to print and read a hard copy.

### **3.9.4 Users' format preferences**

One question that was frequently asked in the collected research was the user's preference for the print or electronic format. It is a question that is usually asked for acquisition purposes; however the results are not always straightforward. Instead of using the term "preference" some articles, such as Camacho and Spackman (2010) and Shepherd and Arteaga (2014) asked about choice. Some articles such as Zhang and Beckman (2011) and Camacho and Spackman (2010) limited the respondents to a dichotomous "yes" or "no" answer. Other articles offered a third "it depends" or "does not matter" option, such as found in ebrary (2008) and Levine-Clark (2006). In some articles, for example Lincoln (2013), the respondent can give an explanation for why that format was chosen. This type of question is influenced by the participant's attitudes and opinions towards e-books, by the e-book platform or the steps and motions that the user has to go through in order to access the e-book. This aspect of preference for print due to the unyielding vendor platforms was documented in Cassidy, Martinez and Shen (2012: 328) article. Preference for print or e-book format is also influenced by the participant's area of study or research. For example, in Li et al.'s (2011: 11-12) article, it was discovered that the Arts and Humanities faculty preferred print books, whereas the Business and Law faculties preferred e-books.

Preference for e-book or print varied in the literature in the collected research. Some reports, such as ebrary (2008) and Foote and Rupp-Serrano (2010) reported that users preferred the e-book to print, while other research such as Camacho and Spackman (2011) and Brown (2009) reported that users preferred print over the e-book format.

Ebrary's (2012: 8) report on a survey conducted in 2011 compares the results of the question concerning preference to that of its 2008 survey (Ebrary, 2008) and discovers that e-book preference has decreased by three percent. This decrease could be understood as an acknowledgement that e-books are not necessarily a good substitute for print books.

### **3.9.5 Terminology**

The results of the surveys as a whole showed that there was general confusion amongst participants over what an e-book actually was and in some cases what an electronic resource or online resources were. This confusion was identified by researchers from the comments students made. While a focus group and an interview can clarify any misconceptions or misunderstandings (although they were not discussed except for the Briddon et al., [2009] article), surveys do not have that ability and this is considered a disadvantage of surveys.

### **3.9.6 The word "use"**

One article, (Croft & Bedi, 2004), which falls outside of the literature search parameters because the university is based in Canada, highlighted an important fact that no other researcher has mentioned and which can alter the researcher's understanding of the data collected. What the word "use" means and expresses differs from person to person. The word "use" could mean any number of things with regards to e-books. It could refer to someone trying out the product or experimenting with it, it also could refer to accessing it, or referring to it in an assignment. An example of this confusion of the term "usage" can also be seen in the survey conducted by Shepherd and Arteaga who discovered that students who said they had never used an e-book nevertheless assented to having opened an e-book (2014: 21), thus highlighting this confusion over the terminology.

There was also some confusion over whether the question was asking about usage in terms of reading for pleasure or usage in terms of reading for academic purposes.

Not all the articles provided a sample of their questionnaire that was distributed, let alone the cover letter. Provision of this would have explained the situation and whether interest lay in e-book usage overall or library e-book usage provision.

While some authors, such as Shelburne (2009), Briddon et al., (2009), Camacho and Spackman (2010), ask the dichotomous, closed-ended, question "Have you ever used an e-book?" and the respondent can either answer "yes" or "no", other authors such as Rowlands

et al., (2007) and Nicholas et al., (2008), offer the “I don’t know” or “I’m not sure” option. The inclusion of this option could allow the researchers to see whether participants understood the term e-book; however this was not stated in the article. Some authors use the term “e-book” or “e-books” or “electronic book” when asking about usage. These different terms, which refer to the same medium, can also add to the confusion over what an e-book actually is. From this question, the respondent may think the researchers are asking about e-book usage for academic purposes or for leisure purposes and this may tacitly exclude the question of whether or not it is provided by the library. However, as the cover letters explaining the survey were not available, one can only speculate, as in the cover letter it might have stated to what purpose the researcher was referring.

Cassidy, Martinez & Shen (2012) and ebrary (2008) specifically ask about the use of library provided e-books in their question, so if a participant did not read the cover letter or simply forgot what e-books the researcher was referring to, they are then reminded.

Perry (2005), Makin (2008) and Lincoln (2013) ask two questions in relation to the use of e-books instead one ambiguous question. One question concerns e-book usage for academic purposes; and the other question is about e-book usage for leisure purposes.

The Springer (2013) article is a good example of the potential for participants misunderstanding what is being asked of them. After analysing the responses by faculty to questions about how they read e-books and on what device they used when reading, it was discovered that instead of talking about their academic reading habits, some faculty were reporting on their own leisure reading habits. Once this was discovered, it was decided that the faculty responses would be excluded from any further analysis of the data collected.

### **3.9.7 Awareness of e-book provision**

As has been stated earlier, libraries rely on usage statistics provided by the e-book vendors. However this does not tell them about the awareness of the e-book provision, as it links to how the service is being marketed. One can be aware of a service that is provided, but not have a need to use it, though one might have a need in the future.

Numerous surveys did not ask about the participant’s awareness of the library’s provision of e-books and instead asked only about usage. However in the literature reviews, authors would discuss the statistics of usage and awareness calculated by various institutions. The fact that

many surveys did not enquire about the user's awareness of e-books, but still spoke about e-book awareness in general, leads one to believe that some researchers may see awareness and usage as the same thing. An example of such, is an article which states "discovering user's e-book awareness" as one of article's aims, but the participants are not asked about their awareness: this can be found in the JISC (2008) article.

