

The hypothetico deductive method psychology essay



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Research method is a process whereby issues in a scientific study are systematically resolved. This method involves the identification of the steps required in the performance of a scientific study and how they are to be applied. The selection of a research method has to be done with a specific purpose in mind and the researcher has to identify the reason(s) why a particular method is preferred, and why it is the most appropriate for a particular study (Kumar 2008).

This chapter discusses the research method employed in this study. This method is to develop a new conceptual model, which is the main objective of this study.

4. 2 RESEARCH METHOD

This study employs the hypothetico-deductive method. This method consists of several phases (Sekaran 2009) which are the observation phase, the preliminary data gathering phase, the problem delineation phase, the theory formulation phase, the hypothesizing phase, the data collection phase, the data analysis and interpretation phase, and the deduction phase (Sekaran 2009). The initial stage of this study involves the building of a context framework followed by the formulation of the proposed conceptual model through the generalizing of hypotheses, the collection and analysing of data, and finally the deduction of a conceptual model. The phases that make up the hypothetico-deductive method are shown in figure 4. 1.

Figure 4. 1: Hypothetico-deductive Method Phases

Source: (Sekaran 2009)

Figure 4. 1 shows the entire method undertaken to execute this study which consists of 9 phases. However, in this chapter, not all the phases are discussed in depth except for phase 6 and 7 i. e. the research design and data collection technique respectively. Only phases 6 and 7 are to be discussed in depth since research design is the backbone or central for any method. Phases 1, 2, 3, 4, 5, 8, and 9 are not discussed extensively in this chapter as the structure of this study does not require the discussion here. The outcome of those phases are reflected in various separate chapters as depicted in figure 4. 1

4. 2. 1 Observation

The first phase in this method involves the observation of an environment in order to detect changes such as new behaviours, attitudes, and feelings. For example, changes in communication patterns or styles in a workplace. These observations can lead a researcher to conclude that there is a potential need to carry out a study to investigate issues such as: (i) current obstacles that exist in an organization (ii) areas and situations that need improvement (iii) theoretical concerns that should be tightened in order to provide better understanding of certain phenomena and (iv) research questions that need to be answered through an empirical pattern of research (Sekaran 2005).

In this study, the significant influence of culture on the acceptance of CMC was generally observed. Although CMC facilitates knowledge sharing - especially in organizations- it has not been adequately addressed.

Meanwhile, there are a number of obstacles that are caused by unacceptable technologies being transferred to developing countries, such as video-

conferencing. As the cultural influence on technology acceptance is still
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ambiguous, this factor should be explored to provide a better understanding of its possible effects on the acceptance of CMC. The observation for this study is further discussed in sections 1. 1, and 1. 2 in Chapter I.

4. 2. 2 Preliminary Data Gathering (Literature Survey)

The literature survey phase enables the researcher to get further insight into potential factors that could play a role in the field of study. A good literature survey ensures a review of related concepts and critical factors that are expected to affect the situation. This survey also strives to identify reasons why these factors are considered the most significant, and how they should be examined to solve the research problem. During this phase, attempts are made to identify gaps and issues that are still ambiguous, and the significance of carrying out the study is defined. Thus, the literature survey offers a foundation for the proposal of a new conceptual model to conceptualize the research problem in a theoretical manner (Sekaran 2005, 2009).

This study reviews key factors in order to provide an understanding of the concepts used in the study, and how these concepts are integrated. It also reviews the theoretical background of the conceptual model and previous studies of social constructs relevant to national culture influence on technology acceptance. The literature survey (or literature review) is discussed in Chapter II.

4. 2. 3 Problem Delineation

Upon reviewing the literature, research problems can be substantially reduced from its original broad base. In this phase, the issue(s) or barrier(s)

that generally lead to the need for a study should be identified. This can be done by focusing on the gaps and limitations that exist in previous related works (Sekaran 2005). Sekaran 2005 also states that a problem is “ any situation where a gap exists between the actual and the desired ideal states.” However, a research problem does not necessarily imply that there is anything so seriously wrong with an existing situation that an immediate remedy is required. Rather, a problem is merely referred to as interest in an issue where acceptable changes can help improve the current situation.

