

Chapter 3 Methodology

3.1 Theoretical Background

After observing the awareness studies mentioned under the literature review, below common features were found in an awareness study.

1. A survey based approach is used on a random or selected sample.
2. In most cases, the research instrument used is a questionnaire.
3. Results from the data collected for a period of time is obtained by appropriate statistical techniques.

After further analysis of the awareness studies, the researcher verified that a survey based approach is applicable for the study at hand.

3.2 Research Approach

The research was done in two phases in order to achieve the objectives. To find the awareness level and the factors affecting the awareness, a questionnaire was used on a randomly selected sample of IT Project Managers in Sri Lanka. The results obtained were statistically analyzed and the hypotheses were tested. Descriptive statistics was used to determine the awareness level of APM.

Finding the conflicts/challenges faced when implementing APM and providing recommendations based on successful implementations of APM were qualitative objectives and semi-structured interviews were carried out with a selected sample based on the agile project management maturity of the organization and convenience.

3.2.1 Conceptual Framework

Figure 12 below shows the conceptual framework used by the researcher. The framework is derived from the international benchmark study and the study done for awareness of data warehousing and mining as stated under the literature review. Few modifications were done and the awareness is measured in terms of business knowhow, basic knowledge on agile project management and industry awareness. The researcher added two new variables to the independent factors which is customer influence and organizational attitude and culture. Socio-technical aspects variable is too broad to be analyzed and hence the variable was disregarded and introduced a new variable “Existing PM Practices”.

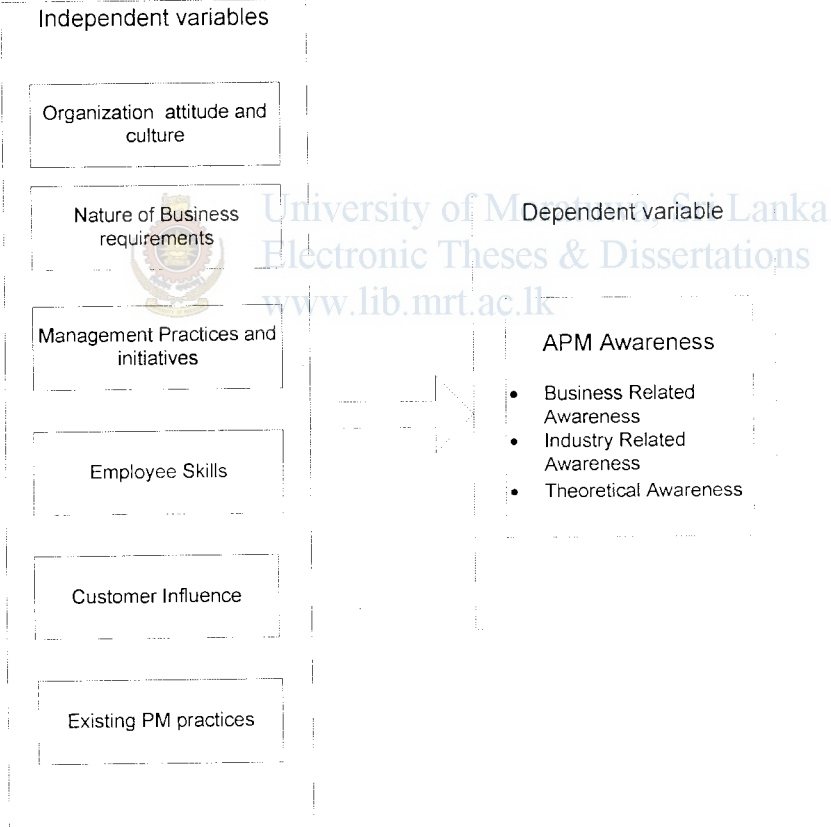


Figure 10: Conceptual framework for awareness of APM

3.2.2 Research Hypotheses

The research hypotheses were formed to statistically analyze the objective “Ascertain what affects the awareness of agile project management among the Sri Lankan IT professionals”

The following hypotheses were formed in order to analyze the relationship between the independent and the dependent variables according to the conceptual framework.