The article from the research that reported the highest e-book awareness percentage was a study conducted by the University of Liverpool (2010), which stated that eighty-seven percent of the respondents reported being aware of e-book provision and its availability from the library. Apart from the Zhang and Beckman (2011) article which was written in the same year and cites seventy-four percent awareness, the articles that follow did not ask about awareness. Although it is interesting to note this finding of the highest percentage of awareness, speculation about the range of awareness is problematic: the literature review spans ten years and, in this time, the technology and perceptions of it have changed so much that valid comparison is nugatory.

### **3.9.8 If a definition was provided**

Many people (both faculty and students) do not know what an e-book is. As was mentioned earlier, some people believe they have never used e-books only to discover during the survey that they actually have. This leads to another point of interest in the selected research and that is whether a definition was included with the survey. After all, if one does not know what an e-book is and whether one has used an e-book or not, one cannot accurately answer the questionnaire. In his article discussing the results of a survey conducted at the University of Denver, Levine-Clark (2006: 288) states that the word "electronic book" was intentionally left undefined in order to determine user awareness.

As was found in one of the articles, Folb, Wessel & Czechowski (2011: 224-225), it was reported that participants still expressed confusion over the term even when a definition had been provided.

### **3.9.9 Questions on demographic information**

In the area of social research, demographic questions pertaining to the participant's age, gender and educational level are asked to determine if any similarities or commonalities can be established amongst the sample of respondents that might reveal characteristics of the

population as a whole. In the selected research, demographical information such as academic status, the faculty the participant belongs to, age and gender, were asked. The enquiry about the demographic information of participants did vary from survey to survey depending on the respondents at which the survey was aimed. For example, if a survey was aimed at the faculty, they were asked the length of period they had been teaching at that specific institution; this was asked in the ebrary (2007b) and Camacho and Spackman (2010) research. Due to the personal nature of these types of questions, researchers are advised to only ask questions that are relevant to the objectives of their research (Sue & Ritter, 2012: 70): no further use was made of the demographic information in the analysis of results, so its collection seems to have been an unnecessary invasion of privacy.

This statement contrasts the fact that a number of surveys enquired about the participant's gender and age, however, no conclusions were drawn from the responses to such questions. Looking at the research, it is unclear whether these questions were asked because it was expected of them, or asked to see if any similarities appeared and then could be discussed in the findings. Only a selective few incorporated the demographical data, such as gender and age into their research.

The Rowlands et al., (2007: 494) article states that comparing the demographic information of participants to e-book usage is complex because of the multiple interactions between age, gender and subject interest and how these interactions affect the interpretation of the data. The researcher interprets Rowlands et al., (2007: 495) as saying that while the demographic interactions are complex, they should be analysed to avoid the "one-size-fits all" analogy with e-book usage (Rowlands et al., 2007: 495). Revelle et al., (2012: 425) agree that gender and e-book usage should be collected as it would help with collection development decisions in institutions and faculty departments where there is gender imbalance.

Folb, Wessel and Czechowski (2011) is an example of the complexity that arises when comparing e-book usage to demographical information. Folb, Wessel and Czechowski (2011: 221) compares e-book usage and print usage to the demographical data collected and states that gender was associated with e-book usage as men "were more likely to report" using library e-books than women. The possible reasons for why men were more likely to report on library e-book usage than women were not discussed and it was found that the researchers needed to clarify on what they meant.

Lincoln (2013: 52) was the only article to ask about the participant's ethnicity. In the article, it was not disclosed why this question was asked and the responses to the question were not discussed. Using the demographic measure of age collected from the participants, Lincoln (2013) was able to draw a comparison between age and e-book usage. In the article, Lincoln (2013) reported that while all the participants found the electronic resources available to be useful, there was a degree of uncertainty with using them and he links this uncertainty to the participant's age. Lincoln states that while the younger respondents saw and interacted with electronic resources as an everyday occurrence, the older respondents found the electronic resources to be a novelty and were not confident in using them (Lincoln, 2013: 44-45). However, Lincoln did not stipulate what he considered "younger" and "older" to actually mean. Lincoln (2013: 44) links this finding to Prensky's (2001) article on digital natives (those who were born into the digital world) and digital immigrants (those who showed interest and adopted the digital technology) (Prensky, 2001: 1-2).

### **3.10 Results and recommendations in articles**

The aims of the majority of the articles in the collected research were to look at e-book usage and user's attitudes and opinions. While the articles achieved these aims, it was interesting to see that a few of the articles did not highlight that future research in the field the researcher was investigating was needed, or more importantly give recommendations or advice arising from the data analysed. Folb, Wessel and Czechowski (2011: 218) recommended that the e-book catalogue records should offer direct access to the e-book itself. It was also discovered that while users expressed preferences for the different formats, they would use the format available to them; hence librarians do not have to supply titles in duplicate formats. Camacho and Spackman (2010: 43) stated that as a result of their survey the library, in collaboration with the vendor, changed its purchasing method. The result of Shelburne's (2009: 65) survey was that library patrons would use whatever book format the library has made available. Revelle et al., (2012: 428) suggested that librarians focus more on subject-specific e-book or print format preference instead of institutional-wide format preference.

