Chapter 3

Research Methodology

This chapter as mentioned in the guideline is all about research methodology so it will cover following topics:

3.1 Research Methodology
3.2 Research Design
3.3 Data Collection Methods and Analysis
3.4 Research Bias
3.5 Reliability and Validity of this research

3.1 Research Methodology:
Research methodology is a systematic way to analyze a problem. It is a science of studying how research is to be carried out. Essentially, the procedures by which researchers go about their work of describing, explaining and predicting phenomena are called research methodology (S. Rajasekar, P. Philominathan, V. Chinnathambi, 2013). It is also defined as the study of methods by which knowledge is gained. Its aim is to give the work plan of research. It is necessary for a researcher to design a methodology for the problem chosen (S. Rajasekar, P. Philominathan, V. Chinnathambi, 2013). One should note that even if the method considered in two problems is same the methodology may be different. It is important for the researcher to know not only the research methods necessary for the research under taken but also the methodology (S. Rajasekar, P. Philominathan, V. Chinnathambi, 2013).

There is always confusion always remained between research methods and research methodology so therefore researcher of this study emphasize to differentiate between the two as defined Research methodology is a way to systematically solve the research problem (Given, 2008). It may be understood as a science of studying or how research is done scientifically (Berg, 2001).

3.2 Research Design:
Research design is the conceptual structure within which research would be conducted. The function of research design is to provide for the collection of relevant information with minimal expenditure of effort, time and money (Kothari, 1985, Kumar & Ranjit, 2005). On the other hand, research methods are the techniques or tools to collect and analyze data and help the researcher to achieve its objective (Berg, 2001). This concept is also defined by Kinash (2010) that the methods are the techniques or processes we use to conduct our research and the methodology is the discipline, or body of knowledge, that utilizes these methods. This is also argued by Berg (2001) that it is necessary for the researcher to know not only the research methods/techniques but also the methodology. As described in the above definition of research methodology, researcher of this study has chosen following research plan or methodology to carry out this study in order to achieve the objectives of this study. This research is qualitative in nature because of the fact that data is used in this research is not numerical but rather abstract in nature. This research is also qualitative because it is subjective in its existence. This research will use secondary data and this is also a sign of qualitative research in most of research studies. This research will be carried out by collecting data from different secondary data sources and analyze it with the thematic analysis method that will generate the results for this research in the fourth chapter.
**Explanation of research design:**

*Research problem:* This research design will be used by the researcher to solve the issue of role of entrepreneurship in the future economic development of Taiwan.

**Figure 3.1**

**Research Design**

<table>
<thead>
<tr>
<th>Type of Study</th>
<th>Type of Investigation</th>
<th>Extent of Interference</th>
<th>Study Setting</th>
<th>Data Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Qualitative Research</td>
<td>Non-Casual</td>
<td>Minimum</td>
<td>Non-contrived</td>
<td>Secondary Data directly or indirectly related with the research problem</td>
</tr>
<tr>
<td>Descriptive nature</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Inductive Approach</td>
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**Role of Entrepreneurship in the future economic development of Taiwan**

- Non-Technical Innovation
- Human Resource
- Productivity
- Government Policies

**Time Horizon**

- Longitudinal

**Data collection Method**

- Secondary Data
- Review
- Researches, journals, articles on economic development and entrepreneurship of Taiwan

**Applied Thematic Analysis (Grounded Theory) by using Nvivo Software**

**Type of study:** This research is called *qualitative research* because it will give researcher the deep understanding and concrete insight of the phenomena or research problem on hand and how it is related with the different variables available in the business environment. Qualitative research uses a naturalistic approach that seeks to understand phenomena in context-specific settings, such as "real world setting [where] the researcher does not attempt to manipulate the phenomenon of interest" (Patton, 2001, p. 39).
Qualitative research, broadly defined, means "any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification" (Strauss and Corbin, 1990, p. 17) and instead, the kind of research that produces findings arrived from real-world settings where the "phenomenon of interest unfold naturally" (Patton, 2001, p. 39). Although it has been claimed (Winter, 2000) that quantitative researchers attempt to disassociate themselves as much as possible from the research process, qualitative researchers have come to embrace their involvement and role within the research. This research is an applied research because it’s carried out to understand a particular business phenomena and its effect in the future as the applied research definition suggests “Applied research is done to solve specific, practical questions; for policy formulation, administration and understanding of a phenomenon. It can be exploratory, but is usually descriptive (Kothari, 1985)”. This research used unstructured approach because it needs flexibility to define research problem and qualitative research mostly use unstructured approach as suggested by Kothari(1985) that The unstructured approach to inquiry is usually classified as qualitative research. This approach allows flexibility in all aspects of the research process.

