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Henry Newkirk  
*University of Kentucky*

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# **Environmental Uncertainty and Strategic Information Systems Planning Comprehensiveness**

**Henry E. Newkirk**  
University of Kentucky

## **Introduction**

Strategic information systems planning (SISP) is the process of identifying a portfolio of computer-based applications to support an organization's business plans and to help it realize its business goals (Lederer and Sethi 1988). The extent of SISP success may be associated with more or less comprehensiveness in the planning process and the stability of the environment (Salmela 1996).

Two types of models - comprehensive and incremental - describe strategic formulation (Fredrickson and Mitchell 1984). The most basic feature of the former model is the emphasis on being "comprehensive" in making individual strategic decisions and integrating them into an overall strategy (Fredrickson and Mitchell 1984). The model stresses that strategic decision making should be exhaustive or inclusive in a variety of decision activities.

The alternative model is incremental (Fredrickson and Mitchell 1984). Small groups rely on the expertise, experiences, and behavior of their members (Salmela 1996). Plans use trial and error procedures. Attempts to integrate individual plans into a comprehensive organizational plan are rare. This model favors ideas and interpretations, rather than existing rules and procedures.

One study tested the relationship between planning comprehensiveness and performance in an unstable environment (Fredrickson and Mitchell 1984) and another did so in a stable one (Fredrickson 1984). The findings suggest an opposite relationship between planning and organizational performance in the two environments (Fredrickson 1984). Comprehensiveness and performance were negatively related in an unstable environment (Fredrickson and Mitchell 1984) but positively in a stable one (Fredrickson 1984). Presumably planners could use comprehensiveness to capitalize on their understanding of the stable environment and use the speed and flexibility of the incremental approach in the unstable one.

## **Theoretical Foundation**

These findings in strategic business planning form a very preliminary basis for two hypotheses:

H1: As SISP comprehensiveness increases, SISP success increases until it (success) reaches a maximum; as SISP comprehensiveness continues to increase, SISP success decreases.

H2: In an uncertain environment, the SISP success maximum is achieved with less SISP comprehensiveness than in a stable environment.

A major theoretical basis for H1 is the law of diminishing returns. This law states that the assignment of one unit of input to a process results in an increase to the total output (Samuelson 1976). However, as additional units are added, the marginal output begins to decline and the total output begins to rise at a declining rate (McGuigan et al. 1996). As still more units are added, the marginal output of each unit becomes zero and the total output reaches its optimal. The total output then starts to decline (Sichel and Eckstein 1974). SISP probably displays features of the law of diminishing returns.

With regard to H2, Anderson and Paine (1975), Mintzberg (1973), and Nutt (1976) suggest that comprehensiveness is appropriate for organizations in a stable environment. Such an environment can be well understood. Comprehensive planning can effectively use that understanding and result in greater success than can less comprehensiveness (Fredrickson 1984). However, less comprehensive planning could use the speed and flexibility of a less stable environment (Fredrickson and Mitchell 1984). Ansoff (1979) further argues that increased environmental change has made it impossible to achieve the level of integration demanded by comprehensiveness.

## **Methodology Overview**

This research will use a survey instrument to operationalize the constructs identified in the hypotheses. The instrument will incorporate measures of constructs used by other researchers in SISP (Harris 1989; Kearns 1997; Raghunathan and Raghunathan 1994; Salmela, Lederer, Repoonen 1998; Segars 1994; Teo 1994) and create new measures using other SISP research (Mentzas 1997). Following Churchill's (1979) procedures will produce an instrument rigorously tested for reliability and validity. Participants in the survey will be professional information systems planners. A limitation of this research is that it will use only their perspective.

## *References*

References available upon request from the author (henewk0@pop.uky.edu).