CHAPTER 3

RESEARCH METHODOLOGY

3.1 RESEARCH DESIGN

Research design is a drawing plan for the collection, measurement and analysis of the data that will be derived from the research questions and objectives of the study, it is consider as an important consideration for understanding the methods and results of the research reports (Sekaran & Bougie, 2013). Research design is one of the research processes that the researcher needs to go through, it consists of selecting an overall approach of the study and planning the methods to be implemented. Sekaran & Bougie (2013) claimed that research design should involve a series of balanced decision-making choices regarding the purpose of the study (exploratory, descriptive, hypothesis testing), its location (study setting), time horizon, and the level to which the data will be analysed (unit of analysis).

Accordingly, based on definition of research design described by Sekaran, this study will be conducted for the purpose of testing the hypotheses derived from the theory presented. It is believed that by employing the hypotheses testing purpose usually will tend to explain the nature of certain relationships or explore the differences among groups or the independence of some factors in a situation. Hypotheses testing offer better understanding of the interactions that exist among variables.

The purpose of the study is decided when the researcher selects the nature of the study and selects the setting and individuals. In addition, researcher should select the

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time horizon and the process to collect the data needed in the study namely whether it is based on questionnaires, observations or other methods.

This study is exploratory and causality in nature. It is exploratory as the researcher in this study is seeking for more information to know about the situation related to the service quality, actual usage and performance impact.

3.2 RESEARCH PARADIGM, APPROACH AND STRATEGY

3.2.1 Research Paradigm

The research philosophy comprises of important conventions about the system in which the world is perceived. These conventions will represent a base for research approach and the methods to be utilized as a segment/section of such approach (Saunders et al., 2009). A research practice consists of a set of theoretical rules about the principles guiding a scientific inquiry (methodology), inherent quality of reality (ontology), values (axiology), understanding (epistemology), and the practical problems in conducting an investigation (research methods) (Creswell, 2009; Gelo et al., 2008).

There are two common philosophy approach that are used in social science namely positivism and interpretivism. Saunders et al., (2009) state that metatheoretical differences between interpretivist and positivist study research approaches depend on ontology (the researcher's view of the nature of reality or being), epistemology (the researcher's view regarding what constitutes acceptable knowledge), axiology (the researcher's view of the role of values in research), and data collection techniques most often used.

According to Saunders et al. (2009), ontology is related to the reality nature which leads the researchers to place questions regarding assumptions on how the world operates. There are two sides of ontology namely objectivism (the role of social factors that exist in reality external to social players concerned with their presence) and subjectivism (social entities which are made by the perception and awareness and actions resulting from those entities concerned with their existence). According to Creswell (2009), ontology is the concepts and relationships that can exist for an actor or a community of actors. Sensibly, a common ontology defines the vocabulary with which queries and assertions are exchanged among actors. Subjectivism is the ontology of this study, whereby humans' interactions and actions produce and reinforce the world, that are perceived in their true settings.

According to Sekaran & Bougie (2013), epistemology is the disagreement about the nature of knowledge or how we come to know. While Saunders, Lewis, & Thornhill, (2012) suggests that epistemology concerns what constitutes acceptable knowledge in a field of study. Furthermore, Bhattacherjee (2012) mentioned that epistemology refers to our assumptions about the best way to study the world.

According to Saunders, Lewis, & Thornhill, (2012), axiology is a field of philosophy that concentrate on values judgements, the researcher's values play an influential role in research stages and it contributes to the credibility of the results. From another point of view, reasons for all human actions are based on their values, to articulate the values the researcher demonstrate axiological skill as a building block for making judgements about how they are going to conduct the research. Selecting

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philosophical paradigm is a reflection of research values such as selecting procedures regarding data collection (Heron, 1996).

Permilovskiy (2012) mentioned that a value continuously depends and is present in the subject. Additionally, the quality of an "evaluative judgment" or ideas in judging something will be feeling expressions such as "like" or "dislike", "importance" or "unimportance" are measured by axiological assessment. Moreover, it is undeniable that the values of the researcher are influential when choosing research area, research questions formulation, methods and techniques selection, data collection implementation, data analysis and interpretation and conclusions (Bryman & Bell, 2012). Consequently, it is rational to state that this research is value-laden.

