

Chapter 3: Methodology

Introduction

The purpose of this chapter was to elucidate the research methods utilized in gathering and analyzing the data for examining the relationships between organizational culture and innovation of the employees.

Development of Hypotheses

Organizational culture and innovation are two popular streams of research in the domain of organizational inquiry. Figure 1 illustrates the research model and hypothesized relationships between organizational culture and innovation. With regard to organizational culture researchers believe that members of an organizational organized underlying values, assumptions and interpretations of their organization according to a limited number of categories (Mitroff, 1983).

These categories can be used to identify certain types of cultures in organizations because cultures are based on, and defined by, these values, assumptions and interpretations (Cameron and Freeman, 1991).

Damanpour (1991) suggested that type of organization should be a primary variable in organizational innovation studies. Furthermore, distinguishing types is crucial, as the variance in environmental opportunities and threats for organization of different types can influence their degree of innovativeness (Damanpour, 1991).

Based on Chapter One and Chapter Two, six hypotheses were developed to test the relationships accordingly.

H1: There is a significant correlation between empowerment and organizational innovation.

H2: There is a significant correlation between team orientation and organizational innovation.

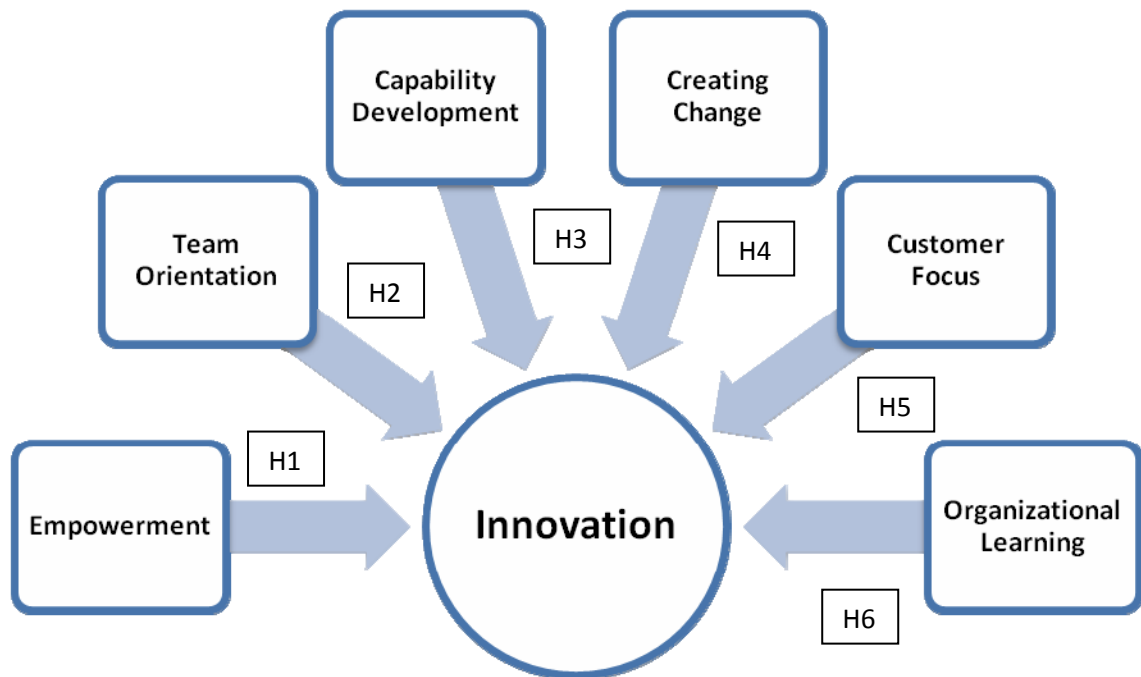
H3: There is a significant correlation between capability development and organizational innovation.

H4: There is a significant correlation between creating change and organizational innovation.

H5: There is a significant correlation between customer focus and organizational innovation.

H6: There is a significant correlation between organizational learning and organizational innovation.

Conceptual Framework



Research Design

This study was quantitative and included data collected from culture and innovation questionnaire.

Organizational Culture

The organizational culture questionnaire, which is adopted from Denison (1996) consisted of data which is used to assess the key dimensions of the Involvement and Adaptability. 30 items were presented on the questionnaire to assess the culture of that organization. Items 1 to 5 measure empowerment, items 6 to 10 for team orientation, items 11 to 15 measure capability development, items 16 to 20 for creating change, items 21 to 25 for customer focus and item 26 to 30 for organizational learning.

The innovation questionnaire was adopted from Johannessen et al. (2001). 12 items were presented on the questionnaire to assess the innovation level of that organization. Item 1 – 6 measures the innovation in the past three years that were perceived to be new for the company, but which have previously been used by other firms. Item 7 – 12 for the innovation for the past three years that were perceived to be new to the industry in which the company operates.

The organizational culture questionnaire used a 5-point Likert scale – from 1 – *Strongly Disagree* to 5 – *Strongly Agree*. In addition, an innovation instrument by Johannessen et al. (2001) was used to measure innovation in each organization. The innovation questionnaire also uses a 5-point Likert scale. A score of 1 indicated “strongly disagree”, which a score of 5 indicated “Strongly Agree”.

In this study, a survey (see Appendix 1) was comprised of 3 parts. Part 1 was *Organizational Culture*, Part 2 was the *innovation* evaluation and Part 3 was the *Demographic Profile*.