This research will use inductive approach because it aims to generate a theory that can generalize the observations and conclusions of this research. Inductive reasoning begins with specific observations and concludes with broader generalizations and theories (Trochim, 2002). One begins with specific observations (data), notes any patterns in those data, formulates one or more tentative hypotheses, and finally develops general conclusions and theories. It is important to note that, in some cases, the purpose of qualitative research is not to analyze data in order to form hypotheses or theories. Rather, in these cases, the purpose may simply be to provide a “thick description” of what is going on in the particular setting being studied (theories (Trochim, 2002).

Type of investigation:  
It is non-casual because the research will not define the cause and effect relationship but an indirect relationship between independent and dependent variables. The level of interference is almost none because this research is based on secondary data analysis so it will not interfere in any natural settings.

Non-contrived:  
This research is non-contrived because it will observe the events of past and present at its natural occurrence as suggested by Pojasek (2005) that a non-contrived setting is the natural environment in which events normally occur. Field studies and field experiments are examples of non-contrived settings. A field study is a study carried out in the natural environment with minimal interference from the researcher.

Figure 3.2  
Inductive Research Model  
Theory building approach  
Empirical study  
Start here  
Obs 1  
Obs 2  
Obs 3  
Obs 4  
Conceptual Abstract level  
Theory  
Inductive reasoning  

**Unit of Analysis:**

Unit analysis means the independent variables that are being investigated by the researcher in order to understand its effect or relationship with the dependent variable that is the research problem or research topic. This is also mentioned by J. Long (2004) that unit of analysis is the most basic element of a scientific research project. That is, it is the subject (who or what) of study about which an analyst may generalize.

This research has following unit of analysis:
1. Non-technical innovation in SMEs
2. Human resource productivity of SMEs
3. Government policies regarding SMEs

**Time Horizon:**

Time horizon is longitudinal because researcher has no exact point of time frame for the collection and selection of research data because data selection is scattered on multiple periods of time. This is also mentioned by this statement “A longitudinal study is an observational research method in which data is gathered for the same subjects repeatedly over a period of time. Longitudinal research projects can extend over years or even decades” (Rouse, 2013).

**Data Type:**

Data type in this research is secondary data that consists of previous researches on the same topic, government reports, articles and journals produced in the past on the same topic directly or indirectly. The main reason why the secondary data is used extensively in this research because the researcher is not located in the same country and the research resources are very limited therefore researcher has used secondary data type for his whole research. In the case where primary data cannot be obtained or it becomes difficult to obtain primary data, then the researcher is bound to use secondary data. The reliability, authenticity and generalization of secondary data is less as compared to primary data as it has been already manipulated and used by other people. Obtaining primary data requires more human and non-human resources like time, money and energy, therefore in some studies researchers consider secondary data much better and feasible.

**Sources of Data:**

The researcher will use following sources in order to collect data for his research and analyze it to generate theoretical generalization.

1. Latest Researches on internet about the subject on internet
2. Government Records about the subject on internet
3. Public Records about the subject on internet

**Latest Researches:**

The researcher will use latest researches obtained from the internet to review, analyze and obtain concrete data that is related with the subject of this research and can be used to provide answers of research questions and satisfying research objectives as well.
**Government Records:**

Government records about the subject are available in the form of government surveys, tax records, census data and other statistical reports. They are easily available on internet and widely used in research studies.

**Public Sector Records:** Public Records about the subject are available in NGOs like UN reports, World competitive index, and Global competitiveness index as well as some other public sector organization and others. These records can be published or unpublished but they carry information that cannot be obtained from other sources. These all reports are easily accessible by internet.

**Major Source for this research:** Researches has used internet mostly to obtain the data for this research because Internet in today’s world is the fastest growing source of information. The internet has become mature and today you can get any information from the internet. Most of the books are available on the internet in e-book format. You can get information while staying at home. The information can be obtained faster than you can obtain from any other source. On the internet you can get e-books, e-journals, e-periodicals and e-magazines. The internet is a multiple source of information as all of the above mentioned sources can be obtained from the internet. Most recent and most up to date information can be obtained from the internet as it won’t be available in books and other forms. Getting information from the internet is inexpensive as compared to other sources.

**Selection Criteria of Data Type for Final Analysis:**

The researcher will select maximum eight researches for the final analysis based on following characteristics:

1. The research is written on one of the variables used in this research.
2. The research is written by authentic author, publication or any other verifiable issuing body.
3. The research provides sufficient evidence about the research questions and objectives.
4. The context of the research is quite similar with the context of this research.
5. The research provides deep insight about the subject of this research at hand.

