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Work design, anxiety and depression: A call centre case study

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Chapter 3
Methodology Chapter

3.1 Introduction

The purpose of this chapter is to present the basic methodology followed to collect data. The detailed discussion around the methodology includes a description of the basic type of research that was conducted, the population and sample, the data collection methods and a brief explanation of the different statistical techniques used to analyse the data.

3.2 Hypotheses

The core research focus is the relationship between Work design, Anxiety and Depression, specifically whether the manner in which work is design in call centres will have an impact on the call centre employee's anxiety and depression levels. The hypotheses in this study are:

- There is a positive and significant relationship between Anxiety and Depression.
- There is a positive and significant relationship between Work design, Anxiety and Depression.

3.3 Basic Research Design

The design of the current study is quantitative in nature. Quantitative research is based on the positivistic approach to science and is explained in terms of variables, hypotheses and units of analysis (Neuman, 1997).

Due to the nature of the research a non-experimental, ex post facto, descriptive correlation design was used. As there was no control over either the subjects, and no manipulation of the variable, the design can be classified as non-experimental. The

research showed a correlation tendency, because it attempted to describe the relationship or association that exist between the variables (Rosenthal and Rosnow, 1996).

3.4 Population and sample

In statistics, a '"statistical population"' is a set of entities, which statistical inferences are to be drawn, often based on a random sample taken from the population. According to Cochran (1977) a "Population" is also used to refer to a set of potential measurements or values, including not only cases actually observed but also those that are potentially observable.

The statistical population for this study comprised of South African call centre agents working in outbound and inbound call centres.

Anastasi (1976) define a sample as a subset of a population. Typically, the population is very large, making a census or a complete list of all the values in the population impractical or impossible. The sample represents a subset of manageable size. Samples are collected and statistics are calculated from the samples so that one can make inferences from the sample to the population.

Two South African companies were approached to gain a suitable sample, one company is an IT/Accounting firm and the other is a Municipality water and electricity company. The IT/Accounting company employs a total of 29 call centre agents in their support department and the Municipality water and electricity company employs 40 call centre agents in their collection department. All call centre agents from the two departments were approached. From the IT call centre 29 call centre agents were randomly approached and all of them responded. From the municipality call centre 40 call centre agents were approached and only 27 responded. In total a sample of 56 call centre agents was obtained. The 56 participants formed a quantitative study. The participants completed three questionnaires namely the biographical questionnaire, job characteristic inventory (JCI) and the anxiety and depression scale (ADS).

The sample was obtained using a convenience sampling method, as the access to subjects in this study was difficult to obtain. In convenience sampling, the selection of units from the population is based on easy availability and/or accessibility (Cochran, 1977). Using this method the researcher will only use organisations which were approached and which agreed to participate in the research. For the purpose of this study, only subjects who were organisationally employed in call centres as call centre agents were used.

3.5 Instruments

The current research instrument comprised the following sections: Section A: biographical questionnaire, Section B: job characteristic inventory (JCI) and section B: anxiety and depression scale (ADS). All these instruments will be explained further in the next sections.

3.5.1 Biographical and Demographical Information (Appendix B)

Biographical information required from subjects on the questionnaire (App. B., 9.2.1) was designated under a section titled 'Biographical Information' and was designed to obtain information on biographical and psychosocial variables. The biographical information recorded included the age of the respondents, gender, nature of calls handled, length of time in call centre industry, length of time in this call centre, length of time in the current role, hours of work per week, work patterns, nature of employment contract, ethnic origin, educational and vocational qualifications and interest in staying in the call centre.

For the purpose of analysis each of these biographical variables as well as demographical variables were categorised. In most cases a dichotomous categorisation was utilised, for example gender female was coded =2 and male =1. The dichotomising of the variables allowed the categorical and nominal variables to be treated as interval scales. This dichotomous categorisation was applied to the recode all the biographical and demographical variables such as gender, nature of calls handled, length of time in call

centre industry, length of time in the current role, length of time in this call centre, nature of employment contract, length of time in the current role, hours of work per week, work patterns, ethnic group, interest in staying in the call centre and educational and vocational qualifications.

