Step by step approach for qualitative data analysis

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ABSTRACT

The application of qualitative techniques is increasing and acceptable among the researchers. However, majority of the researchers and postgraduate students did not consider the importance of giving detailed procedures in qualitative data analysis for better understanding of the qualitative results. There is a need to uncover step by step approach in qualitative analysis for better application of qualitative techniques. This article presented a detailed step-by-step approach for qualitative analysis with the aid of a pragmatic illustration. The analytic process presented employed the example of qualitative data transcribed into narrative data to develop basic themes. The employment of Domain Analysis and Thematic Network analysis in the example given helped basic themes to converge to higher order themes. The article submitted that this approach in qualitative analysis will aid thorough understanding of qualitative data interpretation. This is extremely thoughtful approach for the systematic presentation of qualitative analysis.

1. Introduction

The use of qualitative techniques is becoming more popular and acceptable in the past few decades among researchers (Nazmy, 2016; Braun and Clarke, 2006; Holt, 2010; Hutchison et al., 2010; Peek and Fothergill, 2009; Attride-Stirling, 2001). The employment of qualitative techniques depends on the concept and the objectives of the research as well as the types of information that are needed to achieve the objectives. The exploratory research that depended on the qualitative methods of analysis needed explanation of its deeper meanings and understandings through the subjective views of the respondents (Akinyode, 2017). This is to understand the specific situations, issues and circumstances so as to explain why things actually happen in an environment where the research is being carried out. Literature indicated that many researchers are promoting and applying qualitative techniques which can be termed as

positive step towards a deeper understanding of social and humanity occurrences. However, while these techniques are receiving attention from researchers, majority did not give detailed steps to be taken on how to embark on the analysis for the purpose of better interpretation of the qualitative results.

If the results of qualitative research are to be given better interpretation with the aim of significant and beneficial implementation of the recommendation, the importance of proper understanding of the actual steps to be taken in qualitative data analysis cannot be over-emphasised. However, much attention has not been drawn to the task of how to analyse and present the qualitative data in a logical manner. Certainly, researchers identified the need to report the techniques of data analysis to enhance proper interpretations and assist young researchers in similar research (Fielding and Fielding, 1986; Attride-Stirling,

2001; Braun & Clarke, 2006). Nonetheless, progress in qualitative research literature in the past few decades on different subjects is definitely inspiring (Creswell, 2012b; Miles et al., 2014; Denzin, 2001; Morse, 1994). While some researchers focussed their attention on how to integrate quantitative and qualitative research (A. Bryman, 2006; Alan Bryman, 2007; J. W Creswell & Clark, 2011; Onwuegbuzie & Leech, 2006), some examined the use of the software as a methodology in qualitative research (Hutchison, Johnston, & Breckon, 2010; Jones, 2007). The focus of some researchers was validity in qualitative research (John W Creswell & Miller, 2000; Wagner et al., 2012) while some discussed about different strategies in collecting qualitative data (Corbin & Strauss, 1990; Holt, 2010; Peek & Fothergill, 2009; Roulston, 2010; Walker & Myrick, 2006). Moreover, Attride-Stirling (2001) and Braun and Clarke (2006) studies were limited to thematic analysis approach.

As these techniques are becoming more popular and acceptable in research, it should be certified that, it is applied to enhance robust methodology. However, there is relatively limited guide on how the qualitative method is applied. Agreed with the recent advancement and practice of qualitative analysis, it is imperative to clear that this paper is not trying to limit the sufficient understanding of other researchers on how to analyse qualitative data. Nevertheless, lack of clear and succinct procedures to be taken in the analysis may be frustrating to young researchers (Braun & Clarke, 2006). This necessitates the importance of uncovering step-by-step approach in conducting data analysis approach for easy and better application of qualitative techniques (Attride-Stirling, 2001; Braun & Clarke, 2006). This paper therefore hopes to uncover step-by-step approach in conducting a data analysis through five steps analysis procedures namely Data Logging, Anecdotes, Vignettes, Data Coding and Thematic Network so that the techniques of analysis may be properly interpreted and assist other young researchers in similar research.

This article aims at bridging this research gap and add to the body of knowledge. It details procedure in conducting qualitative data analysis and employs five steps approach in the analysis. The article submitted that this approach in qualitative analysis will aid thorough understanding of qualitative data interpretation. This is extremely thoughtful approach for the systematic presentation of qualitative analyses. The technique in the article provides an empirical example through practical and effective procedures for conducting an analysis in the application of the steps. This enhances logical and systematic steps analysis of qualitative

data to facilitate better understanding and interpretation of the research results.

The second section of this paper centres on the literature review that explained the context of qualitative research technique on what qualitative technique is all about and its importance. This is followed by the methodology in order to give brief description of the materials used in the paper. The analytic steps that explained the application of five steps analysis procedures are then presented and discussed in the fourth section of the paper. An empirical example for analytic steps that followed the steps explained in section four using a survey as empirical example in qualitative research technique is the focus of section five before the conclusion in section six.