In this study, the problem statement is defined as a situation that has a gap between the actual situation and the expected situation. Although video-conferencing is a core and reliable technology among a variety of communication technologies used by virtual teams in sharing knowledge, its use is still ignored, or at best limited in the location of this study. As such, the cultural influences on the acceptance of video-conferencing needs to be explored with the aim of enhancing the understanding of this communication tool. The current situation of accepting video-conferencing in manufacturing firms in Jordan needs further investigation to formulate a theory (propose a new conceptual model), and then validate a model to find empirical answers to this dilemma. The problem statement is delineated and further discussed in sub-section 1. 3 in Chapter I.

4. 2. 4 Theory Formulation

This phase integrates all available information so that the critical constructs can be conceptualized, hypothesized, and tested, in order to identify reasons for the problem, and how it can be solved. The links identified amongst the critical constructs have to be theoretically woven and justified, to expose

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their possible contribution to the problem. There are two main reasons why a theory should be formulated. Firstly, separate studies have identified other constructs that might not be related to the situation in the undertaken study. Secondly, contradicting results from hypotheses testing have been reported. Therefore, it is essential to formulate a theory in each particular situation in order to achieve a solution (Sekaran 2005, 2009).

In this study, a new conceptual model was proposed to study the problem and investigate the national culture influence on video-conferencing acceptance. This new conceptual model (or theory formulated) was developed by integrating new cultural constructs with Karahanna and Limayem's (2000) model. This study discusses the evolution of the new conceptual model based on Karahanna and Limayem's (2000) model, which is an extension of the original TAM theory. This study was carried out with emphasis on the importance of Hostede's and Hall's cultural theories . The new proposed conceptual model in this study was named the national cultural influence on video-conferencing acceptance model. This is in line with the fourth phase of the hypothetico-deductive method as shown in figure 4. 1. The formulated theory (or proposed conceptual model) is discussed in Chapter III.

4. 2. 5 Hypothesizing

After the identification of significant constructs in the situation, the hypotheses can be formulated from the links network (Sekaran 2005).

Sekaran (2005) defines hypothesis as “ a logically conjectured relationship between two or more variables expressed in the form of a testable

statement.” Another definition provided by Singh et al. (2006) is simply an <https://assignbuster.com/the-hypothetico-deductive-method-psychology-essay/>

educated guess or prediction based on the relationship between two or more variables. However, these formulated hypotheses need to be tested to verify the reality of the problem.

In this study, all information was integrated based on the literature review and the important constructs identified during the previous phase (theory formulation). In order to locate the source of the problem, the critical cultural constructs were tested using an appropriate statistical approach. The hypotheses of this study are formulated in Chapter III.

4. 2. 6 Research Design

Research designs serve “ as the architectural blueprint of a research project linking design, data collection, and analysis activities to research questions” (Bickman & Rog 2009). Research design describes the systematic approach of collecting, analyzing and interpreting data for a clear purpose. It is also a road map for studies, helping in the planning for data collection and analysis with the goal of answering research questions. The researcher has to contend with a series of decisions which include the concepts to be studied, the method of measurement for these concepts, the approach to be used in investigating the problem, the people to be included in the study, the size of the sample required, the method of collection and analysis of the data, and the method of interpreting the results of analysis to overcome the problem (Creswell 2009).

Research design specification is a fundamental section of the study and presents four design techniques: survey, experiments, observation, and secondary data (Creswell 2009; Robson 2011). However, the study has to

consider selecting the most appropriate design technique. Factors that influence this selection include the sources and types of data that need to be gathered based on research questions, the strategy employed in the gathering and analysis of data, and the limitations involved in terms of time and budget (Keong 2006). The research design for this study is further discussed in section 4. 3 of this Chapter.