In this current study, a positivist paradigm will be the central pillar of the research methodology as it can discover empirical generalizations which are related to social phenomena. The reason why this study is based on positivism philosophy paradigms is that the researcher will try to find reality as it is, and there will be a clear distinction between facts and value judgment, reasons and feelings. Furthermore statistical and mathematical calculations are central in methods which truly measures reality, which makes this study follow the positivism paradigms.

3.2.2 Research Approach

Both inductive and deductive approaches are two well-known methods of reasoning (logic). The deductive method involves formulating the hypothesis and theory, and designing a research technique to investigate the hypothesis. Meanwhile, the inductive method involves the collection of and developing a theory resulting from a data analysis. Induction owes more to interpretivism and deduction to positivism

(Mark Saunders et al., 2009). According to (Lancaster, 2005), the deductive method is restrictive and involves confirming or testing of hypotheses and refers to a group of methods used in executing a stringent testable theories to appraise its applicability in reality or the actual setting. Sekaran & Bougie, (2012) indicated that deduction is a procedure of drawing a sensible conclusion by rationalising a recognised information. Several procedures are involved in this process and in a scientific method, it is regarded as the building block.

Deductive reasoning works from the more general to the more specific. Sometimes this is informally called a "top-down" approach. While inductive reasoning works the other way, moving from specific observations to theories and broader generalizations. Informally, we sometimes call this a "bottom up" approach (Trochim, 2006). The purpose of the deductive reasoning is to test theory, while inductive reasoning is to build theory (Saunders et al., 2009). This study is based on deductive reasoning approach whereby hypothesis testing is the purpose of the study.

3.2.3 Research Strategy

Research strategy represents the way how the researcher will gather data and information for the research. The experiment is distinguished by the activity of the researcher who determines the conditions under which the investigation will take place. The researcher creates, builds or controls the research setting entirely or in parts (Neuman, 2014). Nevertheless, gathering data without asking questions is possible by using the observation strategy whereby people are observed in their natural workplace, their behaviors, activities, and any other item of interest can be noted and recorded (Sekaran & Bougie, 2013). Survey strategy is usually associated with the deductive approach. It is a popular and common strategy in business and management research and is most frequently used to answer questions involving who, what, where, how much and how many (Saunders et al., 2009). Robson (2002) defined case study as a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real-life context using multiple sources of evidence. This study follows the survey research strategy to achieve and answer the research question.

3.2.4 Research Methodological choice

The quantitative paradigm stands on positivism philosophy and quantitative research tries particular measurement of something. In carrying out a business research, quantitative methodologies generally assess the behaviour of consumer, attitudes, opinions, or knowledge. These methodologies address questions associated to how many, how much, how often, who, and when. Although survey is not the only form of methodology used in quantitative research, it is considered the main one (Cooper & Schindler, 2013).

While the qualitative paradigm stands on interpretivism philosophy and the aim of qualitative research is founded on researcher's involvement in the phenomenon to be investigated, collecting data which deliver a complete description of situations, events and interaction between things and people (Cooper & Schindler, 2013).

This study is based on quantitative paradigm because the purpose of this study is testing hypotheses. The method utilized for data collection is a questionnaire and the nature of reality is objective. Besides that, the data will be analyzed through statistical analysis.

3.3 POPULATION

Population refers to the entire group of people, events, or things of interest that the researcher wishes to investigate (Sekaran & Bougie, 2013). The population of this study is Fujairah Police Employees in UAE totalling 2000 employees (The Emirates Centre for Strategic Studies and Research, 2018).

3.4 SAMPLE SIZE

Generalization about populations from data collected using any sample design is based on statistical probability. The larger the sample size, the lower the likely errors in generalizing to the population (Saunders et al., 2009).

According to Roscoe (1979) who proposed rules of thumb for determining sample size as follow:

- For most research sample sizes larger than 30 and less than 500 are adequate.
- In multivariate research, the sample size should be several times (preferably 10 times or more) as large as the number of variables in the study.

Although Pedhazur (1997) mentioned that everyone construct in the research requires = 15 or 30 subjects. He advocated subject to variable ratios of 15:1 or 30:1. Tabachnick & Fidell (2012) stated that the adequate sample size is calculated by this equation: $N \geq 50 + 8m$ (where N is minimum sample size & m is the number of IVs). They added that multivariate statistical analysis requires at least 300 sample sizes.