2.   The Context of Qualitative Research Technique

Creswell (2007) described qualitative research technique as a process where the research problem is studied in its natural setting rather than having subjects studied in a laboratory. Collection of information through this method allows for gathering information from multiple sources aimed at understanding the meaning of the problems through the respondents or involved audience. The data collection in qualitative procedures is not restricted by categories but allows for in-depth and detail information (Patton, 1987). Van Maanen (1979) defined Qualitative research approaches as an array of techniques which gives interpretation through decode, describe, translate, and give the meaning that is naturally occurring and not the frequency phenomena. Qualitative research approaches are social or organisational behaviour research approaches that produce results that are not obtain via statistical procedures or other quantification approaches (Naoum, 2008). It is subjective in nature and its meaning and experiences always described verbally. Richards (2005) in his own opinion sees qualitative data as records of observation or interaction that are complex and cannot easily reduce to numbers. People's behaviour research through observation and interview are through qualitative approaches (Johnson and Barach, 2008; Naoum, 2008; Mahmud, 2008). Qualitative approaches give room to a deeper understanding of the subject matters as they exist in their own unique environment (Miles and Huberman, 1994; Miles et al., 2014). Qualitative data can be obtained through open-ended questions which gives opportunity to the participants to provide information that do not restrict the participants' opinion (Creswell and Clark, 2011). The most widely recognized and most widely

used qualitative research approaches are ethnographic, interviews, focus groups and observations.

There are varieties of benefit that can be derived in the use of qualitative techniques. Data collection through qualitative techniques establishes rapport between the interviewee and interviewer. Through this, the interviewer or researcher directs the attention of the interviewee to the material and motivate him or her to carefully answer the questions (McBurney and White, 2007). The questions of which fact could be derived from the respondents or interviewee is the main target in applying qualitative techniques (Johnson and Barach, 2008). It gives room for the researcher to give further and better explanation on questions whenever he takes note that the interviewee misunderstood any question. The advantages of qualitative research approach identified by many scholars include conveniences of the researcher and the respondents, opportunity of taking place at any time, at any place such as respondents' home, on the street, in a respondents' shop or office. Other advantages are face-to-face contact between the researcher and the respondents, taking place in a relaxed and conducive atmosphere, identification of respondents' body language and expressions, accuracy of the data, researcher's control over the pattern of discussion and high response rate (Creswell and Clark, 2011; Dillman, 1978; Erdos and Morgan, 1970; Jackson, 2009; Naoum, 2008; Roulston, 2010; Mahmud, 2008). Cultural anthropology and cultural patterns of a setting gives birth to ethnography as a research approach which gives knowledge of what can be derived from that setting (Johnson and Barach, 2008). Qualitative research questions obviously describe and incline to address questions such as "what" and "how" "to what extent", in what way" (Onwuegbuzie and Leech, 2006). This allowed the collection of information from multiple sources. This prevented data restriction but allowed in-depth information and better understanding through them that gives natural meaning of the phenomenon in a subjective way. This approach obtained data through open-ended questions by face-to-face interview.

Naoum (2008) classified qualitative research approach into exploratory research and attitudinal research. The application of exploratory research is for statement of problems to be cleared and precise when the amount of knowledge on the researched topic is limited. Data collection is usually through interview or focus grouped discussion technique with intention of determining a situation, screening the alternatives and discovering new ideas (Naoum, 2008; Mahmud, 2008). Exploratory research presents the raw data exactly as participants have explained in the open-ended interview, recorded conversation or observation description in the field of study. It gives insights and better understanding about the subject to carry out further investigation. The need for the precision and clarity of the statement of problems on the limited amount of knowledge on a researched topic makes such study to be an exploratory research. The use of attitudinal research evaluate the opinion of the participants, their view and their perception subjectively towards a particular object in terms of variable, factor and question (Naoum, 2008). Generally, the use of theory is less importance in qualitative research approach compared with quantitative approach. Unlike quantitative, no standard terminology or rules about placement of theory at the beginning of qualitative research. It can however be placed towards the end of the study to become the product of the qualitative research. This can serve as hypothesis that quantitative research can test.

3. Methodology

This paper basically employs relevant literature reviews through published researched journal articles, books, conference proceedings, unpublished thesis and monographs. The literature review examined and synthesized underlying subject aimed at identifying issues relating to qualitative research. The relevant literature reviews centred on the subject through Search Engines such as Google scholar, Library of congress, LISTA (EBSCO) and Web of Science core collection (Thompson Reuters). Many literature were consulted through each of these search engines but after winnowing, only thirty-eight were used and quoted in this paper. The selected thirty-eight literature were based on their contents' relevancy to the subject of discussion in this paper. Those that were not directly relevant to the subject were discarded. The analytic process presented employed the example of qualitative data transcribed into narrative data to develop basic themes. The employment of Domain Analysis and Thematic Network analysis in the example given helped basic themes to converge to higher order themes.

This article illustrates the step by step approach in qualitative analysis for better application. In attempt to demonstrate a practical approach, the next section explains the five steps analysis procedures for proper interpretation of qualitative analysis technique. These steps include Data Logging, Anecdotes, Vignettes, Data Coding and Thematic Network. This is followed by an empirical example to elucidate how each step can be implemented in practice.

4. The Analytic Steps in Qualitative Research Technique

Attride-Stirling (2001) divided the qualitative analysis procedure into three main stages and these include the reduction of the text; the exploration of the text and the integration of the exploration. However, it should be noted that there are varieties of ways through which qualitative analyses can be conducted and not limited to this common three-stage process (Attride-Stirling, 2001; Braun & Clarke, 2006). Each of the stages comprises of abstract level of analysis. These can further be divided into stages for better understanding. This article aims at displaying step-by-step approach in conducting a qualitative data analysis through five steps analysis procedures. This is with a view of interpreting accurately the techniques of analysis and assist other qualitative researchers. It is assumed that the preliminary stages in research such as selection of research paradigm, choosing of sampling techniques, participants, development of semi-structured questionnaires if required, data collection, and transcription of field notes have already been completed. The application of five steps analysis procedures as said earlier include Data Logging, Anecdotes, Vignettes, Data Coding and Thematic Network. Each of these is explained in the next sub-sections.