4. 2. 7 Data Collection

After hypothesizing and deciding on the research design, the next stage involves the collection of data with reference to each construct in the hypotheses. This data is required in the testing of the hypotheses formulated in the study (Sekaran 2009).

For this study, a proper data collection approach was adopted (quantitative) using the constructed data collection method (questionnaire) in the previous phase (research design). Also, the identified sampling technique (purposive), and the sampling time horizon design (cross- sectional) were taken into consideration during the data collection processes.

A total of 1800 questionnaires were distributed by hand to the targeted respondents (senior managers) in manufacturing firms in Jordan from 5th April to 18th July 2011. A total of 47 manufacturing firms from different manufacturing subsectors located in various regions in Jordan, were selected for this study. A total of 434 questionnaires were returned, which satisfies the required sample size (385) for this study. The data collection for this study is further described in sub-section 4. 3. 6 in this Chapter.

4. 2. 8 Data Analysis and Interpretation

The purpose of this phase is to statistically analyse data collected from the previous phase. Appropriate statistical analysis tools are utilised with due consideration given to proper accepted values in interpreting data analysis results obtained during each phase. The data analysis phase reveals whether the results of the generated hypotheses are supportive in nature, or should be rejected. However, the study has to execute several analysis steps in order to return reliable hypotheses (Sekaran 2005; Pallant 2007).

After irrelevant responses were excluded, the collected data was analysed by the Statistical Package for the Social Sciences (SPSS) 17.0 statistics software program as suggested by Sekaran (2005). Several statistical analysis steps were executed using SPSS 17.0. and these are (a) data screening and cleaning, consisting of data coding and checking for missing data and outliers, (b) assessment of normality distribution of data and descriptive statistics with regard to demographic characteristics of the sample and cultural, social and TAM constructs, (c) scales reliability testing, EFA and constructs validity (convergent and discriminant validity) in relation to the measurement model and (d) hypotheses testing using standard and hierarchical multiple regressions. The Modprobe macro script was used for providing a better understanding of the moderator effect, and the data analysis results were then interpreted and discussed with due consideration given to the accepted values by referring to a professional statistical research. The data analysis and interpretation is further discussed in Chapter V.

4. 2. 9 Deduction

This concluding phase deals with the translation of the hypotheses test results in the data analysis phase. Based on the findings, this study can produce theoretical and practical implications which can lead to recommendations for future work. Information derived during the deduction phase can result in a possible solution to the problem (Sekaran 2005).

According to Sekaran (2005, 2009), deduction can be achieved based on results obtained from the testing of the hypotheses. However, the hypotheses and research questions will require complete answers to be effective. If the hypotheses are not substantiated or incompletely supported, the researcher should refer back and execute one or more of the previous phases in order to discover the reasons for this situation. As shown in figure 4. 1, the broken narrow lines leading to each phase facilitates the re-examination process in any phase when required. In order to be assured that no fault occurred, it is necessary to revise related literature from the preliminary data gathering phase, as well as the data analysis and interpretation phase.

Based on current findings, this study attempts to provide academic explanations for the rejection of some hypotheses. Discussions of the findings were presented through describing the meaning of the results; followed by discussion of the results of hypotheses, as what consistent and/or contradictory previous studies. However, some hypotheses were rejected. Thus, argument, and justification were conducted on the results of hypothesis testing. Based on these discussions, theoretical and practical

implications, limitations, and recommendations for future work were reported. The deduction phase is further discussed in Chapter VI.

4. 3 RESEARCH DESIGN

This section specifically discusses the research design phase in the research method employed for this study. This phase is made up of eight sub-sections which are (a) previous work adopting the quantitative approach by questionnaire, (b) the data collection method, (c) population and sample size, (d) sampling technique, (e) sampling time horizon design, (f) construction of the questionnaire, (g) data collection, and (e) data analysis strategy. These sub- sections are described below.

4. 3. 1 Previous Work Adopted Quantitative Approach by Questionnaire

This sub- section reviews previous related works on the national cultural impact which are similar to the approach undertaken by this study. This is to draw evidence that the quantitative approach using questionnaires as a technique for collecting data is appropriate for executing this study.

