

# An Overview of Executive Information Systems (EIS) Research in South Africa

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## INTRODUCTION

Executive information systems (EIS) are designed to serve the needs of executive users in strategic planning and decision-making. Sometimes the terms “executive information systems” and “executive support systems” are used interchangeably (Turban, McLean, & Wetherber, 1999). Definitions of EIS are varied but all identify the need for information that support decisions about the organization. EIS can be defined as “a computerized system that provides executives with easy access to internal and external information that is relevant to their critical success factors” (Watson, Houdeshel, & Rainer, 1997).

This article is organized as follows: The background to EIS implementation is given. EIS research studies undertaken in South Africa are then described. Some future EIS trends are then suggested.

## BACKGROUND TO EIS IMPLEMENTATION

A number of possible indicators for a successful information system (IS) have been suggested in various implementation studies (see, for example, Laudon & Laudon, 1998). The definition of implementation includes the concept of success or failure. Implementation is a vital step in ensuring the success of new systems.

The EIS implementation process is defined as the process used to construct an EIS in an effective manner (Srivihok, 1998). Different factors have been suggested by various researchers as influencing successful EIS implementation (see, for example, Rainer & Watson, 1995). However, there is no agreement on which factors play key roles in EIS implementation. A large number of success factors have been repeatedly suggested by practitioners and researchers, even though empirical studies on the success factors are rare.

EIS are high-risk application systems that are expensive to build and maintain (Strydom, 1994). For example, in October, 1997, the largest water utility in South Africa, Rand Water,

took a decision to build an EIS (based on Oracle® products) and invested ZAR4.5m in revamping its IT infrastructure to support that deployment. In the case of Rand Water, the organization’s EIS eventually played a major role in providing its executives with benchmarking information helping them track Rand Water’s overall performance against a set of objective criteria.

## EIS RESEARCH UNDERTAKEN IN SOUTH AFRICA

A review of previously conducted EIS research at universities in South Africa is undertaken. From this collection, the nature of EIS research for each study is discussed. South African databases were searched for research literature (essays, technical reports, thesis, dissertations, etc) with the keywords “Executive Information Systems” in the title. Nine successful “hits” were found. Those research articles are reflected in chronological publication sequence in Table 1.

The nature of each of the nine EIS studies in South Africa is now briefly discussed:

- Researcher No 1: Design and Implementation of Executive Information System (EISs):** DeWitt (1992) discusses critical success factors (CSFs) for EIS development and states that the type of EIS for an organization will depend on the information requirements of the organization. It should be driven by the CSFs that are unique to a particular business. From previous studies, DeWitt (1992) identifies nine CSFs for an EIS (see Table 2) and notes that there “are differences of opinion in the literature regarding the selection of the right technology” as a CSF. This study was undertaken with sixteen large Cape Town companies from various industry sectors. The findings from Watson’s international survey (Watson, Rainer, & Koh, 1991) were compared against the local (South Africa) survey findings. The findings indicate (1) congruences between the literature search and survey

*Table 1. Research literature (essays, thesis or dissertations) with the keywords “executive information systems”*

| No | Researcher(s)                           | Publication Date | Research title  | Report Type      | Qualification and Institution                         |
|----|---|------------------|---|------------------|---|
| 1  | DeWitt, P.                              | May 1992         | Design and Implementation of Executive Information Systems (EISs)   | Technical Report | B Com (Honours): University of Cape Town              |
| 2  | Twemlow, S. Hoffmann, U. and Erlank, S. | October 1992     | An Assessment of the Penetration of Executive Information Systems in South Africa                                     | Technical Report | B Com (Honours): University of Cape Town              |
| 3  | Strydom, I.                             | April 1994       | Executive Information Systems: A Fundamental Approach   | Thesis           | Doctor Commerci (Informatics): University of Pretoria |
| 4  | Steer, I.J.                             | January 1995     | The Critical Success Factors for the Implementation of Executive Information Systems in the South African environment | Dissertation     | M Com: University of Witwatersrand                    |
| 5  | Faure, S.                               | June 1995        | The Impact of Executive Information Systems on the User   | Essay            | B Com (Honours): University of Cape Town              |
| 6  | Chilwane, L.                            | November 1995    | Critical Success Factors for the Management of Executive Information Systems in Manufacturing                         | Research report  | M Com: University of Witwatersrand                    |
| 7  | Khan, S.J.                              | February 1996    | The Benefits and Capabilities of Executive Information Systems  | Research report  | MBA: University of Witwatersrand                      |
| 8  | Baillache, S.                           | April 1997       | The Experiences Gained by Users of Executive Information Systems  | Dissertation     | MBA: University of Witwatersrand                      |
| 9  | Averweg, U.R.F.                         | December 2002    | Executive Information Systems Usage: The Impact of Web-based Technologies   | Dissertation     | M Science: University of Natal                        |

findings; (2) major conflicting results between the local survey, the international survey and literature search; and (3) major problems encountered in developing EIS.

- **Researchers No 2: An Assessment of the Penetration of Executive Information Systems:** Twemlow et al. (1992) carried out an exploratory study that showed the extent of EIS penetration in South Africa. The sample (61 companies) was selected from the 1992 Financial Mail survey (a reputable weekly financial publication) of “top” companies in South Africa. The research instrument was designed to evaluate EIS as a significant business trend, the extent of penetration of this trend in the organization and perceived impact on the business. From these researchers’ findings, the problems experienced by companies during the implementation and use of their EIS is reflected in Table 3. Twemlow et al. (1992) suggest that even though studies have been performed to determine the nature of executive work and their information requirements, there is still uncertainty in this area. Twemlow et al. (1992) note that “it is not surprising” that the first two out of the top four problems associated with EIS implementation were concerned with the complex and changing executive information needs.
- **Researcher No 3: Executive Information Systems: A Fundamental Approach:** Strydom’s (1994) research investigated the problems concerning EIS “from a fundamental research perspective.” Based on the results

of the research an augmented EIS was proposed and referred to as a computer supported executive system (CSES). Strydom (1994) discussed the role of training in successful implementation of IS and focuses on computer supported learning for EIS.

- **Researcher No 4: Critical Success Factors for Executive Information Systems Implementation:** Steer’s (1995) study used the findings of research undertaken by Harris (1993) and others. The basis of Steer’s research “was to identify the critical success factors for the successful implementation of an Executive Information System ..... where an EIS had been implemented.” Seventeen well-established organizations in Gauteng (a province in South Africa) that have EIS experience were targeted and surveyed. The analysis of Steer’s findings indicate 21 major concepts that were raised by interviewed respondents in relation to the CSFs for implementing EIS. The top 10 CSFs (in descending order) that were identified in this study for the successful implementation of EIS are reflected in Table 4. Steer indicates that although “the remaining 11 concepts of the 21 discussed during the research are not the most important critical success factors of implementing an EIS, they are still important, and should therefore be considered when implementing an EIS.” Steer (1995) labels these CSFs as “secondary” CSFs for the successful implementation of EIS. These secondary CSFs are reflected in Table 5.

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