### **3.11 Use of literature in the literature review**

A common occurrence in many of the articles discussing e-book usage, and not specifically in the collected research, is the comparison of e-book usage statistics of academic institutions situated around the world. In the opening chapter, it was noted that this comparison causes a

major weakness in the credibility of the research. Researchers should exercise caution when comparing e-book usage statistics from one country to another as each country's economic standing, their culture, and demographics are likely to be different. An example of this can be found in Carlock and Perry's (2008) article in which they compare Chu's (2003) findings on e-book usage to that of Ismail and Zainab (2005). Here we see an institution in the United States being compared to an institution in Malaysia. On closer examination of the two articles, it is discovered that while Ismail and Zainab survey undergraduates, Chu surveys graduate students. As is seen in both article's publication dates, the surveys were conducted in different years, so it is understandable and expected when Ismail and Zainab, who surveyed four times as many respondents as Chu, show a six percent higher rate in e-book usage. The one aspect that Carlock and Perry's (2008) article revealed through this comparison between e-book usage of both institutions was that the advantages and disadvantages were listed as the same. Abdullah and Gibb (2008) do not compare e-book usage amongst academic institutions across the globe, and instead highlight the fact that e-book usage is very low across the globe. While not directly compared, Anuradha and Usha (2006)'s article features in many articles such as Shelburne (2009) and Nicholas et al., (2008) who refer to it when discussing e-book usage amongst faculty and students, even though the study took place in India.

The most ideal form of usage comparison would be if the institution itself has conducted the survey more than once using the same research method. Within the ten year period, only one article, a vendor-funded article, performed a follow-up survey. The JISC Collections (2009b) article is a report on a follow up survey which was first distributed in 2008 and the findings are discussed in JISC Collections (2008), Nicholas et al., (2008) and Jamali, Nicholas and Rowlands (2009) summary of the collected research. None of the individual researchers attempted to conduct another survey in order to determine an improvement in e-book usage.

### **3.12 Conclusion**

This chapter has examined the various research methods used and it was discovered that while surveys were the most commonly used research method, confusion over terminology, low response rate and unanswered questions demonstrate that surveys need to be used in conjunction with another research method in order for more accurate data to be generated. It was also noted that while the advantages and disadvantages remained the same amongst

respondents, their usage and needs for e-books differed depending on the faculty they belonged to as well as the vendor the institution used.

## **Chapter Four: Tame or Wicked Problem?**

### **4.0 Introduction**

This chapter analyses the discrepancies found in the literature dealing with e-book usage in academic libraries in relation to Rittel and Webber's (1973) wicked and tame problems. Both wicked problems and tame problems will be discussed individually in order to gain a better understanding of the problems and their characteristics. A comparison involving e-book usage in academic libraries and the literature supporting the findings will be conducted in relation to the characteristics of a wicked problem and a tame problem.

### **4.1 Defining the term “problem”**

The word “problem” features frequently in research, however very few scholars spend time trying to define what a “problem” is and instead just assume the reader shares their understanding of what constitutes a problem. As this term is central to this chapter and the dissertation as a whole, a definition will be provided.

The term problem is defined as a “discrepancy between the current state of affairs and a desired state (Balint, et al., 2011: 12)”. In other words, a problem is an acknowledgment that there is a gap of sorts between the present condition and the desired goal (Huitt, 1992).

The construction of a typology of problems – that is, differentiating between different types of problems and approaches to their solutions – is not a new development. Social and community roles are built on the hope of rectifying problems. It is human nature to strive to be better and to improve something that has already been built and changed. However, with this drive for improvement, failure is often met along the way and instead of change, one often just ends up restructuring and relabeling, thus creating a never-ending cycle of change (Grint 2008).

### **4.2 Wicked and tame problems**

While Rittel and Webber (1973) were the first to use the term “wicked problem”, they are not the first to identify that there are some problems which prove difficult in nature to solve. Wicked problems have also been referred to as “ill-structured problems” by Mitroff and Mason (1980: 339) and as “social messes” by Ackoff (1974: 21), who coined the term “social

messes” because he believed that there was no suitable word to describe a “system of problems”.

The reason behind the use of the term “social messes” instead of “wicked problems” is that the use of the word “problem” creates confusion: use of the term problem implies that there is solution, which, as we will see, is not the case with wicked problems (Ritchey, 2011: 1; Conklin, Basadur & VanPatter, 2007: 4).

Fully to grasp and understand what a wicked problem is, the characteristics and qualities of a tame problem will first be discussed, thus offering a good comparison to a wicked problem. When introducing these two terms, Rittel and Webber (1973) also began with defining a tame problem first.

### **4.3 Tame Problems**

Rittel and Webber introduce the notion of a tame problem, which they also refer to as a benign problem, as problems that scientists and engineers encounter and deal with. Examples of tame problems are activities such as solving a mathematical equation or achieving checkmate in a chess game within a certain number of moves (Rittel & Webber, 1973: 160). These two examples of tame problems show that there is a clear objective and the person will know whether the problem has been solved or not.

### **4.4 Characteristics of a tame problem**

A problem is considered “tame” if it has the following characteristics or distinguishing features (Conklin, 2005: 9-10; Ritchey, 2013: 2):

1. A well-defined and stable problem statement
2. Definite stopping point – we know when a solution has been reached
3. The solution can be objectively evaluated as right or wrong
4. Belongs to a similar class of problems which are solved in a similar way
5. Have solutions which can be easily tried and abandoned
6. Comes with a limited set of alternative solutions

As we have seen from the above features, a tame problem is a straight forward problem that has a clear beginning and end (Hancock, 2010: 34). These problems can be solved by using

analytical methods or approaches used by researchers in their relevant disciplines (Kreuter et al., 2004: 442).

#### **4.5 Wicked problems**

The term “wicked problem” was first introduced and documented in 1967. Churchman, an academic at the University of California, attended a seminar in which Rittel first introduced the term “wicked problem” as a problem that had a strong social element to it, was ill-formulated, the information relevant to it was confusing and the decision makers had conflicting values and opinions (Churchman, 1967: B-141).