A number of studies have revealed that the use of questionnaires is a popular instrument for data collection. This is evident from studies carried out by Adams et al. (1992) who distribute 260 questionnaires in 10 organizations with 118 returned and analysed; Gefen and Straub (1997) analyse 392 questionnaires from three countries, Straub et al. (1997) collect 393 questionnaires in the same scope of cultural research.; Karahanna and Straub (1999) distribute 180 questionnaires and receive 100 responses, Karahanna and Limayem (2000) mail survey questionnaires to e-mail and v-

mail users randomly, and receive 211 responses from e-mail users and 173 from v-mail users. Guo and D'Ambra (2002) distribute questionnaires to two universities randomly resulting in a total of 50 individual respondents. Thatcher et al. (2003) survey college students in the US using a questionnaire. Loch et al. (2003) design a questionnaire to collect quantitative data from respondents, and then analyse 277 responses. Setlock et al. (2004) employed the quantitative approach; a total of 48 participants completed a questionnaire. Kayan et al. (2006) collect questionnaire responses online from American, Indian and East Asian participants; a total of 78 participants responded to the survey completely; 28 from the US, 21 from India and 29 from East Asia. Akour et al (2006) use questionnaires to collect and analyse the cultural influence; a total of 507 Jordanian managers participated. Richardson and Smith (2007) engage participants from universities in the US and Japan; a total of 75 students from the US and 79 from Japan participated by responding to a questionnaire. Hwang and Kim (2007) distribute questionnaires online for undergraduate business students in the northern region of the US; a total of 155 questionnaires were collected. Al-Gahtani et al. (2007) personally administer questionnaires for data collection and a total of 1190 questionnaire responses were analysed. Zhang et al. (2007) collect questionnaires from a total of 183 group respondents. Setlock et al. (2007) ask a total of 34 pairs of participants to complete a questionnaire. Wei (2008) employs an online questionnaire; a total of 63 usable responses were analysed. Li et al. (2009) use questionnaires to collect data with of 644 respondents. Gaspay et al. (2009) distribute questionnaires using a web-based survey to diverse geographical regions in the US, a total of 1617 questionnaires were usable <https://assignbuster.com/the-hypothetico-deductive-method-psychology-essay/>

and analysed. Vatrapu and Suthers (2010) distribute a questionnaire to measure the cultural values; different instruments were employed in the study with the goal of analysing the cultural influence at different levels. Setlock and Fussel (2010) survey 22 participants who completed a questionnaire (6 from the US, 4 from India, 4 from Korea, and 7 from China) about their media preferences.

4. 3. 2 Data Collection Method (Survey by Questionnaire)

The quantitative approach adopted by this study is a commonly employed method for measuring the influence of national culture (Mentzer 2007). Cultural studies adopt surveys as a popular means of exploring the influence of culture on IT acceptance (Gallivan & Srite 2005). The quantitative approach is suitable when the national culture constructs are surveyed and their respective implications explored in the literature. The qualitative approach on the other hand, is employed when the constructs are still in the ambiguity stage, and there is a need for in-depth exploration in order to recover the variables (Sekaran 2005; Chaitani 2010). This approach focuses on related variables or constructs with the purpose of formulating a theory or conceptual model at the conclusion of the study (Sekaran 2005). A survey questionnaire provides a numeric (quantitative) report of attitudes through the exploration of a sample of the population with the intention of generalizing the hypotheses of the study (Creswell 2009). This method of data gathering provides respondents with the opportunity to express their values, beliefs, and attitudes (Chaitani 2010). It is also an efficient mechanism in the collection of data when the study has identified precisely the kind of data required, and how to measure the variables. Depending on

the research questions, the researcher has to decide on a quantitative or qualitative approach or both (Perecman & Curran 2006; Cairns & Cox 2008). For this study, there is a need to know how users would respond in a given situation. Thus, the questionnaire method qualifies as a suitable process in the collection of data for this study (Cairns & Cox 2008).

