Chapter 7
Methodology for Developing a Usability Assessment Questionnaire in Spanish as a Bilingual Strategy for Software Improvement: A Validation Approach

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ABSTRACT

Usability is the characteristic of a software product of being effective and efficient and producing satisfaction for users and traditionally is assessed through questionnaires but most of them are only available in English. A software usability assessment questionnaire (SUAQ) is proposed in two languages: Spanish and English. The methodology comprises four stages: 1) questionnaire development, 2) administration, 3) statistical validation, and 4) sample size determination. Twenty items were evaluated in terms of clarity, consistency, and relevancy. Then, the SUAQ was administered to 95 respondents. Overall, reliability values were acceptable in

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Spanish and English version, respectively. The factor analysis was feasible since the KMO index, and the Bartlett sphericity test was statistically significant. Both versions of SUAQ were tested to determine their validity. The findings show that the proposed methodology is an effective usability assessment instrument and thus an effective software improvement tool from a bilingual approach.

INTRODUCTION

Currently, an increasing number of companies do business internationally, settle across different countries, and have customers overseas. When a company has a computer program design process that will be used by people of different nationalities and languages, it is necessary to evaluate the usability of the computer programs being developed. In English-speaking environments, it is more accessible to assess the usability of computer programs and software products since assessment instruments are generally available in English. Unfortunately, when designers and developers wish to test the usability of their products in non-English speaking environments, one of the main obstacles to overcome is the restricted number of assessment instruments available in other languages.

BACKGROUND

Usability is a quality attribute in software engineering (Pressman & Maxim, 2015), and its definition varies across sources. For example, according to the international standards ISO/IEC 25010:2011 (ISO/IEC, 2011) and ISO 9241-11:1998 1998 (International Organization for Standardization for Standardization, 1998), usability is a characteristic that allows a product to be used effectively, efficiently, and satisfactorily. Similarly, to Jakob Nielsen (Nielsen, 1993), usability refers to characteristics in a product, such as learnability, efficiency, memorability, low error levels, and satisfaction. However, even though organizations such as the International Organization for Standardization and the European Telecommunications Standards Institute (International Organization for Standardization, 1998; ISO/IEC, 2011) recognize the importance of usability in software development, none of them have proposed a usability assessment instrument. Developers thus have had to select among a series of available instruments, such as field observations, heuristic evaluations, focus groups, surveys, and questionnaires.

Questionnaires are perhaps the most popular usability assessment instruments. Examples of well-known usability assessment questionnaires are the Questionnaire for User Interface Satisfaction (QUIS), developed by Ben Shneiderman in 1987.
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