**3.3 Data collection Methods and Analysis:**

Qualitative data collection methods play an important role in impact evaluation by providing information useful to understand the processes behind observed results and assess changes in people’s perceptions of their well-being (Danielson, 2013). Data collection is a systematic approach to gathering information from a variety of sources to get a complete and accurate picture of an area of interest (Flottman, Stewart & Tayler, 2012). Data Collection is an important aspect of any type of research study. Inaccurate data collection can impact the results of a study and ultimately lead to invalid results (D. Giddaiah, 2012). Data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes.

The data collection component of research is common to all fields of study including physical and social sciences, humanities, business, etc. While methods vary by discipline, the emphasis on ensuring accurate and honest collection remains the same (Knatterud, G.L., Rockhold, F.W., George, S.L., Barton, F.B., Davis, C.E., Fairweather, W.R., Honohan, T., Mowery, R, O’Neill, R. (1998).
“This research will use document review as its data collection tool that involves reviewing previous researches, articles and journals in order to get insight about the subject and find the relevant information to answer research questions”.

Existing records often provide insights into a setting and/or group of people that cannot be observed or noted in another way.

This information can be found in document form (K.D. 2002). Lincoln and Guba (1985) defined a document as “any written or recorded material” not prepared for the purposes of the evaluation or at the request of the inquirer. Documents can be divided into two major categories: public records, and personal documents (Guba and Lincoln, 1981).

Data Analysis Method:

Data analysis is a systematic search for meaning. It is a way to process qualitative data so that what has been learned can be communicated to others. Analysis means organizing and interrogating data in ways that allow researchers to see patterns, identify themes, discover relationships, develop explanations, make interpretations, mount critiques, or generate theories. It often involves synthesis, evaluation, interpretation, categorization, hypothesizing, comparison, and pattern finding. It always involves what H. F. Wolcott calls “mind work” . . . Researchers always engage their own intellectual capacities to make sense of qualitative data.” (Hatch 2002, 148).

The Researcher of this research will use grounded theory as data analysis method to generate a theory that can describe the relationship between independent and dependent variables.

Thematic analyses, as in grounded theory and development of cultural models, require more involvement and interpretation from the researcher. Thematic analyses move beyond counting explicit words or phrases and focus on identifying and describing both implicit and explicit ideas within the data, which are themes. Codes are then typically developed to represent the identified themes and applied or linked to raw data as summary markers for later analysis. Such analyses may or may not include the following: comparing code frequencies, identifying code co-occurrence, and graphically displaying relationships between codes within the data set. (Hurix, 2011). It is also argued that thematic analysis is more involved and nuanced. Thematic

Analysis moves beyond counting explicit words or phrases and focuses on identifying and describing both implicit and explicit ideas. Codes developed for ideas or themes are then applied or linked to raw data as summary markers for later analysis, which may include comparing the relative frequencies of themes or topics within a data set, looking for code co-occurrence, or graphically displaying code relationships (Namey, Guest, Thairu, & Johnson, 2007).

Grounded Theory:

According to Duncan (2006) and Randolph (2007), grounded theory is an inductive qualitative research method where the theory or models emerge from the data via a spiral research process, e.g. the theory is said to be “grounded” to the research context. Randolph refers to Creswell (2007) stating that grounded theory is appropriate when there is no existing theory related to the phenomena or the existing theories are not complete. The emphasis on supporting claims with data is what links applied thematic analysis to grounded theory. Grounded theory is a set of inductive and iterative techniques designed to identify categories and concepts within text that are then linked into formal theoretical models (Corbin & Strauss,
Charmaz (2006) describes grounded theory as a set of methods that “consist of systematic, yet flexible guidelines for collecting and analyzing qualitative data to construct theories ‘grounded’ in the data themselves” (p. 2). According to Dey (2004) there is not a single unified, well-defined method called “grounded theory”, but different interpretations of grounded theory from the early developers Glasser and Straub to the recent variations.

However, there are also commonalities.
1. Primary purpose: create theory from the data
2. Research data: relies mainly on qualitative (can also be quantitative) data acquired through a variety of methods, such as observations, interviews and document analysis (Dunican, 2006).
3. The data collection becomes more structured as the study progresses.
4. Selection of data: theoretical sampling of data based on the potential contribution to the development of theory.
5. Data analysis process: coding the data into categories, which represent the key aspects of the data. The data collection stops in grounded theory when the categories reach saturation, e.g. the researcher is no longer capable of creating new categories.