4.1 Data Logging

This is the process through which the raw data from either personal interview, focus grouped discussion, observation or other form of qualitative data collection was recorded in a recorded sheet. The process is also known as data documentation which is the next level after the data collection (Khan, 2008; Easterby-Smith et al., 2008). Data logging meant to serve the purpose of documenting simultaneously the data collected through every form of data collection, researcher's description, feelings, view and insights as well as assumptions and ongoing ideas about the subject matter. The process should be highly interactive that will necessitates the researcher to go back to check against original data (field notes transcripts) to compare occurrences to identify specific issues.

4.2 Anecdotes

This is to streamline the data log to make comprehensive notion of the data collected. It has to be achieved immediately after the researcher get home from the field survey. This takes the narrative form of writing. Khan (2008) saw the Anecdotes as the chronological sequence of transformation actions. This guides the researcher in generating feelings and building the themes. The researcher has to write anecdotes by summarizing the chronological sequence on the narrative explanation given by the interviewee on the subject matter. This can be complemented by the researcher's observation and other forms of data collection like ethnography and photograph. This will help in developing themes.

4.3 Vignettes

Vignette is a useful term in qualitative research to represent narrative or story investigations on the interpretation of person, knowledge or circumstances that the researcher describes. The in-depth description of the setting, participants and themes of qualitative research are the focus of vignettes to establish the credibility of the study. It is a step further deep from anecdotes and reorganizes the multifarious dimensions of its subject for capturing, in a brief representation of the information that needs to be gathered over a period of time (Khan, 2014). This demands more attention and representation of more sense of understanding about the meaning of the research work in order to gives higher level of interpretation. The use of vignettes is to provide as much detail as possible to help the readers having better understanding and get convinced that the account is credible (Creswell and Miller, 2000) through which the readers can make decisions to apply the findings to other settings or similar situations. Vignettes therefore allow higher level of interpretation beyond mere description, higher sense of understanding about the phenomenon and allow the capturing of themes.

4.4 Data Coding

Creswell (2007) and Creswell (2012a) defined coding as the procedure of fragmenting and classifying text to form explanations and comprehensive themes in the data. It is the process through which researcher gather or 'tag' content related to a specific theme or idea (Attride-Stirling, 2001). It aims at reducing the data by sorting out the information transcript into manageable and meaningful transcript segments with the aid of coding framework. Data coding in qualitative research means assigning labels or codes to different sections of text that related with different problems. Miles et al. (2014) described coding as examination of the discrete parts of data for differences and similarities either through 'Open' or 'Axial' coding method. 'Open' coding aims at identifying the discrete concepts while 'Axial' coding is primarily to designate the manner in which links are made in new ways between the

groups and sub-groups (Walker and Myrick, 2006; Corbin and Strauss, 1990; Khan, 2008). Coding helps in separating data into categories (nodes) or themes so that data from different sources can be easily organized and compared. With significant themes coded in this manner, researcher can later examine and retrieve motivating sections and look at them as distinct files.

4.5 Thematic Network

Thematic networks aim at exploring the understanding of a subject or the denotation of an idea not to resolve contradictory explanations of a problem (Attride-Stirling, 2001) which is a means of establishing a thematic analysis of qualitative data. Creswell (2012a) categorized theme as ordinary, unexpected, hard-to-classify and major and minor. According to him, ordinary themes are those a researcher might assume to find, unexpected are the surprised themes which are not anticipated to surface during a study while hard-to-classify themes are those that contain ideas that uneasy to fit into one theme or overlap with several themes. Major one represents major ideas while minor themes are the secondary ideas within the database. The application of Thematic network is a web-like network organizing principle and representing the procedures that were employed from text to interpretation as shown in Figure 1 which was hierarchical level of basic theme, organizing theme and global theme to

show their relationship. However, this technique does not intend or pretend to discern the foundation of arguments or the end of explanations, it simply provided a technique for breaking up text and finding within its explicit explanations and their implicit implication (Attride-Stirling, 2001). The selection of phrases and words depended on research questions which researcher intended to answer. In achieving this, the transcript of the information has to be read repeatedly for proper understanding of the mind of the participants on the subject matter.

Basic theme is the utmost basic or lowest-order that result from the documented data. It demanded to be read within the perspective of other Basic themes in order to make sense beyond its immediate denotation. The combination of two or more Basic themes represent an Organising theme. Organising theme is a middle-order theme that arranged the Basic themes into bunches of similar subjects to condense the principal expectations of a group of Basic themes to reveal what is going on in the texts. Organising theme aims to enrich the meaning and implication of a wider theme that marries several Organising themes. Global theme is a group set of Organising themes seen as macro theme and super-ordinate theme that encompass the principal metaphors in the whole data and a concluding or final theory (grounded up theory). It presents an argument, position and declaration about a given matter or certainty aimed at summarising and making intelligence of bunches of
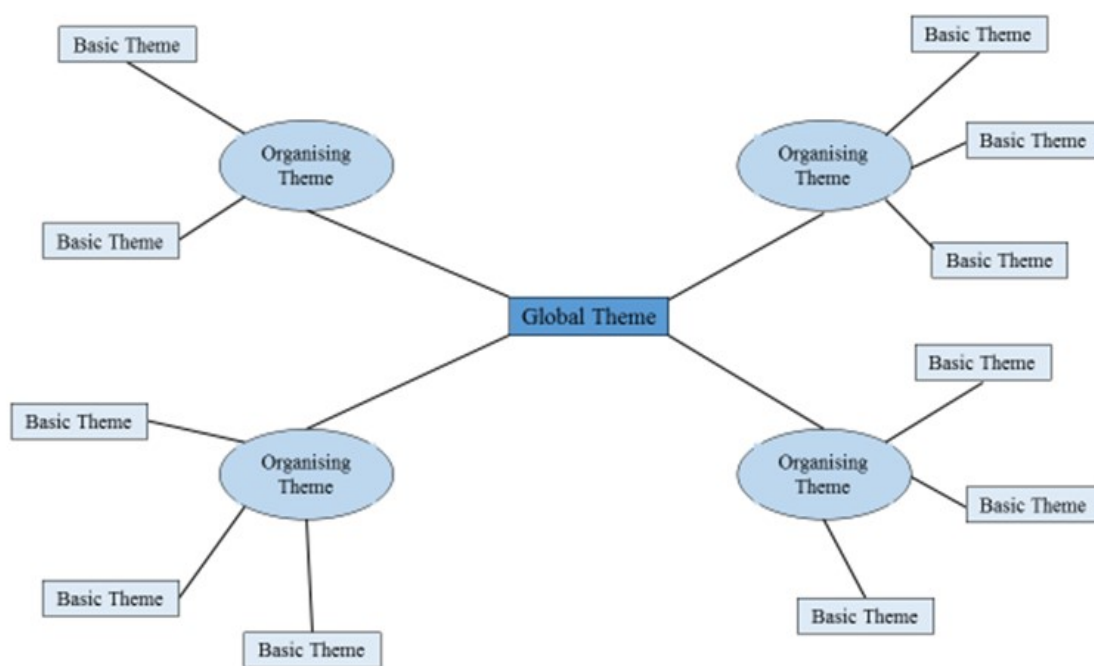