In order to be consistent with the previous suggestions, it is allowable to set the sample size of this study at 400 to meet the minimum sample size as the data analyzed using SEM. The total number of sample size (400 units) in this study is consistent with previous studies in the same area, (Boateng et al., 2016) and (Dokhan & Akkoyunlu, 2016) in the context of information system have utilized 337 and 467 respectively as a total sample size which justifies the selected number of sample size in this study.

3.5 SAMPLING TECHNIQUES

Sampling techniques can be divided into two categories namely probability and nonprobability sampling. For probability sampling, the subjects in the population have the same likelihood or probability to be picked from the population, and this probability is known. Therefore, inferences about a population can be made from the sample in order to answer the research questions and achieve the research objectives. On the other hand, the probability that a subject in a population will be selected is not known in a non-probability sampling, while the research questions cannot be answered nor can the objectives be achieved on the basis of statistical inferences about the population characteristics (Mark Saunders et al., 2009).

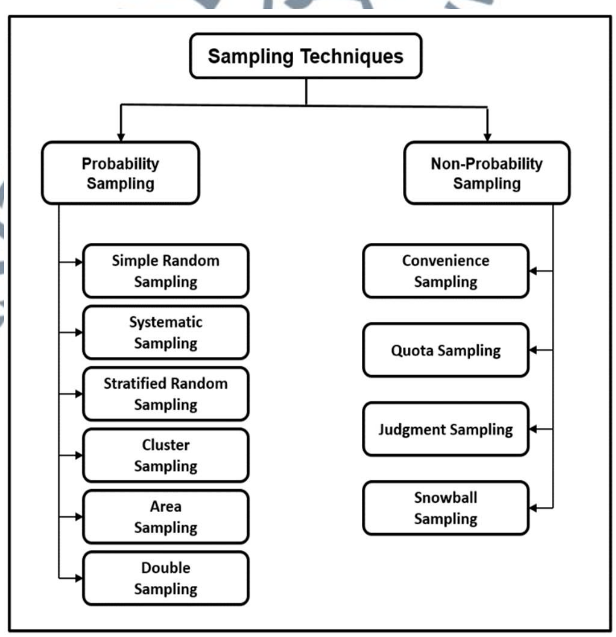

Figure 3.1: Types of Sampling Techniques
Source: (Saunders et al., 2009; Cooper & Schindler, 2013)

The sample frame is a list of the entire elements of the population that the researchers draw their sample from, and it is what distinguishes probability and nonprobability sampling (Mark Saunders et al., 2009) (figure 3.2). If the researcher can get a list of all population in the study, then the suitable technique will be probability, if not the nonprobability technique will be the only option. This study selected the sample from the population of Fujairah police department by using probability random sampling. This is when every element in the population have their equal chance of being selected as a subject (Sekaran & Bougie, 2013). Probability random sampling in particular gives the researchers the chance to choose equally from the sample frame.

3.6 UNIT OF ANALYSIS

The unit of analysis refers to the level of aggregation of the data collected during the subsequent data analysis stage, and the choice of the unit of analysis depends on the research problem, and there are a different type of the unit of analysis (individual, groups, and Organizations) (Sekaran & Bougie, 2013). This study is based on the Individual as unit of analysis, because the problem statement addresses issues related to the employees at Fujirah police, in addition to the support of relevant literature of using individual as the unit of analysis in innovation context (Al-Amri et al., 2018; Daniel, 2008; Prajogo et al., 2014).

3.7 VARIABLES AND MEASURES

The Rating Scale for this study is Likert rating scale that is designed to examine how strongly subject agree or disagree with statement on a 5-point Likert scale: (1)

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Strongly disagree, (2) Slightly disagree, (3) Neutral, (4) Slightly agree, (5) Strongly agree. The instrument to measure the main variables in this study as follow:

3.7.1 INDEPENDENT VARIABLES

1) Intellectual Capital

Intellectual capital also captures both stocks and flows of an organization's overall knowledge base (Bontis, 1999; Bontis et al., 2002). The intellectual capital in this current study composed of three constructs namely: 1) human capital, 2) structural capital, 3) relational capital. These constructs are measured as follows:

a) human capital

Human capital measurement instrument consists of three items that are drawn from Liu & Jiang (2020) which have also been used by other studies like (Yusliza et al., 2020) and (Mohd et al., 2019). The final items are drawn in the table below.