This was society’s first introduction to the term wicked problem and it was only six years later in 1973, that Rittel, with the help of Webber, published the article “Dilemmas in a general theory of planning” which explored the subject further. In this article they advocated for a new way of approaching problems that should be introduced as the then current engineering-style way of approach and the scientific approach were failing to solve (and in some cases making worse) socially orientated problems (Armstrong, 2013: 16).

In their paper, Rittel and Webber (1973) clarified that the use of the word “wicked” in “wicked problem” is not to imply that these problems are ethically deplorable in terms of the character and values of the community, or such, from which the problem stems, but “wicked” in its tricky and elusive nature, making it difficult to be influenced by any social and political factors (Rittel & Webber, 1973: 160; Kreuter, et al., 2004: 442).

In recent years, a group of academics have expanded on Rittel and Webber’s conceptualisation of a wicked problem, and have introduced the notion of a “super wicked” problem, citing climate change as an example (Levin et al., 2010: 3). However, this term is relatively new and still has to gain acceptance and usage amongst the academic community.

#### **4.6 Experts and stakeholders**

The literature reports on the use of “experts” to deal with tame problems and the use of “stakeholders” for wicked problems. This distinction highlights the fact that while tame problems can be classified into the appropriate fields in which trained experts can deal with them, wicked problems rely on a range of people (those who have a stake in the problem and

the solution) with varying skills and expertise to focus, not on solving, but on understanding the problem (Roberts, 2000: 1).

#### **4.7 The ten characteristics of a wicked problem**

As discussed in chapter one, Rittel and Webber (1973: 161-167) listed ten characteristics of a wicked problem. While it is difficult to generalise about the nature of wicked problems, they do have a certain number of characteristics or properties that they all share (Balint, et al.: 2011: 11). A number of academics just simply list the characteristics without going into any detail, which can create confusion and misunderstanding as each characteristic is open to interpretation. One has to read Rittel and Webber's article, which further explains the reasoning behind the characteristics, in order to fully understand the components of a wicked problem. The characteristics (Rittel & Webber, 1973: 161-167; Ritchey, 2013: 4-5) are outlined in the sections that follow.

##### **4.7.1 There is no definite formulation for a wicked problem**

Conklin (2005: 7) defines this characteristic as being an inability to understand the problem until a solution has been developed. This characteristic refers to the idea that in order to understand and describe the wicked problem, one must be able to formulate any possible solutions (Rittel & Webber, 1973: 161). However, these solutions usually highlight more issues concerning the problem and hence require further changes to the solution than actually solving them (Conklin, 2005: 7). So if one can succinctly define the problem and come up with reasonable and practical solutions to the problem, it is then not a wicked problem. On the other hand, if one is unable to formulate the problem, and the solutions developed cause more problems, it is then a wicked problem. Conklin (2005: 7) highlights the fact that people will have differing views on what the problem is and the acceptable solutions.

##### **4.7.2 Wicked problems have no stopping rules**

If one cannot articulate what the problem is, then one cannot give an actual or clear-cut solution. This characteristic refers to the fact that a wicked problem would have no overall, approved, solution and the only reason why the problem solving was abandoned was for factors external to the problem itself (Rittel & Webber, 1973: 162; Conklin, 2005: 7). Factors such as money, time and energy would determine the conclusion of problem solving rather

than because a solution was reached that was “good enough” for the time being (Rittel & Webber, 1973: 162; Conklin, 2005: 7).

#### **4.7.3 Solutions to wicked problems are not true-or-false, but good-or-bad**

A solution to a wicked problem is not right or wrong and instead is considered to be either better or worse, good enough or not good enough (Conklin, 2005: 7). With wicked problems, there is no generally agreed upon formula or criteria that can be used to find an indisputable solution (Conklin, 2005: 7). Instead the solution is evaluated by people who are knowledgeable in the specific field (Rittel & Webber, 1973: 162; Conklin, 2005: 7). As there are many parties involved in judging these solutions, who come from different educational backgrounds and have a variety of experience and interests, there is a wide range of opinions on offer and the options derived from these can only be evaluated as good or bad (Rittel & Webber, 1973: 162; Conklin, 2005: 7).

#### **4.7.4 There is no immediate and no ultimate test of a solution to a wicked problem**

This characteristic relates to the fact that once the solution to a wicked problem has been implemented, the effects, or rather the consequences of such a solution, may be undesirable and these repercussions may outweigh the advantages that the solution was to bring about (Rittel & Webber, 1973: 163). One cannot simply do a preliminary test or conduct a trial beforehand.

#### **4.7.5 Every solution to a wicked problem is a “one-shot operation”; because there is no opportunity to learn by trial-and-error, every attempt counts significantly**

This characteristic is similar to the characteristic above as it also refers to the fact that any solution to the problem will have consequences and, once implemented, you cannot simply undo it without causing much confusion and damage. Sometimes solutions to problems that are adopted are irreversible (Rittel & Webber, 1973: 163).

#### **4.7.6 Wicked problems do not have an enumerable (or exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan**

There are no standards or criteria one can follow to ascertain that all possible solutions have been identified with a wicked problem as it is unique in nature. A wicked problem can have many potential solutions, as well as many more which have not been thought of, unlike tame problems which have a limited set of solutions. Rittel and Webber (1973: 164) proceed to say that this characteristic is centred on a person's judgment and decision whether to pursue more possible solutions or to act on the solutions already conceived.