Figure 1: *Structure of a Thematic Network (Source: Attride-Stirling, 2001)*

lower-order from the data. It is the summary of the main themes and a revealing explanation of the transcripts that gave the meaning of transcripts as a whole within the context of a given analysis.

5. An Empirical Example for Analytic Steps in Qualitative Research Technique

The illustration used in this article was drawn from the analysis of a survey that focused on factors of affordability in housing in the city of Ibadan, Nigeria (Akinyode, 2017). This aspect of the article highlights the process of analysis and not the content of the interpretation. However, the examples are given where necessary to have meaningful understanding of the processes. This process commence from Data Logging of the interview among 27 participants

5.1 Data Logging

The first step is data logging. In the interview conducted among 27 participants that serves as example in this article, the raw data collected through personal interview, observation and photograph as forms of qualitative data were recorded in a recorded sheet to become data documentation. Researchers' description, feelings, view and insights as well as assumptions and ongoing ideas about the subject matter were also recorded. This was mainly to document the responses from the interview and other forms of qualitative data. The written of these responses was in form of logs that helped in preparing the anecdotes.

5.2 Anecdotes

After the researchers have written down the responses from the participants in form of logs, then they prepared the anecdotes. Anecdotes are the refined version of logs written legibly for the purpose of record. This is the second step in the qualitative data analysis that involved restructuring of the data log to have better understanding of the data collected. In the example given in this article, this was the sequential structuring of transformation activities on housing affordability problems. The researchers summarised the sequential structure of the narrative explanation given by the participants immediately after the data collection to minimise twisting of information and wrote it in form of anecdotes. These were used as the resource to extract references as nodes. This guided the researchers to generate feelings and develop the themes.

5.3 Vignettes

Vignette is the deeper step next to anecdotes that reorganised the diverse magnitudes of the subject for capturing information on the subject matter. The researchers used vignettes to represent in-depth description of collected information in form of narrative story. This was to establish the credibility of the study and have more sense of understanding about the subject to give higher level of interpretation. In the example given in this article, the use of vignettes provided detail to help the readers having better understanding and get convinced that the account is credible. With this, higher level of interpretation beyond mere description, higher sense of understanding about the phenomenon and capturing of themes were achieved. This was to enable the readers make decisions in applying the findings to other settings or similar situations.

5.4 Data Coding

Prior to the analysis of qualitative data, the interview responses were documented in form of 'logs' and later refined into 'anecdotes'. The interview text (anecdotes) through which the researchers gathered and tagged the content related data to a specific theme or idea then became meaningful and manageable text segments. This were used as the resource information in form of open data coding as 'nodes' to extract 'references'. This was to sort, arrange, manage, develop and modify the data. This aimed at preventing inconsistency for thematic development for the purpose of content analysis. The created 'nodes' provided a place to gather and store the relevant pieces of statement defined as 'references'. Based on their similarity, 'codes' created from 'references' allowed 'nodes' to be combined, renamed and deleted in the process of data analysis. At the data coding exercise, the researcher checked the transcription for accuracy and read the data repeatedly to get better understanding of the database. The 'codes' were later verified and refined into smaller numbers of 'refined codes'. However, data coding selected and obtained data carefully to avoid repetition but ignored other data that do not accurately provide evidence for the theme. These were further dissected into contextual meaningful 'keywords' through immersion from which explicit themes were emerged.