3.5.2 Job Characteristic Inventory (Appendix C)

Work design is operationalised by scores of the Job Characteristic Inventory (JCI) by Szilagyi, Sims and Keller (1976) taken from Hackman and Oldham (1995) which is indicative of the amount of variety, autonomy, task identity, feedback, dealing with others and friendship opportunity in the call centre environment. Szilagyi, Sims and Keller's dimensions coincide with the very same dimensions of Hackman and Oldham's jobs characteristics model, however simple correlations are not elicited in the document. In the JCI high scores will indicate good work design and the low scores will indicate a poor work design.

When scoring the JCI there are two questions, which need to be reversed so that low scores indicated positive remark (Question 10 and 15). The JCI and ADS were administered together and the entire questionnaire utilised including the biographical questionnaire required an estimated administration time of 30-40 minutes. Details of the scales are given below.

The Job Characteristic Inventory (JCI) is a self-report instrument that measures an individual on the following six dimensions:

- skill variety – the extent to which a job requires a variety of employee competencies to carry it out
- task identity – the extent to which a job requires an employee to complete a whole piece of work (from start to finish)
- autonomy – the extent to which the employee has empowerment and discretion in carrying out his or her tasks

- dealing with others- the degree to which the job requires employees to deal with other people to complete the work.
- friendship opportunities- the degree to which a job allows the employees to talk with one another on the job and to establish informal relationships with other employees at work.
- feedback - the degree to which employees receive information as they work which reveals how well they are performing on the job.

Rating

Responses for each question are made on a five-point likert scale. For the first 17 questions, the answers ranged from 'very little (1), moderate amount (3) to very much (5)'. The answers for items 18 to 35 range from 'minimum amount (1), a moderate amount (3) and a maximum amount (5)'.

When scoring the JCI item 10 and 15 need to be reversed so that the low scores indicate positive remarks.

Reliability

The findings in Hackman and Oldham (1975), report a correlation coefficient of 0.82 for the JCI scale. With the exception of the friendship sub-scale all the other subscales proved to have a correlation coefficient of above 0.70 level.

3.5.3 Anxiety and Depression Scale (Appendix D)

Anxiety and **Depression** on the other hand are operationalised by scores on the Anxiety and Depression scale (ADS) by Warr (1990). Warr (1990) conducted a research on blue-collar employees in the clothing factory. In his study Warr (1990) examines and validates instruments to tap on two correlated axes of affective well-being namely job related anxiety-contentment and job related depression-enthusiasm.

Rating

Respondents use a six-likert scale to either agree or to disagree with the given statements in the scale. The answers are rated from 'never, some of the time to all of the time'. To tap on job related anxiety- contentment, the adjectives used are tense, uneasy, worried, calm and etc. Responses to the first three items were reversed- scored, so that high scores indicated positive well-being.

To tap on job related depression- enthusiasm the adjectives used are depressed, gloomy, miserable and etc. The first three items were again reversed- scored, so that high scores indicated positive well- being.

The high scores on the ADS will indicate low anxiety and depression levels.

Reliability

In Warr's (1990) clothing factory research on blue-collar employees a correlation coefficient of 0.76 was reported from the anxiety sub scale and a 0.80 correlation coefficient was reported from the depression subscale.

3.6 Administration of the Questionnaire

After the respondents initial indication to participate in the study they were given the questionnaires with an empty envelope addressed to the researcher. They were asked to place the completed questionnaires in the sealed box. The box was placed in a central place in the company's building to facilitate a convenient and speedy return of the questionnaire. Questionnaires were therefore completed in a setting of the respondents' choice.

3.6.1 Instructions to Respondents

A consent form at the beginning of the questionnaire (Appendix A.) informing them of the following of the researchers name, degree being studied and the purpose of the particular research. Respondents were assured that all the responses made to the items were confidential, that the responses could be anonymous since no submission of identifying information is required, that participation in the study was voluntary, that no negative consequences would arise for any participation and, that they could choose to withdraw at any stage.