4. 3. 3 Population and Sample Size

Given that the purpose of this study is to explore the acceptance of video-conferencing in manufacturing firms in Jordan, the determination of sample size as a representation of the population to be investigated is essential (Sekaran 2003). As this study intends to investigate knowledge sharing among manufacturing firms, the population sample is taken from knowledge workers (senior managers). Specifically, this study attempts to ascertain the perception of senior managers towards the acceptance of video-conferencing as a tool for knowledge-sharing. Presently, senior managers share their knowledge via DSSs which restrict knowledge resource to this level, as shown in figure 4. 2. Thus, knowledge sources such as Transaction Processing Systems (TPS) (for data), MISs (for information), and Executive Information Systems (EIS) (for wisdom), are beyond reach (Laudon & Laudon 2007). Figure 4. 2 illustrates the four levels in the pyramid model of an IS in an organisation.

Figure 4 . 2 Laudon & Laudon (2007)

There are various ways to determine the appropriate sampling size for conducting a survey questionnaire. Comrey and Lee (1992) claim that a sample size of 100 respondents is considered poor, 200 considered fair, 300

considered good, 500 considered very good, and 1, 000 or more considered excellent. In another argument, Wimmer and Dominick (2006) assert that in multivariate studies, a large sample is required because of the inclusion of multiple response data analyses. The sample size of 250 respondents is recommended as good, 500 as very good, and 1000 as excellent.

On the other hand, Israel (1992), Watson (2001), and Sekaran (2009) affirm that in determining the appropriate sample size, the study has to also take three criteria into consideration. These are the confidence level, the precision level (sampling error), and variability. However, Watson (2001) recommends avoiding determining a sample size randomly, or affix a percentage to it, because there is no exact percentage for each population. In light of this, Krejcie and Morgan (1970) and Sekaran (2005) perform an arithmetical equation to calculate the sample size, and this is reproduced as follows:

$$S = \frac{X^2 NP (1 - P)}{d^2 (N - 1) + X^2 P (1 - P)}$$

S = the sample size

X² = the value of chi-square for 1 degree of freedom at the desired confidence level

(3.841 /95%)

N = the population size

P = population proportion (as known, variability)

d = the degree of precision level (as known sampling error or margin error)

For the purpose of calculating the required sample size for this study, the actual population has to be established. According to ACI (2009) there are 10, 317 knowledge workers in Jordan and this population is the focus of this study.

The values for determining the required sample size for this study are as follows:

$$S = 370.347 \hat{\%}^{\wedge} 370$$

$$X^2 = 3.841$$

$$N = 10317$$

$$P = 50\%$$

$$d = \pm 5\%$$

The S value as indicated in the above is 370.347, which is approximated to 370. This represents the required sample needed for the study. The method used to determine sample size (370) is parallel to the method suggested by Payne and McMorris (1967), Krejcie and Morgan (1970), Sekaran (2005), and Dattalo (2008) as depicted in Table 4. 1. With a population of about 10, 000, a minimum sample size of 370 is sufficient. The Table 4. 1 reviews the specified determined sample sizes from a given population size.

Table 4. 1 Determining Sample Size from a Given Population Size

N

S

N

S

N

S

10

10

220

140

1200

291

15

14

230

144

1300

297

20

19

240

148

1400

302

25

24

250

152

1500

306

30

28

260

155

1600

310

35

32

270

159

1700

313

40

36

280

162

1800

317

45

40

290

165

1900

320

50

44

300

169

2000

322

55

48

320

175

2200

327

60

52

340

181

2400

331

65

56

360

186

2600

335

70

59

380

191

2800

338

75

63

400

196

3000

341

80

66

420

201

3500

346

85

70

440

205

4000

351

90

73

460

210

4500

354

95

76

480

214

5000

357

100

80

500

217

6000

361

110

86

550

226

7000

364

120

92

600

234

8000

367

130

97

650

242

9000

368

140

103

700

248

10000

370

150

108

750

254

15000

375

160

113

800

260

20000

377

170

118

850

265

30000

379

180

123

900

269

40000

380

190

127

950

274

50000

381

200

132

1000

278

75000

382

210

136

1100

285

1000000

384

Source: Payne and McMorris (1967); Krejcie and Morgan (1970); Sekaran (2005); Dattalo (2008)