H1₀: Organizational culture and attitude do not have an effect on awareness levels of Agile project management

H1₁: Organizational culture and attitude have an effect on awareness levels of Agile project management

H2₀: Nature of Business requirements does not have an effect on awareness levels of Agile project management

H2₁: Nature of Business requirements has an effect on awareness levels of Agile project management



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H3₀: Management practices and initiatives do not have an effect on awareness levels of Agile project management

H3₁: Management practices and initiatives have an effect on awareness levels of Agile project management

H4₀: Skill level of employees do not have an effect on awareness levels of Agile project management

H4₁: Skill level of employees have an effect on awareness levels of Agile project management

H5₀: Customer Influence does not have an effect on awareness levels of Agile project management

H5₁: Customer Influence has an effect on awareness levels of Agile project management

H6₀: Existing PM practices do not have an effect on awareness levels of Agile project management

H6_A: Existing PM practices have an effect on awareness levels of Agile project management

Where H1₀, H2₀, H3₀, H4₀, H5₀ and H6₀ are the null hypotheses and H1_A, H2_A, H3_A, H4_A, H5_A and H6_A are the respective alternate hypotheses.

The hypotheses can be stated in mathematical form as follows.

H1₀: $\rho_1 = 0$

H1_A: $\rho_1 \neq 0$

Where ρ_1 is the correlation factor between organizational attitude and culture and overall APM awareness

H2₀: $\rho_2 = 0$

H2_A: $\rho_2 \neq 0$

Where ρ_2 is the correlation factor between nature of business requirements and overall APM awareness

H3₀: $\rho_3 = 0$

H3_A: $\rho_3 \neq 0$

Where ρ_3 is the correlation factor between Management practices and initiatives and overall APM awareness

H4₀: $\rho_4 = 0$

H4_A: $\rho_4 \neq 0$

Where ρ_4 is the correlation factor between Skill level of employees and overall APM awareness

H5₀: $\rho_5 = 0$

H5_A: $\rho_5 \neq 0$

Where ρ_5 is the correlation factor between Customer influence and overall APM awareness

$H_{0}: \rho_6 = 0$

$H_{A}: \rho_6 \neq 0$

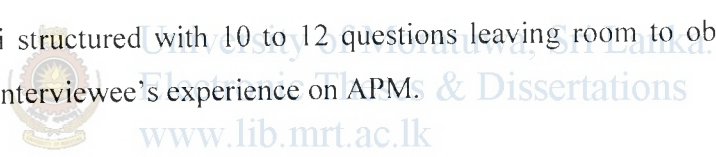
Where ρ_6 is the correlation factor between existing PM practices and overall APM awareness

3.3 Research Design

3.3.1 Research Instruments

The research instruments used for the study are questionnaire and semi-structured interviews. Section A of the questionnaire consisted of 36 questions with an open ended question in order to get the feedback on the drawbacks and problems faced in the project management methodology practiced in the organization. Section B consisted of 25 questions and an open ended question to obtain comments.

The interviews were semi structured with 10 to 12 questions leaving room to obtain practical information based on the interviewee's experience on APM.



3.3.2 Operationalising the Variables

Table 6 below represents the operationalising of the variables.

Table 6: Operationalising the variables

Concept	Variables	Indicators	Scale	Measures	Question numbers	
Organization attitude and culture	Attitude towards new PM technologies		Interval-Likert	5 point scale	1, 2	
	Internal drive for new PM technologies		Interval-Likert	5 point scale	3	
	Reaction of staff to new PM technologies		Interval-Likert	5 point scale	4,9	
	Business receptiveness to change	perceived difficulty (Au and Enderwick 2000)		Interval-Likert	5 point scale	5
		adoptive experiences (Au and Enderwick 2000)		Interval-Likert	5 point scale	6
		Perceived benefit (Au and Enderwick 2000)		Interval-Likert	5 point scale	7
		Enhanced value (Au and Enderwick 2000)		Interval-Likert	5 point scale	8
Nature of Business Requirements	Rate of business requirement change		Interval-Likert	5 point scale	10	
	Nature, complexity & Scalability of projects	On time Delivery of projects	Interval-Likert	5 point scale	12	
		Project Complexity	Interval-Likert	5 point scale	11	

Management Practices and initiatives	Employee Training & development		Interval-Likert	5 point scale	16
	Encourage new practices and continuous process improvement	Highlight Importance	Interval-Likert	5 point scale	13,14, 18
		Educate	Interval-Likert	5 point scale	15
		Recognition	Interval-Likert	5 point scale	17
		Continuous Improvement	Interval-Likert	5 point scale	19
Employee Skills	Professional qualifications		Nominal	Category	B-3,
				Dichotomous	B-4
Customer Influence	Industry Experience		Nominal	Category	B-2
	Customer relationships/ requirements/ influence	Customer's awareness on the processes	Interval-Likert	5 point scale	20
		Relationship with customers	Interval-Likert	5 point scale	21
		Communication with customers	Interval-Likert	5 point scale	22
		Customer influence	Interval-Likert	5 point scale	23
Existing PM practices	Suitability of Technology		Interval-Likert	5 point scale	24
	Problems in existing technology		Interval-Likert	5 point scale	25,26
Awareness of agile project management	Awareness of business practices		Interval-Likert	5 point scale	27,28,29
	Awareness of industry practices		Interval-Likert	5 point scale	30,31
	Theoretical awareness		Interval-Likert	5 point scale	32,33,34,35,36