The coding process consists of the following phase
1. Identification of categories in data. Open coding is used to examine the text for items of interest, with the ultimate aim of accumulating codes into categories.
2. Building relationships between categories. A researcher uses a comparative approach where he/she constantly compares new instances of the category with those already encountered until he/she saturates the category (i.e. no new insights in the category can be gained from the data).
3. Grouping the categories together to form theoretical constructs. The net outcome of grounded research is a theory that contains a central phenomenon, its causal conditions, its intervening conditions and its consequences.

An important part of the research process is to decide when enough data has been coded. When multiple behaviors occur, the data is said to be saturated. Gathering Data has similarities to case study research and ethnography, since both the latter aim to detect and interpret patterns within activities and events (de Villiers, 2005).

Figure 1. The Data Analysis Process

Source: qualitative data analysis (p.2) by John V. Seidel (1998)
Data Analysis Software:

Qualitative data analysis is a “process of bringing order, structure and meaning to the mass of collected data” [5]. Such process is not an easy task. It is disordered, hard, and time consuming, even though it is an innovative and captivating method (Marshall, C., & Rossman, G. 1990). Therefore, this research has used qualitative analytical software in order to analyze the research data and find the results. Nvivo qualitative software is used in this research because it is a comprehensive qualitative data analysis software package. The software can be used to organize and analyze interviews, field notes, textual sources, and other types of qualitative data including image, audio and video files. NVivo has various advantages and may significantly improve the quality of research. Analysis of qualitative data has become easier than ever before and yields more professional results. The software greatly reduces manual tasks and gives the researcher more time to discover tendencies, recognize themes and derive conclusions (Hilal & Alabri, 2013).

Steps of analyzing research data using Nvivo:

There are six steps that are used in this software in order to analyze the research data and find the results.
1. Creating Project in the software (Research main topic).
2. Collecting or importing all data whether primary or secondary into the software.
3. Creating free nodes and tree nodes for the research (Coding Process)
4. Matching nodes with the research data at hand or creating new nodes.
5. Summarizing the research data by using themes from nodes.
6. Analyzing the data and getting results by using queries and models.

This research will use Word Frequency query and Text search query in order to analyze the data with models as well.

3.4 Research Bias

Bias is a form of systematic error, and there are innumerable causes. The causes of bias can be related to the manner in which study subjects are chosen, the method in which study variables are collected or measured, the attitudes or preferences of an investigator, and the lack of control of confounding variables (a distortion of observed associations by additional, sometimes not readily apparent, variables). In epidemiologic terms bias can lead to incorrect estimates of association, or, more simply, the observed study results will tend to be in error and different from the true results. Bias should be considered primarily a function of the study process (i.e., design and methods) and not of the result. (Sica, 2005). Therefore researcher of this study understands that there are always some behavioral, cultural or meta-physical factors that influence the researcher to choose certain research methodology, sampling design and sample size so therefore researcher has always tried to find out the logical reasoning of his decisions in order to avoid bias factor in his research.

3.5 Reliability and Validity of this research:

The reliability and validity are not two different concepts but it can be said that they are the two sides of the same coin. The researcher uses a data collection tool in his/her research based on the subject in order to get data and analyze it. If the data collection tool is not reliable, the researcher will use corrupted data and eventually the research will not be considered validate. The term ‘Reliability’ is a concept used for testing or evaluating quantitative research, the idea is most often used in all kinds of research. The idea of testing in qualitative paradigm is viewed as a way of information elicitation. Therefore most important
test of any qualitative study is its quality. (Bashir, Afzal & Azeem, 2009). Validity in qualitative research means the extent to which the data is plausible, credible and trustworthy; and thus can be defended when challenged (Bashir, Afzal & Azeem, 2009). McMillan & Schumacher (2006) stated that validity refers to the degree of congruence between the explanations of the phenomena and the realities of the world. Disagreement occurs between the names of specific concepts; reflexivity and extension of findings are the other words that can be used in this regard. Reliability and validity remain appropriate concepts for attaining rigor in qualitative research. Qualitative researchers have to salvage responsibility for reliability and validity by implementing verification strategies integral and self-correcting during the conduct of inquiry itself. This ensures the attainment of rigor using strategies inherent within each qualitative design, and moves the responsibility for incorporating and maintaining reliability and validity from external reviewers’ judgments to the investigators themselves ((Bashir, Afzal & Azeem, 2009).

*The researcher of this research will use selection criteria of data type as a measurement scale in order to check reliability of data and validity of his own research.*