

IT Design Skills Selection for Professional Development

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Abstract—IT professionals in these days need to obtain multidisciplinary skill sets in order to succeed in their career. Design skill is considered as one of important characteristic for IT professionals. Many researches addressed design skill sets differently. This results in an increasing numbers of design skill items, in which some of those items have their meaning slightly different from each other. These long lists of design skill items can cause to long range of questionnaire. This study evaluates three techniques used for items selection which help reducing the number of skill items but with expect to remain their value within the selected items. The comparative studies used in this work are random selection, statistics selection, and effective coverage-based selection. The study found that the proposed technique provides the most satisfy result comparing to the other two techniques. According to this, the reduction rate by using this model is better than random and statistics algorithms about 47.83% and 34.78% respectively. Moreover, the percent coverage by using the proposed model is higher than the traditional methods approximately 13-26 %.

Keywords- information technology skills; design; selection

I. INTRODUCTION

Data gathering is one of the important activities that help researchers to find the design skill items needed for IT professionals. Many techniques are normally used for data gathering in which the important ones are interviewing, questionnaire, and observation. Each of these data gathering technique is appropriate for different situations which may depend on many factors for examples; the subject to be studied and its scope, number of target respondent, the target respondents' locations, and time and budget used to complete data gathering [1]. However, whatever technique that might be used, every researcher expects to get the accurate and completed set of data without error and bias. Therefore, the researchers need to carefully consider the technique used to enhance the data correction and completion. One of the important characteristics of using questionnaire is the quality of questions. Good questionnaire should not consist of too many questions and each question should be short but clear enough for the respondents to understand what they are asked. However, many researchers faced with the problem of long list of questions in a questionnaire. The respondents may not paid attention to carefully complete all those questions or may want to hurry finish answering those questions in a short time.

This might result in uncompleted and uncorrected data with lead to data missing and bias.

Researchers found it is difficult to reduce some of the related subject items from the long list. Several means may be applied to minimize the number of these items such techniques are Random Selection (RS), Statistics Selection (SS), Effective Coverage-Based Selection (ECBS), Meaningful Phrase Replacement (MPR), and etc. However, in order to find the minimum list of items the combination of these techniques may also be used but it might be sophisticated and time consumed.

This study focuses on RS, SS, and ECBS techniques which can use computer tools to support in the item selection processes. While MPR techniques are human consideration basis techniques in which computer tools may not appropriate for these kinds of selection. The study will make a comparison among the first three techniques. In general, RS technique is based on computer applications to systematically random select the questions or the items on the list by assuming that each of them has equally importance. In fact each of the items may obtain different values, thus, the less important items might be selected while the items that more important might be ignored. This might be the limitation of RS technique. SS technique may be applied for selecting the important items base on its mean value. The items those have their mean value larger than the overall mean value will be selected. The weak point of this technique is a standard deviation (SD) will be ignored in which the item with its mean value less than the overall mean value may contains low level of SD while the item with high mean value may obtains high value of SD. These are the reasons, why ECBS technique is proposed as an alternative in this study.

II. MATERIALS AND METHODS

A. Dataset

TABLE I shows the lists of the design skill items required by IT professionals [2]. These design skills had been gathered from many research works in which the sources of these items are also addressed in Table 1. This study will apply the following skill set to determine the item selection models.