3.4 Sampling Design

3.4.1 The Population

The population that comes under this study for analyzing the awareness of APM is IT Project Managers in Sri Lanka. According to the IT workforce survey done by Sri Lanka Information and Communication Technology Agency (SLICTA) in 2007 the total IT workforce predicted for the year 2008 was 44,660 (SLICTA 2007). Out of this 5% are project/program managers which is approximately 2233. According to the report the workforce is expected to grow by 20% each year and therefore the total workforce for the year 2009 can be predicted as 53,592 and hence the predicted value of IT project managers can be taken as 2680 for the year 2009. Figure 11 below shows the IT workforce growth trend.

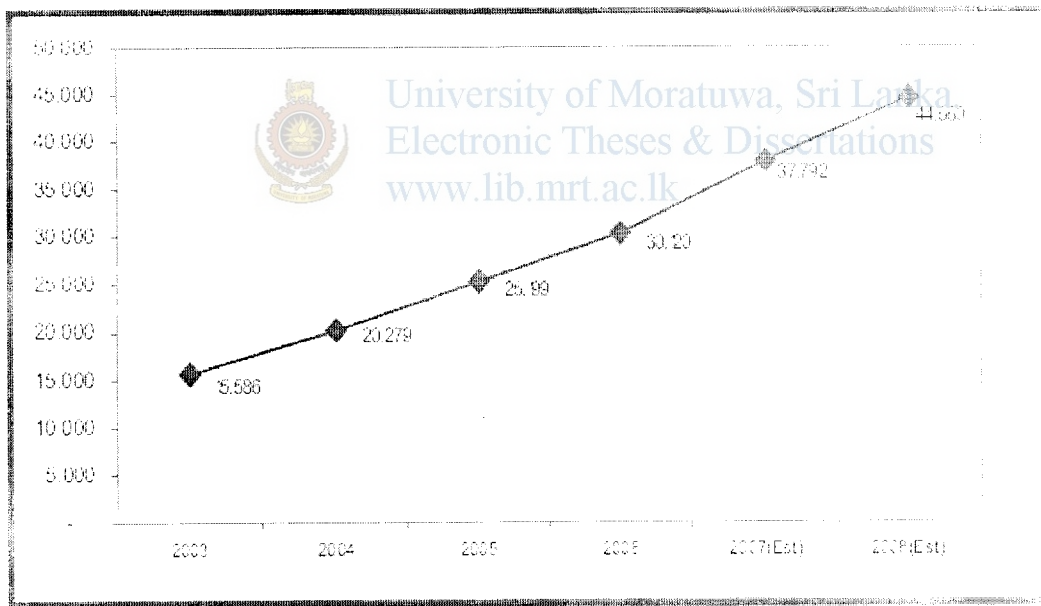
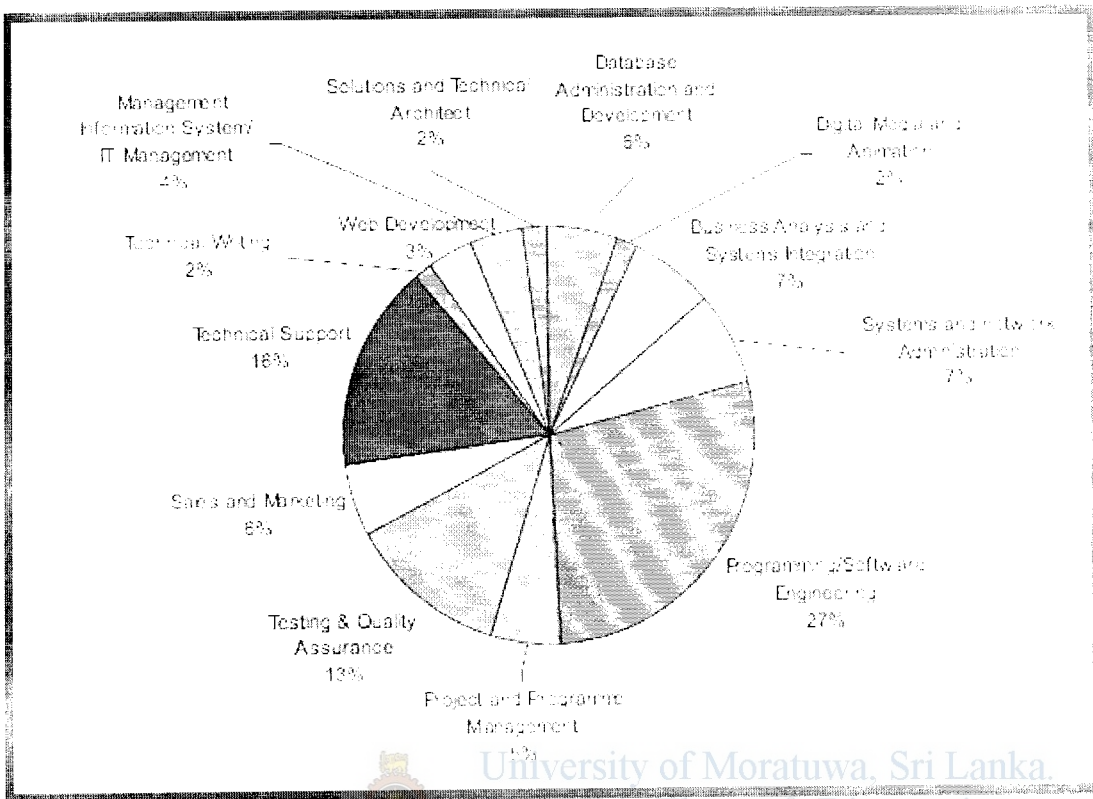