Data coding aimed at reducing the data by breaking down the interview text (anecdotes) into meaningful and manageable text segments. It was the process through which the researchers gathered or 'tagged' content related data to a specific theme or idea. 'Nodes' were created to
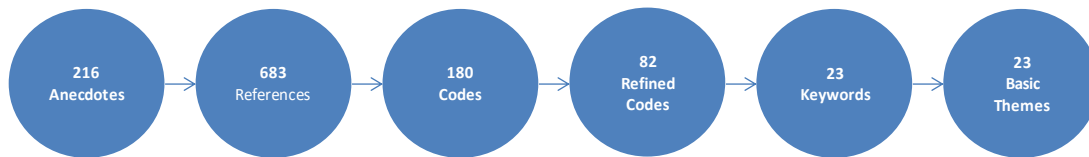
Figure 2: Refining Qualitative Data into Basic Themes

gather and store the relevant pieces of statement defined as 'references'. Based on their similarity, 'codes' as the organization of the texts into topics were created from 'references'. The classification of codes was achieved through 'cutting up' of the texts (quotations) and 'pasting' into the created nodes across the interviews. The number of codes was significantly less than that of the references and thus the bulk of data was systematically reduced. These codes were stored in particular 'nodes' (Example in Figure

2). Thus, the main issues discovered in the interview during the course of going through the text were safely stored. These were done to establish the common discourses among all the respondents. At the beginning of the analysis, a total number of 180 'codes' were created from 683 'references' across the 216 anecdotes (27 respondents multiply by 8 questions). This was later verified and refined to 82 'codes' so as to avoid repetition as shown in Figure 2. These were further dissected into 23 contextual meaningful

Table 1: From Keywords to Basic Themes

No	Keywords	The Basic Themes
1	Nearness/ Proximity	Proximity to the work-place dictates house location
2	Facility	Users are not satisfied with infrastructural facilities within their residential area in general
3	Educational Level	Users' level of education plays a role in house selection and satisfaction
4	Social	Users ascribe more importance to social prestige and family ties in selecting area of their choice as increased educational level adds to their self-esteem
5	Price	Price determines the type of house they are occupying
6	Low Wage	Low wages of users prevent many from having their personal house
7	Land	Cost of land depends on the location where the land is situated
8	Land Cost	Limited available land increases the cost of land, that affects the values of the house
9	Building Plan	The cost of Building plan preparation, processing and approval puts burden on private developers, which they try to overcome through increased house price
10	House Type	Type of House determines its price, but its value is still an undetermined factor
11	Estate Agent	Involvement of Estate Agent superficially increases the value of the house
12	Land Lord Decision	Landlords' Decision in comparing Lagos market affects the house rents
13	House Situation	Ineffectiveness of housing policy reflects on the housing quality users are building
14	Density	Ineffectiveness of Planning Regulation leads to slum development in newly developing areas
15	Housing Quality	Population increase in urban centre that increases land and housing demand has influence on housing quality
16	Planning Regulation	Conversion of residential house to commercial use leads to housing shortage
17	Housing Demand	Low housing supply resulted from road extension and conversion of residential house to commercial use
18	Housing Shortage	Increase in birth rate and youth migration increase users' population who are seeking for house
19	Housing Supply	Land is too expensive for majority of users
20	Population Increase	There is no more land available in urban centre
21	Expensive Land	The Location of house determines its quality and rents
22	Unavailability of Land	Housing density reflects the users' category with high income households invariably occupying bigger land with less number of housing units
23	Land Speculation	Land speculation through the estate agent becomes problems among users

'keywords' through immersion, from which 23 basic explicit themes were emerged during the preliminary qualitative analysis as shown in Table 1.

5.5 Thematic Network

The thematic network is in three stages and these include basic, organising and global themes. It is the process of exploring the links that exists between the explicit statements and the implicit meanings in respondents' discourse. This provided the tools for the interpretation and organisation of the themes. The development of thematic network started from the basic themes and worked 'inwards' through the organising themes towards a global theme. It is presented and illustrated in a graphic form like web-like nets, to convey the organising principle that creates them, between the outer edges (basic themes) and the inner core (global theme).

5.5.1 Basic theme

The organization of the interview text into different codes at nodes led to exploring the quotations abstracted from the interview context to establish significant and common themes among the respondents. This was done by going through each node to bring out the coded text (quotation) and checking its support across all other sources (interviews). The identification of themes to interpret the code that were significant and those that were less significant were taken into consideration. As the themes were emerging and becoming specific enough to bring out an idea, they were being modified to accommodate the discourse of the majority of the respondents. 23 themes emerged at last in the final analysis as shown table 1.

At this point, a little discussion on explicit and implicit themes can be helpful. Explicit theme is what is obvious from a data. However, for a qualitative researcher, explicitness of data is not enough. There is a search for implicit themes. The expression of the inner meaning of explicit theme is known as implicit theme. While the explicit themes help to make a quick scan of the problems, the implicit themes try to dig deeper and find out the untold stories. Behind every explicit, there are some implicit stories. Though, the number of the implicit themes can be different from the number of the explicit themes but if the objectives of the study are carefully constructed, then, there is likelihood that the number of transformed implicit themes might be the same as the number of explicit themes from which they directly generate. This is a way to reduce complexity. This was

what happened in the example given in this article such that 23 implicit basic themes generated directly from the 23 explicit themes. The Explicit Themes were not uttered but the Implicit Themes emerged through the immersion process directly.

The basic principle in selecting themes at this stage of analysis was simply through 'data saturation' whereby majority of the respondents were saying the same points i.e. referring to the same theme on a particular issue. Majority of the other respondents must support a theme picked up by one respondent before it could be considered as the theme. However, that did not really mean that a theme uttered by only one respondent was discarded. Giving full respect to the nature of qualitative research that values each item rather than the number of the items, those themes were also initially considered before accepting or rejecting. For example, the theme 'housing is cheap in Ibadan' was only mentioned by one respondent and has no support from any other respondent. It was not neglected from the analysis on the grounds that, not enough respondent had seen house rents as cheap and no thorough comparisons and deductions could be obtained, but it was neglected as it did not clearly indicate any significant direction. However, during analysis, it became increasingly common that many themes were repeating. That was why a certain quantitative measure was taken to select a theme. Preference was given to the more common themes under the assumption of looking for common discourses rather than individual narratives or subjective theories.