On the other hand, Israel (1992) and Watson (2001) emphasize that for a population size of 10, 000, (confidence level is 95%; precision level is $\pm 5\%$; and variability is 50%) the required sample size is 385. Table 4. 2 reviews the specified determined sample sizes from a given population, precision levels, confidence levels, and the degree of variability.

Table 4. 2 Determining Sample Size from a Given Population Size, Precision Levels, Confidence Level, and the Degree of Variability

Size of

Sample Size (n) for Precision (e) of:

Population

$\pm 3\%$

$\pm 5\%$

$\pm 7\%$

$\pm 10\%$

500

a

222

145

83

600

a

240

152

86

700

a

255

158

88

800

a

267

163

89

900

a

277

166

90

1, 000

a

286

169

91

2, 000

714

333

185

95

3, 000

811

353

191

97

4, 000

870

364

194

98

5, 000

909

370

196

98

6, 000

938

375

197

98

7, 000

959

378

198

99

8, 000

976

381

199

99

9, 000

989

383

200

99

10, 000

1, 000

385

200

99

15, 000

1, 034

390

201

99

20, 000

1, 053

392

204

100

25, 000

1, 064

394

204

100

50, 000

1, 087

397

204

100

100, 000

1, 099

398

204

100

> 100, 000

1, 111

400

204

100

Source: (Israel 1992; Watson 2001)

a = Assumption of normal population is poor. In such a case, the whole population should be sampled.

It is worth mentioning that this study prefers 385 as the appropriate sample size as recommended in Table 4. 2. This is because a sample size of 385 exhibited maximum values compared to other suggested sample sizes, and could accommodate the entire recommended sample.

4. 3. 4 Sampling Technique

This study adopts a purposive sampling technique for data collection. This is a non-random technique also known as non-probability sampling. The purposive sampling technique requires survey respondents to possess specific features that are associated to the purpose of the exploratory survey (Trochim 2006; Dörnyei & Taguchi 2010). In the same way, Sekaran (2005) states that purposive sampling is restricted to a particular type of group(s) which can provide the needed data. This is due to the fact that either this group is the only one to possess such data, or it is the only one that conforms to criteria set by the study. The specific type of sampling is possibly a society, an organization, or an exclusive/limited group (Trochim 2006).

In the utilization of the purposive sampling technique, the components were chosen according to the purpose of the study (CEMCA 2002). This study collected data from a specific type of user (senior managers) in manufacturing firms who are in the DSS organizational level, where

knowledge exists and is shared via CMC technologies such as video-conferencing.

4. 3. 5 Sampling Time Horizon Design

According to Sekaran (2009), there are two sampling designs of time horizon in collecting data, and these are cross-sectional (one-shot), and longitudinal.

This research employs the cross-sectional design in collecting data which is defined as “ data collected at one point in time, from a sample selected to represent a larger population” (Owens 2002). Campbell et al. (2006)

examine the effects of cross-sectional design in community disclosures and their research findings support the authority of cross-sectional clarification.

The cross-sectional design is valuable in providing a general assessment of dominance in a geographical area. Cross-sectional design assumes that the measured values were unchangeable during the previous years (Young 2009). Hofstede (2011) indicates that the fervently held national culture values are difficult to change and will take a long period, possibly over generations, as these values were learned early. In the case of a national assessment, the study has to decide whether to conduct a single assessment for the whole country, or separate assessments for sub-national areas in order to plan for the assessment sample size, sample technique, costs, and time required for the survey (Gorstein et al. 2007). According to Young (2009) the longitudinal design requires