#### **4.7.7 Every wicked problem is essentially unique**

While the characteristics of tame problems have certain similarities amongst them that allow one to use an established set of techniques to solve them, this is not the same with wicked problems (Rittel & Webber, 1973: 165). However with a wicked problem, each solution is unique and specific to that problem and each problem must be approached differently, whereas with tame problems, they can be approached in the same way. Rittel and Webber (1973: 165) give the example of the construction of a subway in one city, an activity which must be considered different to the construction of a subway in another city because each city has a different population and transportation habits.

#### **4.7.8 Every wicked problem can be considered to be a symptom of another [wicked] problem**

The title of this characteristic is quite self-explanatory. One has to be able to identify the root of the problem in order to be able to solve it. While trying to find a solution to the problem, you encounter another problem within the problem you are trying to resolve which, in turn, manifests as a wicked problem (Rittel & Webber, 1973: 165).

#### **4.7.9 The causes of a wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem's resolution**

This characteristic relates to the fact that there is no standard way of explaining the problem, and that each individual will describe the problem differently, depending on how they see and

interpret it (Rittel & Webber, 1973: 165). The problem is explained in the way that will make that individual's solution seem like the most plausible.

#### **4.7.10 [With wicked problems,] the planner has no right to be wrong**

In the scientific community, scientists are able to develop hypotheses, test and refute them, without any consequences to the scientist themselves or their environment. However, in a social context, one cannot adopt this way of experimenting and discovering whether something is true or false with no repercussions, as there are consequences. In a social context, one tries to improve something, not solve it; and while scientists can remain detached from the solving of their hypothesis, in a social context, the person remains liable and in charge of the consequences of their solution.

While the above-mentioned characteristics help one to understand how a wicked problem “presents” itself, the origins behind the wicked problem, such as how it came about, the causes, and how no solution controls it, varies from one wicked problem to another (Armstrong, 2013: 19), thus differentiating itself from a tame problem which can be solved by reusing an idea or solution that has been tried and tested before.

#### **4.8 All ten characteristics?**

The “inventors” of the wicked problem, Rittel and Webber, do not mention whether a problem has to have all ten characteristics. Ritchey (2013: 3) highlights the fact that a few of Rittel and Webber's ten characteristics are closely related and that there is a certain degree of overlap amongst them and so the set can be narrowed down to at least five.

The table below (Table 1) shows how Rittel and Webber's (1973) characteristics have been adapted and changed over the years by Conklin (2005) and Burns, Hyde and Killett (2013).

**Table 1: Comparison of a wicked problem’s characteristics**

Rittel and Webber (1973)	Conklin (2005)	Burns, Hyde, Killett (2013)
No definite formulation	Do not understand the problem until a solution has been developed	No definite formulation
Have no stopping rules	Have no stopping rules	Search for a solution is open-ended
Solutions are not true-or-false, but better or worse	Solutions are not right or wrong	Solutions are not true-or-false, but good or bad
No immediate or ultimate test of a solution		
Every solution is a “one-shot operation”	Every solution is a “one-shot operation”	
No enumerable set of potential solutions	No given alternative solutions	
It is unique	It is unique	
A symptom of another wicked problem		Symptom of another problem
Causes of wicked problems can be explained in numerous ways		No rules or criteria to determine the correct explanation
Planner has no right to be wrong		

While both Conklin (2005) and Burns, Hyde and Killett (2013) agree on the first three characteristics in accordance with Rittel and Webber’s (1973) characteristics, that is as far as the similarities go. However, there are two characteristics that the researchers agreed upon that should be excluded from their interpretation of the characteristics, and that is Rittel and Webber’s “No immediate or ultimate test of a solution” and “The planner has no right to be wrong”. While they disagree on the other characteristics, they agree that these two are repetitive.

#### **4.9 Differences between tame and wicked problems**

In the two sections above, the individual characteristics of a wicked problem and a tame problem were discussed. Turning now to the differences between them, there is a clear link between the differences between wicked and tame problems and how this is exemplified in the definition of a wicked problem provided in 1967 by Churchman (Norton, 2005: 133). There are four factors that distinguish a wicked problem from a tame problem. Table 2 lists the differences between a tame problem and a wicked problem.

**Table 2: Characteristics of a tame problem and a wicked problem**

Characteristic	Tame Problem	Wicked Problem
The problem	Has a clear definition of what the problem is and, as a result, is also able to “unveil” the solution	No agreement about what the problem is and each attempt to create a solution results in the problem changing
The role of the stakeholders	Cause of problem can be determined by experts in the relevant field through the use of scientific data	Stakeholders will have differing ideas about what the problem is and the causes of the problem
The "stopping rule"	The problem is solved	There is no definitive solution to the problem and as a result the task ends when external forces (such as time and budget) prevail
The nature of the problem	The problem is similar to other problems which have protocols in place to achieve a solution	As every problem is unique and there is no set protocol in place, solutions are based on the multiple judgements and opinions of the stakeholders

Source: Kreuter et al., 2004: 443; Batie, 2008: 1177

In some cases, a relatively tame problem can transform and evolve, due to the consequences of certain events, into a wicked problem (Kreuter et al., 2004: 444). Evidence of such transformations are usually found in the health sector (Kreuter et al., 2004: 444). On the other hand, some wicked problems can be tamed, but this is not often and it should not be assumed that it can always be achieved (Roberts, 2000: 1).

Batie and Schweikhardt (2010: 23) and Batie (2008: 1185) state that there are two features that can be used to distinguish a tame problem from a wicked problem, and these features are certainty and conflict. For example, tame problems have a relatively low uncertainty with regards to the causes and effects of the given problem. There is also a low possibility of social conflict in relation to tame problems as there is an overall agreed upon solution to the problem. In contrast, wicked problems have a high level of scientific uncertainty as well as a high level of social conflict on how to address the problem and whether there are any possible solutions.