Moreover, while consideration was given to a data grouping to be saturated if it was replicated in more than 70 percent of the interviews and validated by member checks with the stakeholders, a theme required the support of at least 50 percent of the respondents to be included in the analysis. This was because; respondents may repeat the same thing more than one or two times during the interview that makes the salient points to be more than the number of the respondents. In view of this, data saturation point was considered to be at least 70 percent while the respondent is at least 50 percent. Bearing in mind that a small number of interviewees covered a wide range of housing affordability, care was taken that the selected themes did not enjoy prevalence among one class of respondents (stakeholders), and that they received support across the various stakeholders' groupings. This added a new level of organization to the interviews. Having moved from purely descriptive 'topics', 'categories', and 'codes', this level began the analysis proper by abstracting the coded text from its context and regrouping it into thematic

headings. The 23 significant themes (basic implicit themes) were carried into the next stage of the analysis which was formation of six Organizing themes.

5.5.2 Organizing theme

The procedure of organization and interpretation of the basic themes towards the formation of organizing theme and ultimately to the global theme followed the thematic network method of qualitative analysis (Attride-Stirling, 2001). The 23 basic implicit themes were assembled into unified and coherent structure of six organizing themes according to the fundamental story the basic themes are telling. This was illustrated graphically in a schematic web-like diagram that depicts relevant links as shown in Figure 3. The fundamental matters and discussions shared between 23 basic themes were thereafter identified and expressed through the six Organizing themes.

Though, 23 basic themes derived from the 23 keywords were not documented in any serial during their emergence but followed the way the references were input in the nodes. Nevertheless, there was a need to group them according to their topic in order to derive organizing theme. This was done in two phases. First, the themes that talked about similar topic were grouped. Second, they were put in an order in a way that the preceding one leads or is connected with the following one as reflected in Table 2. For example, three basic themes were grouped to become organizing theme and then put in a sequence. The first one talked about general dissatisfaction about the infrastructure of housing. The following one actually went a bit further and tried to generalize that most physical attributes in these housing are poor, and it is almost taken for granted that affordable houses must be in poor condition. Therefore, the second one is a continuation of the first one. The third one states that if a house has a lower price, it must be lower quality. Therefore, it is a generalized version of the first one, and is almost parallel to the second one. Therefore, the second and the third one can be considered as the continuation of first one. That helped to search for an organizing theme, which can represent in a best possible way to all these three situations. The organizing theme 'The concept of affordable houses is strongly associated with lower quality of houses and associated facilities' is found to be a best representation of the inner meaning or the implicit meaning reflected through those three basic themes collectively. That is how all the six organizing themes were constructed.

However, that was not the end, since the study would also search for a global theme, therefore, after completing the
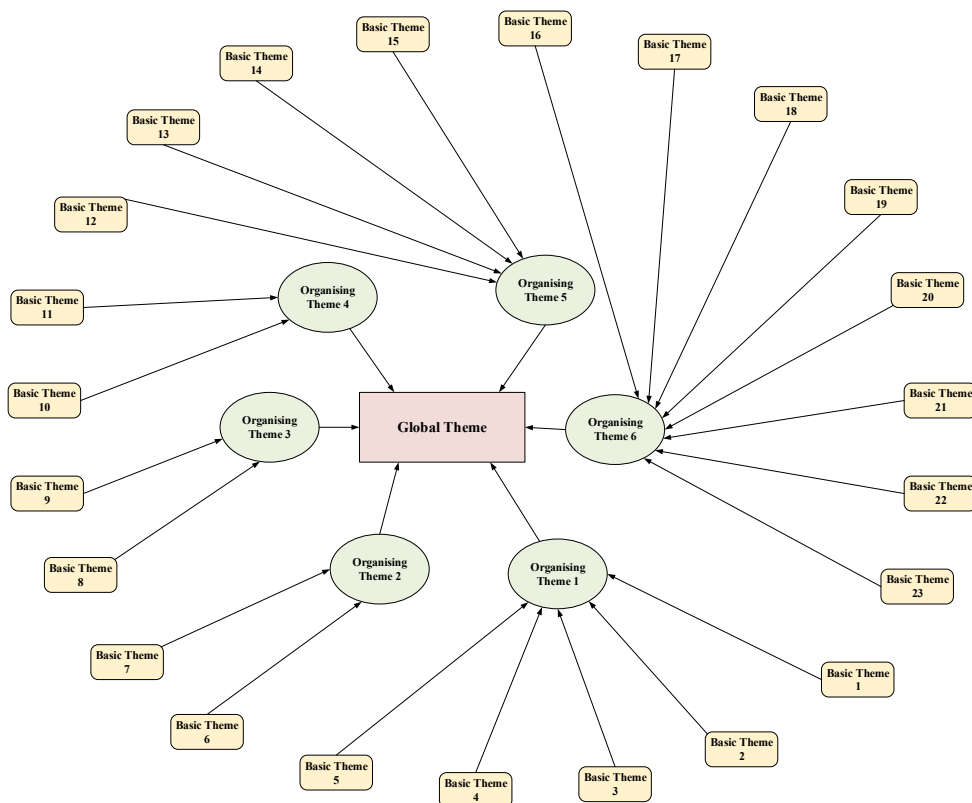

Figure 3: *Thematic network for a global theme*

construction of the six organizing themes, they were also arranged in a sequence, where the preceding one connects to the following one, and the succeeding one would not make sense if the preceding one does not appear. That gave a strong root to search for the global theme. This was the underpinning technique of thematic network.