Figure 11: Overall IT workforce growth trend 2003-2008
Source: IT workforce Survey-2007 ICTA (SLICTA 2007)

Figure 12 below shows the breakdown of the IT workforce according to the job category.



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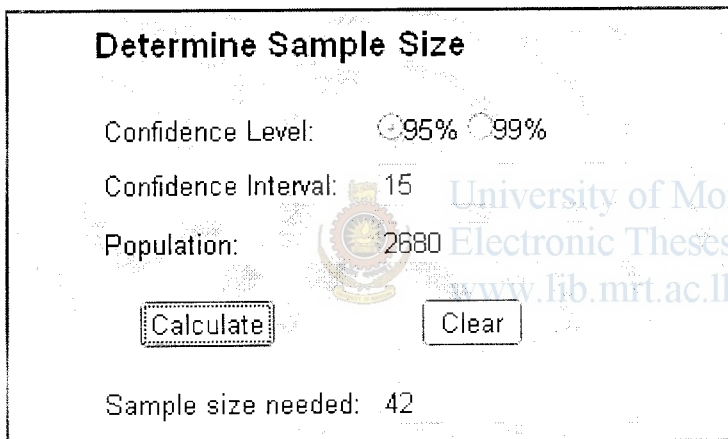
Figure 12: Overall IT workforce by job category
Source: IT workforce Survey-2007 ICTA (SLICTA 2007).

The population under consideration for finding the APM implementation challenges and recommendations is IT companies who are currently practicing Agile Project Management. Due to the time restriction a case study method was used with a selected sample of companies including a company who has successfully migrated to agile and practicing it and a company who is using both traditional and agile methods.

3.4.2 Sampling Procedure

Initially a convenient sample was selected from a list of IT project managers for testing the questionnaire. Once the questionnaire was tested a random sample of IT project managers was used.

Sample size appropriate for the study was calculated with the help of an online sample size calculator available at <http://www.surveysystem.com/sscalc.htm>. 95% as the Confidence level and 15 as the confidence interval was used to calculate the sample size when population is 2680. The calculated sample size was 42 as shown in figure 13 below.



Determine Sample Size

Confidence Level: 95% 99%

Confidence Interval: 15

Population: 2680

Sample size needed: 42

Figure 13: Calculating the sample size
Source: <http://www.surveysystem.com/sscalc.htm>

Structured interviews were carried out with IT Senior Managers and IT Project Managers to find the APM implementation challenges and to provide recommendations.

3.5 Data Collection

Data collection was done through questionnaires and semi structured interviews as stated in section 3.3.1.

3.5.1 Questionnaires

Three methods were used to collect data through questionnaires. Soft copies of the questionnaire were emailed and hardcopies were distributed and collected afterwards. An online surveying tool was also used to collect data which is considered as a convenient method by most of the IT professionals. The most reliable method to collect the data was hardcopy distribution.

3.5.2 Semi-Structured Interviews

Appointments were obtained for interviews with Senior Managers and Project Managers in the selected sample of companies either through a known party or through self introduction. Interviews were semi structured and the responses were noted down.