Respondents were informed of the great importance that their answers should reflect their true opinions and that the research was required in order for the researcher to meet the university degree requirements. Finally subjects were informed that questionnaires consisted of three sections which will take approximately 30-40 minutes to complete and that they should attempt to answer all the items as far as possible. The researchers contact details were also provided should any respondents have required further information.

3.7 Analysis Techniques

3.7.1 Descriptive Statistics

Descriptive statistics are used to present quantitative descriptions in a manageable form. In research studies lots of measures are used to measure large number of people thus descriptive statistics will help to simplify large amounts of data in a sensible manner. Each descriptive statistics helps reduce large amounts of data into a simpler summary.

Descriptive statistics are typically distinguished from **inferential statistics**. Descriptive statistics simply assists with describing what is or what the data shows. Inferential statistics assists in reaching conclusions that extend beyond the immediate data alone (Cochran, 1977).

3.7.2 Inferential statistics

Inferential statistics is a method used to try reaching conclusions that extend beyond the immediate data alone. Whereas descriptive statistics are used simply to describe what is going on in the data. The goal of inferential statistics is take what is known and to make assumptions or inferences about what is not known (Cochran, 1977).

- ***T-test***

Crawford (1990) defines t-tests as a statistical technique that can determine whether one group of numerical scores is statistically higher or lower than another group of scores. The t-test assesses whether the means of two groups are statistically different from each other. It is vital to compare the difference between IT and the Municipality call centres before the researcher could merge the two samples into one sample. Secondly the use of t-tests is to summarise a collection of data in a clear and understandable way.

- ***Correlation analysis***

In order to ascertain whether relationships exist between work design, anxiety and depression, correlation statistical procedures as well as independent t-tests were conducted. Correlations are used to compare the two call centres in the study. A further reason for the use of a correlation is related to this study's concern with the nature of the relationships.

The topic of this particular study (whether relationships exists between work design, anxiety and depression) was tested by means of the significance of the Pearson correlation, which is a parametric test that requires data in an interval scale and a normal distribution (Wood, 1974). The degree of linear relationship between the two variables is indicated by the magnitude of the Pearson correlation to -1.00 and +1.00. The closer the correlation is to -1.00 or + 1.00 the greater the degree of linear relationship between the two variables and the closer the correlation is to zero the less the degree of linear relationship between the variables (Nunally, 1978). Low (weak rank- order correlations were regarded as those values less than 0.3, moderate (middle) rank-order correlations as values between 0.3 and 0.5, while strong (high) rank- order correlations were values above 0.5 (Cronbach, 1984). The correlation or relationship is indicated by the negative and positive signs. A negative relationship indicates that when one variable is high the other is low and vice versa, and a positive relationship indicates when one variable is high or low, the other is also high or high respectively (Rust and Golombok, 1989).

It is also important to note that these correlation values were used in this study to measure the effect size of the sample as well as the strength of the results obtained from the sample. Cohen (1988) suggests that **Effect size** refers to the strength of the association between variables or the strength (**size**) of the difference found. Effect size is simply an objective and standardised measure of the magnitude of the observed effect. The fact that the measure is standardised just means that the researcher can compare the effect size across different studies that have measured different variables. These guidelines were used to assess the importance of the effects, regardless of the significance of the test statistics (Cohen, 1988).

Cohen (1988) presents the following guidelines for interpreting the size of the effect.
d = 0.25 (Small effect)
d = 0.50 (medium effect)
d = 0.75 (large effect)

3.8 Conclusion

This chapter has presented the methodology that was used to conduct this study, beginning with the basic research design of the current study. This was followed by a description of the population and the sample. The instruments, administration of the questionnaire and the analysis techniques were then described. The ethical considerations were also included, providing specific information regarding confidentiality measures to protect the participants.

The following chapter is a description of the analysis of the results of the study as conducted according to the methodology presented above. The data is analysed using the SAS statistical system and the results are largely presented according to the research questionnaire format.