5.5.3 Global theme

In the example given in this article, themes were organized into coherent summaries of the dissected data and thematic networks was presented as the method of analysis. The themes developed at the coding stage were used as basic themes for thematic networks. A great deal of

Table 2: Generating Organizing Themes from Basic Themes

New No	Old No	Step 3: The Basic Themes	Step 4: The Organising Themes
1	18	Increase in birth rate and youth migration increase users' population who are seeking for house	
2	15	Population increase in urban centre that increases land and housing demand has influence on housing quality	**O1** Housing shortage is not dealt sensibly by government, leading rents of desirable houses to go beyond affordable limit of low income earners
3	16	Conversion of residential house to commercial use leads to housing shortage	
4	17	Low housing supply resulted from road extension and conversion of residential house to commercial use	
5	6	Low wages of users prevent many from having their own personal house	
6	2	Users are not satisfied with infrastructural facilities within their residential area in general	**O2** The concept of affordable houses is strongly associated with lower quality of houses and associated facilities
7	5	Lower house price and lower quality of housing type are significantly correlated	
8	3	Users' level of education plays a role in house selection and satisfaction	**O3** Increase in educational level may not immediately increases affluence, but that increases higher expectation in lifestyle, and hence increases expected quality of housing
9	4	Users ascribe more importance to social prestige and family ties in selecting area of their choice as increased educational level adds to their self-esteem	
10	14	Ineffectiveness of Planning Regulation leads to slum development in newly developing areas	**O4** Physical quality of currently available affordable houses are not controlled enough by building and planning regulations
11	13	Ineffectiveness of housing policy reflects on the housing quality owners are building	
12	8	Limited available land increases the cost of land, that affects the values of the house	
13	10	Type of House determines its price, but its value is still an undetermined factor	**O5** The issue of determining the Value of House is continuously ignored by the government
14	11	Involvement of Estate Agent superficially increases the value of the house	
15	12	Landlords' decision in comparing Lagos housing market affects the house rents	
16	20	There is not much land available in urban centre	
17	1	Proximity to the work-place dictates house location	
18	19	Land is too expensive for majority of households	
19	7	Cost of land depends on the location where the land is situated	
20	23	Land speculation through the estate agent becomes problems among users	**O6** Developers can exploit House price, but government's non-intervention or ill intervention makes it even harder for low-income group.
21	22	Housing density reflects the users' category with high income households invariably occupying bigger land with less number of housing units	
22	9	The cost of Building plan preparation, processing and approval puts burden on private developers, which they try to overcome through increased house price	
23	21	The Location of house determines its quality and rents	

interpretative work was done as the themes do not 'speak for themselves'. As such, basic themes were arranged into common subject matters (organizing themes), and these were subsequently re-organized into unifying statement (global theme) which was constructed and represented graphically as thematic networks as shown in Figure 3. This was to give adequate and proper understanding of subjects in discussion or the meaning of an idea through the themes, rather than to harmonize conflicting definitions of a problem. However, the process was not by any means a linear one. There was a need to be constantly checking back, between organizing themes and basic themes, between global theme and basic themes and of course between the global theme and the coded text itself. Furthermore, there was also need to go back to the source of the quotations at both the level of code and the level of context, which required returning to the interview's scripts for proper interpretation.

As mentioned at the beginning of the previous section regarding construction of Organizing themes, where basic themes were put in a sequence after rigorous recursive non-linear process so that the construction of organizing theme makes logical sense. The same was also applied to construct the global theme. The six organizing themes went through rigorous immersion, non-linear method of checking back the interviews, and the basic themes. The target was to find a common theme that can express in a best way to indicate solutions to users' dissatisfaction on affordable housing.

6. Conclusion

The use of qualitative technique in research requires experiences in answering stated research questions in a better way. It gives detailed, coherent, transparent and consistent evidences about the subject matter. Careful and thoughtful presentation of qualitative research report in a logical manner will make such report to be convincing and acceptable to other researchers and prospective users of the findings. This article aimed at presenting a detailed step-by-step procedure of how to conduct qualitative data analysis for better application of qualitative techniques. The pragmatic illustration presented as example is incomplete as the analytic process does not include the interpretation. Nonetheless, the article has presented the systematic steps of handling qualitative analysis to ease the procedure of the analysis. Through splitting the procedure into apparently defined steps, the prospective qualitative young researchers would be able to follow the steps in a

logical manner for rigorous analysis for better interpretation of qualitative research findings.

Qualitative approach in the research may not necessarily follow any consistent systematic guideline. The point of emphasis by various qualitative researchers is trustworthiness to enhance the acceptability of collected data. Data Collection, Documentation, Analysis, and Interpretation are the classical basic methods of research. The qualitative research process runs through research design, field work and analysis stages (Attride-Stirling, 2001; Braun & Clarke, 2006). While the first two stages are practically straightforward but the logical stage is a highly intuitive, theoretically driven stage that does not take place in a modest linear arrangement. The exploratory and explanatory strength of the research determine the value of qualitative research. Revelation of the analytic process presentation of qualitative analysis in this article through Data Logging, Anecdotes, Vignettes, Data Coding and Thematic Network is imperative step and positive contribution to qualitative research to achieve better qualitative analysis. This is to provide systematic presentation of qualitative analyses to aid thorough understanding of qualitative data interpretation.

References

Akinyode, B. F. (2017). Factors of Affordability in Housing in the City of Ibadan, Nigeria. (PhD, Urban and Regional Planning Unpublished Thesis), Universiti Teknologi Malaysia, Malaysia.

Attride-Stirling, J. (2001). Thematic networks: an analytic tool for qualitative research. *Qualitative Research*, 1(3), 385-405.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. doi:10.1191/1478088706qp063oa

Bryman, A. (2006). Integrating quantitative and qualitative research: how is it done? *Qualitative Research*, 6(1), 97-113. doi:10.1177/1468794106058877

Bryman, A. (2007). Barriers to integrating quantitative and qualitative research. *Journal of Mixed Methods Research*, 1(1), 8-22.