Table 3.1: Instrument for Human Capital

item	Measure	Rating Scale	Scales of Measure	Source
HC1	Employees have suitable education to fulfill their jobs.	5-point Likert scale from (1) Strongly disagree to (5) Strongly agree	Interval Scale	(Liu & Jiang, 2020)
HC2	Employees are well trained.			
HC3	Employees hold suitable work experience for accomplishing their job successfully.			
HC4	Employees are well-skilled professionally to accomplish their job successfully.			
HC5	Employees understand that doing this job well is a reward in itself.			

HC6	Considering the time spent on the job, employees feel thoroughly familiar with their tasks.			
HC7	Mastering their jobs means a lot to our employees.			

b) Relational capital

Relational capital measurement instrument composed of three items that are drawn from Liu & Jiang (2020) which have also been used by other studies like (Yusliza et al., 2020) and (Mohd et al., 2019). The final items are drawn in the table below.

Table 3.2: Instrument for Relational Capital

item	Measure	Rating Scale	Scales of Measure	Source
RC1	Employees have a close interaction with their stakeholders.	5-point Likert scale: from (1) Strongly disagree to (5) Strongly agree	Interval Scale	(Liu & Jiang, 2020)
RC2	Employees have mutual respect with the stakeholders.			
RC3	Employees have mutual trust with the stakeholders.			
RC4	Employees have personal friendships with the stakeholders			

c) Structural capital

The instrument to measure structural capital is adapted as shown in table 3.6 which contains six constructs; operation procedure, serpose to change, information system, innovation support, flexible culture, and supportive enviroment (Liu & Jiang, 2020).

Table 3.3: Instrument for Structural Capital

item	Measure	Rating Scale	Scales of Measure	Source
SC1	Employees realize the relationships among authority, responsibility, and benefit.	5-point Likert scale: from (1) Strongly disagree to (5) Strongly agree	Interval Scale	(Liu & Jiang, 2020)
SC2	Employees effectively construct an information system.			
SC3	Employees effectively utilize their information system.			
SC4	Employees know well the content of organization's culture.			
SC5	Employees clearly recognize the organization's perspective.			
SC6	Employees can operate an efficient organization process.			
SC7	Employees can effectively share their knowledge with each other.			
SC8	Employees can conveniently access organization information.			

2) Transformational Leadership (TL)

The instrument to measure transformational leadership is adapted as table 3.2 shows. It contains seven constructs that were adopted from Yue et al. (2019) which have also been used by other studies like (Jensen et al., 2020; Gao et al., 2020: Wang et al., 2020). The final items are drawn in the table below.

Table 3.4: Instrument for Transformational Leadership

item	Measure	Rating Scale	Scales of Measure	Source
	Idealised Influence			
ID1	My direct manager has a clear understanding of where we are going during the change.	5-point Likert scale: from (1) Strongly disagree to (5) Strongly agree	Interval Scale	(Yue et al., 2019)
ID2	My direct manager has a clear sense of where he/she wants our unit to be during the change.			
	Inspritational Motivation			
IM1	My direct manager says things that make employees proud to be a part of this organization during the change.			
IM2	My direct manager says positive things about the work unit during the change.			
IM3	My direct manager encourages people to see changes as situations full of opportunities.			
	Intellectual Stimulation			

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IS1	My direct manager challenges us to think about old problems in new ways during the change.
IS2	My direct manager has ideas that have forced us to rethink some things that we have never questioned before during the change.
IS3	My direct manager has challenged us to rethink some of basic assumptions about our work during the change.
	Individualized Consideration
IC1	My direct manager considers employees' feelings before acting during the change.
IC2	My direct manager behaves in a manner which is thoughtful of employees' needs during the change.
IC3	My direct manager sees that the interests of employees are given due consideration during the change.

3.7.2 Mediating Variable

Job Satisfaction (JS)

The instrument to measure job satisfaction is adapted as shown in table 3.3 which contains ten constructs which were adopted from Macdonald & MacIntyre (1997).

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Table 3.5: Instrument for Job Satisfaction

item	Measure	Rating Scale	Scales of Measure	Source
JS1	I receive recognition for a job well done.	5-point Likert scale: from (1) Strongly disagree to (5) Strongly agree	Interval Scale	(Macdonald & MacIntyre, 1997)
JS2	I feel close to the people at work.			
JS3	I feel good about working at this organization.			
JS4	I feel secure about my job.			
JS5	I believe management is concerned about me.			
JS6	On the whole, I believe work is good for my physical health.			
JS7	My wages are good.			
JS8	All my talents and skills are used at work.			
JS9	I get along with my supervisors.			
JS10	I feel good about my job.			

