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## **Chapter XXV**

# **Business Students as End-User Developers: Simulating “Real-Life” Situations through Case Study Approach**

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### **ABSTRACT**

*In this chapter, the introduction of “real-life” scenarios to undergraduate business students to enhance their understanding of end-user development of databases is investigated. The problems experienced with end-user development due to incomplete information, incorrect design procedures, and inadequate software knowledge are identified. It is the hope of the author that by identifying the design issue relevant to good database production and using “real-life” case studies as insight into how businesses use and store data, the students will be more aware of good practice for their future employment.*

### **INTRODUCTION**

With the increasing number of PCs available in business and the proliferation of relatively inexpensive application (4GL) software, employers are increasingly requiring business graduates to have some knowledge of the concepts of application development (Barker & Monday, 2000; Monday, 2001). Edberg and Bowman (1996) defined user-developed applications (UDAs) as “any computer-based application for which non-IS professionals (end-users) assume primary development responsibility.”

The implementation of UDAs has increased due to the perception that they offer greater user control, increase flexibility, encourage innovation, and reduce the workload of the IT department (Monday, 2001). Christoff (1991) identified that the introduction of 4GL application software represented a “fundamental change in the way data is processed” and understood that this would lead to end-users developing a greater power in the design and implementation of business applications. Hobbs and Pigott (2001) stated that the force behind end-user development was that “the users themselves are in the best position to understand the requirements of the application domain and therefore to create an application tailored to their particular needs.” Consequently, it has been noted that UDAs now represent a significant proportion of information systems being utilized in business (McGill, 2000).

However, there is significant evidence that businesses are only just identifying the problems associated with UDAs. While undertaking risk analysis and evaluation, organizations often overlook the risks involved with the proliferation of UDAs (Janvrin & Morrison, 2000). These risks can include incorrect design, inadequate testing, poor maintenance (McGill, 2000), erroneous data structures, insufficient organizational policies and procedures (Christoff, 1991), and lack of familiarity with development methodologies or application software (Panko & Halverson, 1996).

It is therefore apparent that more responsibility is being placed on the end-user developer to be conversant with design methodologies; data modeling techniques; theory related to effective and user-friendly input, output, and interface design; the intricacies of application software; and documentation techniques to ensure that the application they develop is robust and useful to the organization.

The majority of research in this area has focused on the development of spreadsheet applications, as these were the most common applications developed by end users. Panko (2000) has been instrumental in the research into error rates in spreadsheet development over the past two decades. Errors in spreadsheets developed by end users were located in considerable numbers (Panko & Halverson, 1996), primarily due to the fact that “user controls do not seem to approach the level of control that professional programmers have found to be necessary in a similar application.” Research shows that approximately 91% of end users have had experience with spreadsheets, while as many as 44% of these can contain at least one error (Teo & Tan, 1999; Janvrin & Morrison, 2000).

With the increase in availability of database software with 4GL (application generator) ability, it seems likely that these issues and problems will also be found in the development of small-scale databases. Edberg and Bowman (2000) recognized that “UDAs represent a considerable risk to organizations since users who create applications frequently have little or no training in development methods.”

Monday (2001) stated that feedback over a number of years from local businesses and professional organizations “highlighted a growing need for business graduates with a greater understanding of the opportunities afforded by 4GLs, and a competency in understanding the business needs and developing small-scale applications for local users” which can be applied to the day-to-day business problems.

Hobby (1996) highlighted the need for end users to be given some design and implementation training, where PC users were transformed into end-user developers of databases using Microsoft Access. It was identified that building database applications using 4GL software was “something slightly different from using Word and Excel — actually learning how to design a database properly.”

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