Corbin, J., & Strauss, A. (1990). Grounded Theory Research: Procedures, Canons, and Evaluative Criteria. Qualitative Sociology, 13(1), 3-21.

Creswell, J. W. (2007). Qualitative Inquiry and Research Design: Choosing Among Fire Traditions (2nd edition ed.). California, U.S.A: SAGE Publications.

Creswell, J. W. (2012a). Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research (4th Edition, International edition ed.): PEARSON Publications.

Creswell, J. W. (2012b). Qualitative inquiry and research design: Choosing among five approaches: Sage.

Creswell, J. W., & Clark, V. L. P. (2011). Designing and conducting Mixed Methods Research (2nd Edition ed.). California, USA: SAGE Publication.

Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory into practice*, 39(3), 124-130.

Denzin, N. K. (2001). Interpretive interactionism (Vol. 16). Newbury Park: CA: Sage.

Dillman, D. A. (1978). Mail and telephone surveys (Vol. 3): Wiley Interscience.

Easterby-Smith, M., Thorpe, R., & Jackson, P. R. (2008). Management Research (Third Edition ed.). London: SAGE Publications Ltd.

Erdos, P. L., & Morgan, A. J. (1970). Professional mail surveys: McGraw-Hill New York.

Fielding, N. G., & Fielding, J. L. (1986). Linking data: the articulation of qualitative and quantitative methods in social research. Beverly Hills (CA): Sage, 41-53.

Holt, A. (2010). Using the telephone for narrative interviewing: a research note. *Qualitative Research*, 10(1), 113-121. doi:10.1177/1468794109348686

Hutchison, A. J., Johnston, L. H., & Breckon, J. D. (2010). Using QSR-NVivo to facilitate the development of a grounded theory project: an account of a worked example. *International Journal of Social Research Methodology*, 13(4), 283-302. doi:10.1080/13645570902996301

Jackson, L. S. (2009). Research Methods and Statistics: A Critical Thinking Approach (3rd ed.). Belmont, C.A, USA: Thomson Wadsworth.

Johnson, J. K., & Barach, P. (2008). The Role of Qualitative Methods in Designing Health Care Organizations. *Environment and Behavior*, 40(2), 191-204. doi:10.1177/0013916507311547

Jones, M. L. (2007). Using software to analyse qualitative data. *Malaysian Journal of Qualitative Research,* 1(1), 64-76.

Khan, T. H. (2008). Living with transformation: A study of self-built houses in Dhaka. (PhD Unpublished PhD Thesis), University of Hong Kong (HKU), Hong Kong.

Khan, T. H. (2014). Living with transformation: Self-built houses in the city of Dhaka (Vol. 1): Springer.

Mahmud, Z. (2008). Handbook of Research Methodology: A simplified version. Universiti Teknologi MARA, SHAH ALAM: University publication centre (UPENA).

McBurney, H. D., & White, L. T. (2007). Research Methods (7th Edition ed.). Belmont, C.A: Thomson Wadswoth.

Miles, M. B., & Huberman, A. M. (1994). An Expanded Source Book: Qualitative Data Analysis (2nd edition ed.): Thousand Oaks, CA: Sage.

Miles, M. B., Huberman, A. M., & Saldana, J. (2014). Qualitative Data Analysis: A Methods Sourcebook (3rd Edition ed.). United Kingdom, London: SAGE Publications, Inc.

Morse, J. (1994). Designing funded qualitative research. In N. Denzin & Y. Lincoln (Eds.), Handbook for qualitative research (pp. 220–235): Thousand Oaks, CA: Sage.

Naoum, S. G. (2008). Dissertation Research and Writing for construction Students (2nd Edition ed.). UK: Elsevier Ltd, Linacre House, Jordan Hill, Oxford OX28DP.

Nazmy, H. S. (2016). Virtual Environment as a Design Tool for Sustainable Residential Spaces in Light of Theory of Planned Behavior. *Environment-Behaviour Proceedings Journal,* 1(1), 311-319.

Onwuegbuzie, A. J., & Leech, N. L. (2006). Linking Research Questions to Mixed Methods Data Analysis Procedures 1. *The Qualitative Report*, 11(3), 474-498.

Patton, M. Q. (1987). How to use Qualitative Methods in Evaluation. USA: SAGE Publications.

Peek, L., & Fothergill, A. (2009). Using focus groups: lessons from studying daycare centers, 9/11, and Hurricane Katrina. Qualitative Research, 9(1), 31-59. doi:10.1177/1468794108098029

Richards, L. (2005). Handling Qualitative Data: A Practical Guide. London: SAGE Publications Ltd.

Roulston, K. (2010). Reflective Interviewing: A Guide to Theory and Practice. London: SAGE Publications Ltd.

Van Maanen, J. (1979). Reclaiming qualitative methods for organizational research: A preface. *Administrative Science Quarterly*, 24(4), 520-526.

Wagner, K. D., Davidson, P. J., Pollini, R. A., Strathdee, S. A., Washburn, R., & Palinkas, L. A. (2012). Reconciling incongruous qualitative and quantitative findings in mixed methods research: exemplars from research with drug using populations. *International Journal of Drug Policy*, 23(1), 54-61. doi:10.1016/j.drugpo.2011.05.009

Walker, D., & Myrick, F. (2006). Grounded theory: an exploration of process and procedure. *Qualitative Health Research*, 16(4), 547-559. doi: 10.1177/1049732305285972