3.7.3 Dependent Variable

Organizational Innovation (OI)

A widely accepted definition states that creativity is the production of novel and useful ideas, and innovation is the successful implementation of creative ideas within an organization (Amabile, 1983; Amabile, 2012; Amabile, Conti, Coon, Lazenby, &

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Herron, 1996). In this study, organizational innovation is to be measured by the following constructs which are adapted from literature (Le et al., 2020):

Table 3.6: Instrument for Innovation

item	Measure	Rating Scale	Scales of Measure	Source
	Radical innovation (RI)			
RI1	We accept demands that go beyond existing services.	5-point Likert scale: from (1) Strongly disagree to (5) Strongly agree	Interval Scale	(Le et al., 2020)
RI2	We invent new services.			
RI3	We experiment with new approaches and technological methods.			
	Incremental innovation (II)			
II1	We frequently refine the provision of existing services.			
II2	We regularly implement small adaptations to existing services.			
II3	We introduce improved but existing services for the public.			
II4	We improve our provision's efficiency of services.			

3.8 QUESTIONNAIRE DESIGN

According to Hussey and Hussey (1997), a questionnaire is a list of carefully structured questions, chosen after considerable testing with a view

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to elicit reliable responses from a chosen sample. Basically, the questionnaire is designed to collect the data for the measurement of all the constructs as mentioned above. The questionnaire for this current study is divided into 2 sections with close-ended questions and one with open-ended questions. The measurement items of the study will be adapted from previous studies in the literature that have validated the instruments.

3.9 DATA COLLECTION METHOD

Several methods are used for data collection for instance observation, questionnaire, interview, physical experiment and multi-methods (Sekaran & Bougie, 2013). It is recognized that the most acceptable method of generating primary data is through surveys (Zikmund et al., 2010). In this study, the main data collection method and measurement is through survey specifically self-administered questionnaire. While the subjects of this study are employees within Fujairah Police in UAE, it preferable to distribute the questionnaire to them in-person to motivate them and clarify any doubts. The advantages of self-administered questionnaire are questions can be clarified, the ability to motivate respondents, high response rate, low cost when administered to a group and anonymity is high (Sekaran & Bougie, 2013).

3.10 STATISTICAL TOOLS AND DATA ANALYSIS APPROACH

This research incorporates several statistical methods to assess the gathered data and respond to the hypotheses. More detailed explanation will be provided in the next chapter which demonstrates how the findings are derived from the data collected for the current study.

3.10.1 Data Preparation for Analysis

For the purpose of data preparation for analysis, SPSS software Version 22.0 will be used. The use of SPSS computer program assists in the coding and entering the data collected from survey questionnaires. Then the missing data extent will be examined and apply missing value replacement procedures. After that, this study is going to apply the standardized value (Z-Score) to determine the outliers and Mahalanobis distance score to check for multivariate outliers. Finally, the unengaged responses or straight lining responses are determined and deleted.

3.10.2 Descriptive Analysis

Descriptive statistics uses the data to provide descriptions of the population and the constructs of the study. SPSS software Version 22.0 is used for descriptive analysis, Mean and standard deviation measures are used to assess the central tendency and dispersion. Frequency tables are used to assess the respondent's characteristics. Next, skewness and kurtosis measurements are utilized to assess the normality of data.

3.10.3 Inferential Analysis

Inferential statistics makes inferences and predictions about a population based on a sample of data taken from the population in question. This technique utilizes the

Smart-PLS software (Version 3.0) to test and analyze the hypothesis and causal relationships between variables in the model. This technique is considered suitable for the type of investigation carried out by this study since it allows for answering questions that involve multiple regression analysis of constructs among a single measured dependent variable and a group of measured independent variable (Ullman, 2006).

3.11 CHAPTER SUMMARY

The research methodology chapter covers many topics beginning with research design where it was explained that this study will adopt positivism as the research philosophy and adopt the quantitative approach as well. Moreover, the population of the study, sample size, sample techniques used was illustrated. Furthermore, data collection and questionnaire design were discussed. Finally, data analysis technique of this study was elaborated including data preparation, descriptive analysis, and inferential analysis.

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