#### **4.10 Solve and resolve**

While you can solve a tame problem, you cannot solve a wicked problem. Instead, they can only be “resolved” for a period of time before the issue comes up again (Norton, 2005: 132). Jeff Conklin says something similar to this effect. He says that one does not solve a wicked problem; rather, it is a case of “negotiate shared understanding and shared meaning about the

problem and its possible solutions” amongst the stakeholders (Conklin, Basadur & VanPatter, 2007: 4).

Unfortunately one can only learn how to cope and manage a wicked problem, and even then these different management strategies would change from problem to problem depending on the social context. However this topic on strategies used to deal with wicked problems and methods tried and discarded trying to tame wicked problems is not the focal point of this dissertation and will not be further discussed.

#### **4.11 E-book usage in academic libraries: is it a wicked problem?**

Taking what has been discussed about wicked problems and tame problems in this chapter thus far, applying this knowledge should assist in identifying whether the task of finding out how e-books are being used in academic libraries is proving to be a wicked problem.

To help understand whether it is a wicked problem or not, the subject matter (research into e-book usage in academic libraries) was discussed in chapter three. Chapters two and three highlighted the findings that the following factors are proving to be major issues in producing accurate and reliable data for reference and reuse. These issues, that appear in the literature, and which were discussed in chapter three, are:

- Location
- User response
- Method of research to collect the data
- Confusion over terminology
- Usage and awareness of e-books

Instead of using Rittel and Webber’s ten characteristics, the five characteristics of a wicked problem listed by Burns, Hyde and Killett (2013: 515) will be used to aid the analysis. These five characteristics are listed as the following (Burns, Hyde & Killett: 2013: 515):

1. Wicked problems have no definitive formulation
2. The search for a solution to a wicked problem is “open-ended”
3. Solutions are not true-or-false, but good or bad
4. No rules or criteria to determine how the problem should be explained
5. It is a symptom of another problem

The reason for using Burns, Hyde and Killett (2013) instead of Rittel and Webber's (1973) characteristics is that any information or thoughts and opinions might become monotonous and repetitive because, as was stated earlier, Rittel and Webber's ten characteristics can be shortened due to their repetitiveness. The reason why Conklin's (2005) six characteristics are not being used is because, while Burns, Hyde and Killett's work is the most recent development in the field of wicked problems, they have also developed and put into practice their characteristics, whereas Conklin discusses the application of the theory and the methods used in tackling a wicked problem, but has not put it into practice.

The characteristics in relation to e-book usage in academic libraries and the literature discussing it, is analysed below.

#### **4.11.1 Wicked problems have no definitive formulation**

It is only recently that institutions have started paying attention and investigating e-book usage at their institutions. While circulation statistics showed that people were accessing the e-books, it was unclear whether they were actually being read. Due to this realisation, some institutions which have provided e-books for at least ten years, are researching what their patron's attitudes and perceptions are, only to discover that many did not know about the service.

In relation to this characteristic, it is not a wicked problem as researchers are realising that e-book usage is a problem and acknowledge that further research needs to be done, especially with regards to the link between the use of electronic screens and reading comprehension. However, researchers are interpreting the issue differently, if acknowledging it at all, so it can be argued that there is no definite formulation or hypothesis.

#### **4.11.2 The search for a solution to a wicked problem is "open-ended"**

Understanding e-book usage has only been identified as a problem within the past few years due to the realisation that the method which was currently being used and accepted by libraries (the receiving of usage statistics from the vendors), was not revealing accurate information. As this problem comprises a social component involving multiple views, from the researchers themselves to the research conducted, if a solution is reached it would have to be implemented on an institutional level as academic institutions are affected and influenced

by the community which uses their services. This links to the issue of comparison with regards to location of institutions mentioned in chapter three. Some communities may be more technology-efficient than others.

From the above statement, e-book usage as a problem can potentially be seen as wicked as there will be no agreed-upon solution.

#### **4.11.3 Solutions are not true-or-false, but good or bad**

The solution to any problem that involves people should not be considered as either true or false, such as is found in scientific experiments, as each individual is different due to their education, culture and upbringing, and it is not easy to predict what they might do, unlike the fixed rules when you play a chess game. A solution to improve awareness of e-books would be to inform and educate the lecturers, who would in turn recommend resources to students.

An example of a possible solution to the collecting of accurate data in e-book usage research would be to not use a survey as a research method, which exacerbates issues such as confusion over terminology and misinterpretation of questions. Instead of a survey, a focus group or a semi-structured interview should be used, where the confusion over terminology would (it is to be hoped) be eliminated. However, these research methods are expensive and would use up a lot of the research budget for the department, thus excluding other research from taking place. Any solution to the collection of accurate data on e-book usage would have a large monetary repercussion and when academic libraries are already struggling with budget cut-backs, this proves to be quite crippling.

While some solutions have an instantaneous response to the problem, this is not the case with a subject such as e-book usage. While research has indicated that e-books have an impact on cognitive issues, they are here to stay. Due to the fact that people have varying degrees of computer literacy (which also links to Prensky's digital native and digital immigrants), a solution may not necessarily work.

E-book usage can be seen as a wicked problem with regards to this characteristic as attempts to discover e-book usage differ depending on the research method used and questions asked.