Target Population

In this study, the part-time students in Graduate School of Business, University of Malaya, peers and industry contacts of the researcher are the targeted population. This is to ensure the generalization of the sample from government sector and private sector in Malaysia.

Sampling Plan

In a quantitative study, generally, the larger the sample size was, the higher the generalization was in the target population and the lower sampling error was. Tabachnick and Fidell (1989) suggest, in their multivariate text that the minimum number of subjects for each predictor or independent variable (IV) in a regression analysis should be 5-to-1. They state the following:

If either standard multiple or hierarchical regression is used, one would like to have 20 times more cases than IVs. That is, if you plan to include 5 IVs, it would be lovely to measure 100 cases. In fact, because of the width of the errors of estimating correlation with small samples, power may be unacceptably low no matter what the cases-to-IVs ratio if you have fewer than 100 cases. However, a bare minimum requirement is to have at least 5 times more cases than IVs – at least 25 cases if 5 IVs are used. (pp. 128-129).

As there are 49 IVs in the questionnaire, therefore the minimum sample size should be $49 \times 5 = 245$.

The participants of this study who were asked to respond to the questionnaire were selected because they were an accessible population and they were presumed to have perceptions relative to their firm's organizational culture.

In this research, there will be six independent variables: empowerment, team orientation, capability development, creating change, customer focus, and organizational learning. The dependent variable will be innovation.

Pretest of the Instrument

A questionnaire pretest was conducted to place emphasis on the measurement of organizational culture and innovation, since many researchers have indicated the difficulty of measurement in empirical studies (Shinn, 1996; Damanpour, 1991). 10 people were randomly selected from the population to participate in the pretest phase.

Four respondents indicated problem in understanding the meaning in item 28 “Lot of things “*fall between the cracks*”. Therefore item 28 had changed to” Lots of things *are overlooked*”.

Data Collection Procedures

Email administration. 250 emails were sent out to the researchers' contacts and asked to complete the soft copy of the questionnaire. The email survey was fielded for two weeks. One initial invitation and two reminders were sent out.

The initial invitation email served as the invitation to participate in the study and included:

- 1) The purpose of the study
- 2) A statement of how the results would be used
- 3) A request for participation in the study
- 4) The importance of obtaining his / her response
- 5) A statement of promised confidentiality or anonymity of survey responses
- 6) An email address of the researcher

At the end 122 soft copies were received.

In-person paper administration. Approximately 300 copies of questionnaire were given out to the targeted population. Each paper questionnaire was three pages- two pages with survey items and one page for demographic information. Paper survey was conducted concurrently as the email administration, which lasted for two weeks.

Participant Response Rates and Demographics

Response rates. The questionnaire was administered over a two-week period via email and paper. At the end 139 hard copies were received. The response rate was 47.5%. There are 12 questionnaires were incomplete, therefore the total respondents for this study was 249.

Instrumentation

Organizational Questionnaire

The 30-item questionnaire (Denison & Neale, 2000) assesses two culture traits (involvement and adaptability), each having three dimensions with each of those dimensions measured with five survey items as described above. The questionnaire uses a 5-point Likert scale (from 1. *Strongly Disagree* to 5. *Strongly Agree*).

Data Analysis Techniques

Once the questionnaire was administered and the data were collected from the 249 respondents, the data were merged into an SPSS database to be analysed.

Many statistical tests, including descriptive data analysis, internal consistency reliability, exploratory factor analysis, and standard multiple regression, were used in this study. Before beginning data analysis, the following steps were taken:

1. Data coding: Data collected were coded with numbers for response categories for each of the variables in this study and each variable received a code name.
2. Descriptive: Through descriptive statistics, data problems and the statistical assumptions of the parameters used in this study were further examined. In consequence, data problems were solved, and variables were transformed only if variables were unable to meet the statistical assumptions.
3. Internal consistency reliability: Most variables had several items measured with semantic differential rating scales. The internal consistency of the multiple-item scales was estimated through Cronbach's alpha. A Cronbach's coefficient alpha for each of these scales needed to reach 0.7, the minimum threshold for the internal consistency reliability in the social science research (Nunnally, 1978).
4. Exploratory factor analysis: Through exploratory factor analysis, each scale underwent factor analysis, to determine the data to be reduced, and a large set of items resembling a construct were also identified. As

5. Pearson Correlation is used to explore the strength of the relationship between two continuous variables. This gives an indication of both the direction (positive or negative) and the strength of the relationship. A positive correlation indicates that as one variable increases, so does the other. A negative correlation indicates that as one variable increases, the other decreases.
6. In standard multiple regression: all the independent variables are entered into the equation simultaneously. Each independent variable is evaluated in terms of its predictive power, over and above that offered by all the other independent variables. This is the most commonly used multiple regression analysis. This approach would tell how much unique variance in the dependent variable each of the independent variables explained.

Ethical Considerations

Careful consideration was given to the nature of the study and its possible effects on participants. The participants were informed that the questionnaire was voluntary on their part and included a guarantee of complete confidentiality and anonymity. They were also informed that they had the right to withdraw from completing the surveys at anytime. The participants were also assured that all data would be reported in aggregate to avoid any identification of individual response. In addition, all data collected were protected by keeping them in a secure place that was only accessible by this researcher. Finally,

prior to data collection, appropriate approval was obtained from the Institutional Review Board of University of Malaya (Appendix 2).