Decision Support Systems in Small Businesses

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INTRODUCTION

Decision support systems (DSSs) are widely used in many organisations (Arslan et al., 2004; Belecheanu et al., 2003; Dey, 2001; Gopalakrishnan et al., 2004; Lau et al., 2001; Puente et al., 2002). However, there is a common tendency to apply experience and techniques gained from large organisations directly to small businesses, without recognising the different decision support needs of the small business. This article aims to address the issues related to the development and the implementation of DSSs in small business firms. Our arguments are based on evidence drawn from a large body of DSS literature and an empirical study conducted by the authors in the UK manufacturing sector.

BACKGROUND

Early DSS were developed in parallel with management information system (MIS) in the 1970s. MIS is developed to primarily generate management information from operational systems, whilst DSS as defined by Gorry and Scott Morton (1971) is information systems that focus on supporting people in the unstructured and semi-structured decision-making process. A typical DSS consists of four main components: the database, the model base, the user interface and the users. Central to the DSS are the models and analytical tools that assist managers in decision making and problem solving. Concomitant with advances in the technology of computing, most DSS provide easy access to data and flexible control models with a friendly user interface design; some DSS also incorporate a variety of analytical tools and report/graphic generators. The main purpose of DSS is not to replace managers’ ability to make decisions, but to improve the effectiveness of managers’ decision making.

DSS in practice can hardly be separated from other types of computer-based systems, as it is often integrated with those systems, for example operational databases, spreadsheets, report generators, and executive support systems. Thus the boundary of DSS has now been extended, and DSS broadly refers to any computer-based information system that affects or potentially affects how managers make decisions. This includes data and model oriented systems, reporting systems, executive support systems, expert systems and group decision support systems.

The success and continued growth of small and medium sized enterprises (SMEs) are critically important to local and national prosperity, but their problems are not always accorded the same importance as those of larger organisations. Compared to the research devoted to large organisations on the use of information systems, SMEs have attracted much less attention. It is also the case that the problems inherent in providing support for small business management are more commonly studied from a social or economic viewpoint. Very few studies indeed have addressed decision support needs in the context of the use of information technology.

Managers of small businesses have often been disappointed with software packages because of the inability of these to adapt well to their needs (Heikkila et al., 1991). There are dangers in seeing small businesses as miniature versions of large businesses; many problems differ, and even similar problems require different solutions. Small enterprises normally have limited resources and less skilled managerial staff. They have higher failure risks and commonly do not have suitable access to the information they need.

DSS IMPLEMENTATIONS

Small business may represent a productive domain for attempts to introduce greater levels of computer-based decision support. Ray (1994) suggests that small business managers and their staff have positive attitudes towards the use of computers in business. Cragg and King (1993) report that many companies have plans to increase their use of computer applications, and found that the wish for better information was the motivating force in all case studies conducted. In the majority of the firms studied by Khan and Khan (1992), managers believed that a computerised system improved their performance in selected areas, but that there is still room for significant further development.

Gordon and Key (1987) point out that if small business managers’ problem-solving skills are deficient in any of the critical areas of management decision-making, then they must improve those skills through the use of appropriate educational programmes, consultants, decision support tools,
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