#### **4.11.4 No rules or criteria to determine how the problem should be explained**

This characteristic links to Rittel and Webber's (1973) characteristic concerning a wicked problem's "uniqueness". The fact that electronic books are a relatively new invention supports the notion that e-book usage as a problem is "unique". However, when you consider other aspects of e-book usage, such as reasons for non-use, eye-fatigue being one of them, this reason is not new due to the fact that people complained about eye-fatigue with micro-readers and computers, before electronic books became available.

Researchers also interpret and approach the aspect of e-book usage in different ways and in relation to their institutions, thus creating a variety of research and literature. It has been reiterated throughout the past two chapters, e-book usage differs from institution to institution. For example, one institution may find the provision of e-readers and tutorials on how to access e-books are needed, while another institution may find that increased awareness of the service, such as posters, is needed.

This links to the previous point, where it was stated that the approach to the investigation of e-book usage differs from researcher to researcher, and while the overall problem (e-book usage) is acknowledged, the research into the problem and possible solutions are not the same from researcher to researcher.

#### **4.11.5 It is a symptom of another problem**

The issue of whether e-book usage is a symptom of another problem is debateable. E-books were first invented as an answer to the problem concerning information distribution, and also to prove that such a feat could be achieved. In other words, it can also be understood that concerns about e-book usage is a symptom of uncertainties surrounding the technology of e-books, which in turn is a symptom of the problem concerning information distribution.

Some would argue that academics are over-analysing the issue of e-book usage as people would use whatever format is available to them at their time of need, while others would argue that e-book usage is a problem that produces long term effects, such as reading comprehension, especially if e-books are incorporated into the school curriculum.

## **4.12 E-book usage in academic libraries: is it a tame problem?**

According to Rittel and Webber (1973) if it is not a wicked problem, it is then a tame problem. In the section above, Burns, Hyde and Killett's (2013) five characteristics of a wicked problem is applied to the problem of e-book usage. Now a similar approach will be used to compare it to the characteristics of a tame problem.

### **4.12.1 A well-defined and stable problem statement**

While the aims of the majority of the articles in the collected research were to discover e-book usage and perceptions, it was not the sole purpose of some of the articles. The research questions and methods used did not necessarily focus exclusively on e-book usage and perceptions. This, in conjunction with the different results the research methods would produce and the variety of institutions examined, indicates that there is no well-defined and stable problem statement in which the results can be determined.

### **4.12.2 Definite stopping point – we know when a solution has been reached**

There is no definite stopping point: the problem involves multiple viewpoints and opinions and the research produces differing or inconclusive results. The literature itself does not provide solutions, it collects the data that e-book usage and awareness is low, but does not stipulate how the institution could or should combat these issues.

### **4.12.3 The solution can be objectively evaluated as right or wrong**

In a situation like this, there would be no overall agreement to decide whether a solution would be right or wrong, so this characteristic does not fit the problem. The fact that it is not a scientific equation or a chess match, but involves multiple stakeholders each having their own agenda, reinforces this idea. Each problem would have to be analysed in relation to the context of that institution, and then a solution may be implemented, that may only work in that institution.

### **4.12.4 Belongs to a similar class of problems which are solved in a similar way**

One conducts research in order to discover whether a product or service is being used. However with e-book usage, there are many factors that affect it, such as the electronic

format of a book may not be available to the institution and, without further research, it is impossible to be sure if the title in another e-format can be substituted. The format issues are the most pertinent. Is a printout of an e-book still an e-book?

Factors such as screen size may affect reading ease and comprehension. While e-book usage as a problem can be argued as unique, it does relate to problems that have been researched using observations as the method of choice. These problems that have had previous research conducted are text presentation in different forms and paper versus screen reading comprehension. However, there is a relative lack of research about the substitutability of books in e-format for those in print format, let alone the possibility of interchanging different e-formats.

#### **4.12.5 Have solutions which can be easily tried and abandoned**

Any solution to e-book usage would not have an instantaneous result and hence cannot be tried and abandoned with ease. Any results from the solution implemented would be gradual. The research into e-book usage would require multiple follow-up with a large sample population to see if there was any improvement.

#### **4.12.6 Comes with a limited set of alternative solutions**

While the solutions to the problem can be argued as being many, they can also be argued as being limited, as everyone would agree that the only solution to the problem would be to carry on with what they were doing and how they were approaching e-book usage. Solutions are also limited due to the fact that technology is forever evolving. A solution may be implemented for one problem, but by then, a more up-to-date version, signalling the arrival of new problems, has been introduced.

Due to the difficulty in trying to compare the problem concerning e-book usage to the characteristics of a tame problem, it can be argued that it is not a tame problem as e-book usage is not static, but an ever-evolving problem. This statement supports the idea that it is a wicked problem due to the inability to fully grasp the problem as well as the solution. While it fits the characteristics of a wicked problem, the researcher is hesitant to call it such as e-book usage is a complex issue with many interconnecting strands.

### **4.13 Support from the literature**

With regards to the literature and whether it provides any evidence on whether it is a wicked problem or a tame problem, Conklin, Basadur and, VanPatter (2007: 4) state that “there are no single stakeholder wicked problems”. They say that for a wicked problem to have been identified, it would have been discovered or developed in a conversation amongst a group of people (Conklin, Basadur, VanPatter, 2007: 4). Going by this statement, this means the potential existence of a “wicked problem” needs to be discussed more widely before it can be recognised as such.

In Churchman’s (1967: B-141) guest editorial he says that non-wicked problems (in other words tame problems) can be found in the “arena of play” and he gives nursery schools and academia as examples. One does not know whether Churchman was saying this in jest in relation to Rittel not stating how far and wide one can find wicked problems in his seminar, or if he was revealing an insight. This is another way of saying that wicked problems cannot be found at school, university or a higher education level. This is in contrast to Rittel and Webber (1973: 160) who state that public policy issues such as the modification of the school curriculum is an example of a wicked problem. Here we see that while a wicked problem can be found in the educational sector, it has to be in relation to a policy. If Churchman’s insight is correct, then it is suggesting that the focus and objectives encountered in the classroom and educational assignments are limited in scope and do not necessarily reflect the “social messes” that characterise the stuff of real life.

