User-Developed Applications: Can End Users Assess Quality?

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ABSTRACT
Organizations rely heavily on applications developed by end users, yet lack of experience and training may compromise the ability of end users to make objective judgments about the quality of their applications. This study investigated the ability of end users to assess the quality of applications they develop. The results confirm that there are differences between the system quality assessments of end user developers and independent expert assessors. In particular, the results of this study suggest that end users with little experience may erroneously consider the applications they develop to be of high quality. Some implications of these results are discussed.

Keywords: end user computing; user developed applications

INTRODUCTION
User-developed applications (UDAs) form a significant proportion of organizational information systems (McLean, Kappelman, & Thompson, 1993), and the ability to use end user development tools is often a position requirement instead of an individual option (Brancheau & Brown, 1993). The benefits that have been claimed for user development of applications include better access to information and improved quality of information, leading to improved employee productivity and performance. However the realization of these benefits may be put at risk because of problems with information produced by UDAs that may be incorrect in design, inadequately tested, and poorly maintained.
Despite these risks organizations generally undertake little formal evaluation of the quality of applications developed by end users (Panko & Halverson, 1996). In the majority of organizations, the only measure of whether an application is suitable for use are user developers’ subjective assessments of their applications. Yet purely subjective, personal evaluations of UDA quality could be at wide variance with actual quality. Lack of experience and training may compromise the ability of end users to make objective judgments about the quality of their applications, but it appears that many end users do lack experience and training in both use of system development tools and in systems development procedures (Cragg & King, 1993).

There has been little empirical research on user development of applications (Shayo, Guthrie, & Igbaria, 1999), and most of what has been undertaken has used user satisfaction as the measure of success because of the lack of objective measures available (Etezadi-Amoli & Farhoomand, 1996). The fact that vital organizational decision making relies on the individual end user’s assessment of application effectiveness suggests that more insight is needed into the ability of end users to assess the success of their own applications, and that as well as user satisfaction, additional criteria of success should be considered.

Research on the relationship between experience or training and the success of UDAs has been inconclusive. Some studies have found positive impacts (Crawford, 1986; Nelson & Cheney, 1987; Raymond & Bergeron, 1992) and some have found negative impacts (Amoroso, 1986; Crawford, 1986; Janvrin & Morrison, 2000). Yaverbaum and Nosek (1992) speculated that computer training increases one’s expectations of information systems, and hence may actually cause negative perceptions. This may be the case for both training and experience in the UDA domain and may go some way to explaining the lack of conclusive results in the literature.

There have been many calls for the development of more direct and objective measures of UDA effectiveness (Al-Shawaf, 1993; Edberg & Bowman, 1996; Igbaria, 1990; Rivard, Poirier, Raymond, & Bergeron, 1997). There have also been some attempts to move away from the use of user satisfaction as the major indicator of UDA success and to adopt a software engineering approach with a focus on application quality rather than user satisfaction. Edberg and Bowman (1996) compared the quality of UDAs with applications developed by information systems professionals, and found UDAs to be of significantly lower quality. Rivard and her colleagues (Rivard et al., 1997) noted that although the conceptual definitions of quality from the software engineering literature are appropriate for UDAs, the operationalizations in terms of software metrics are not. They therefore attempted to capture both the user perspective and the more technical aspects of UDA quality through a validated assessment instrument to be completed by end user developers (Rivard et al., 1997). However, none of these studies have compared user and expert assessments of UDA quality, nor looked at the roles of experience and training in end users’ ability to assess the quality of applications. This paper describes a study which uses direct examination of applications to compare users’ and experts’ assessments of UDAs.

**RESEARCH QUESTIONS**

As discussed above, reliance on end user perceptions of UDA quality may be problematic because users may not only