A solution to the reproduction of reliable research on e-book usage in academic libraries would be to implement a research framework and set of techniques policy to which everyone would adhere, thus facilitating the comparability of research findings.

It can be argued that the literature is inconclusive on whether e-book usage is a wicked problem or not. While Conklin, Basadur and, VanPatter (2007:4) do bring up a valid point about it not being a wicked problem if only one individual expresses it, this does not exclude it from being a wicked problem or a point of interest.

### **4.14 Conclusion**

This chapter discussed the characteristics of Rittel and Webber’s (1973) definitions of a wicked problem and a tame problem before applying the knowledge gained from such a

discussion to the issue of e-book usage in academic libraries. It was discovered that while it fits the characteristics of a wicked problem and not the characteristics of a tame problem, the researcher was hesitant to call it such a problem as the characteristics do not completely encapsulate the problem of e-book usage.

## Chapter Five: Conclusion

### 5.0 Introduction

This chapter reviews the analysis and draws a set of conclusions and recommendations.

### 5.1 Conclusion

Academics and researchers alike have been stating that the shift from reading print to reading from a screen was going to change how people read, write and comprehend. Levy (1997) is quoted as saying;

[The Digital library] is participating in a general societal trend toward shallower, more fragmented, and less concentrated reading (Levy, 1997: 202).

While such proclamations were made over the years, they were ignored by society and electronic devices, and more recently, e-books have infiltrated into the lives of many, even becoming a tool for teaching in schools. While research has focused mainly on e-book usage and users perceptions as well as reports on e-book expenditure amongst institutions (Library Journal, 2010), little research is conducted on print versus digital literacy and the negative effects reading from a digital device may have on an individual.

The aim of this dissertation was to discover whether the issue of e-book usage in academic libraries constituted as a wicked problem or a tame problem. Research that was conducted in the United States and the United Kingdom spanning a ten year period was collected and analysed. While each article had the issue of e-book usage in common, the aims of the articles differed, resulting in a representation of a variety of research methods, target populations, questions and results.

Through systematic analysis, a variety of interesting issues emerged from the collected research: however, two issues stood out the most. The first one was that many participants did not know what an e-book was, and in some cases it was also discovered that participants did not know what an electronic resource was. Some participants who had stated they had never used e-books, commented on their usage of *Google Books*. Not all the articles in the collected research stated whether they had included a definition or not. One article in particular stated that even with a definition, participants still expressed confusion. Another

interesting fact that was only highlighted in three articles was confusion over the term “usage”. This highlights a particular weakness in the research of e-book usage as everyone’s idea of use differs from person to person.

It is difficult to produce accurate results and for other researchers to interpret those results when there is confusion over what an e-book is and what is meant by the term “usage”. There is also the misinterpretation of questions. For example some questionnaires specifically look at e-books provided by the institution’s library, but the researcher does not know whether the participant may be talking about their own personal use of e-books. Another interesting point that emerged from the analysis of the questions was that some questions were too vague to collect accurate data; and other questions were asked, but had no value in the overall research.

## **5.2 Recommendations**

While this dissertation only focused on research that was produced from the United States and the United Kingdom, there was an obvious lack of research being produced from European countries, Africa and Australasia. It is evident that more research needs to be done on the subject of e-book usage on a global scale especially as the internet and the use of electronic resources are replacing the library and the physical book. This is especially worrying when studies have shown that the human brain does not necessarily comprehend and retain information read from a screen (Mangen, Walgermo, & Brønnick, 2013).

While some academic libraries (as was found in the United States and the United Kingdom) have been providing e-books for years before the explosion of e-reader technology, they were doing so without necessarily considering the consequences. Consequences such as: spending copious amounts on a service that was not being used due to unawareness; the disadvantages of spending long periods of time reading from a screen; and that the print format was readily available. This early adoption of e-books may seem to be short-sighted by the libraries due to the problems outlined above which were only discovered after many years of e-book provision. An institution’s reputation relies on its library and the services and resources it provides to its patrons.

In chapter four, characteristics of a wicked problem were analysed in comparison to the problem of e-book usage, and while the comparison revealed that it was a wicked problem,

the researcher is hesitant to call it such; as it is believed that the characteristics of a wicked problem do not encapsulate the enormity and complexity that surrounds e-book usage. However, it is a problem, one that came into existence with the advancement of technology which changed the way in which the reader interacts with the physical format and replaced it with an apparent replication of that format. Furthermore, it will remain a problem until more research is conducted into the process of reading with electronic devices and understanding the advantages and disadvantages of such a process.

Folb, Wessel and Czechowski suggest the following;

Perhaps librarians are spending too much time thinking about information containers (print versus electronic), a library-centric way of thinking, and not about the content (Folb, Wessel & Czechowski, 2011: 226).

They proceed to state (using data collected from their research) that users would use the format (or “container”) that was available to them. The idea that people are more interested in the content than the “container” or format in which it is consumed is not a new idea, and was expressed by the OCLC in 2004 (OCLC, 2004). There is always the possibility that we as researchers are over-thinking and over-reacting, and while research supports such claims as the negative effects of e-reading and comprehension, it has not stopped society from embracing this technology, and hence it is safe to say, that e-books are here to stay.

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