Issues in Managing Small Business Information Systems

Bin-Shan Lin, Ph.D.
John A. Vassar, Ph.D.
Louisiana State University

ABSTRACT

This paper addresses three issues in managing small business information systems (SBIS): technical issues, organizational issues, and the approach to information systems investments. Practical guidelines are provided for small business executives.

INTRODUCTION

Two approaches can be used in the way to manage computer-based information systems in organizations. One approach views the information system as a tactical and operational defensive weapon to meet basic processing requirements and to help the firm stay on track (4). Such an approach is reactive oriented. Information system projects are developed on reactions to the environment. A different approach views the information system as a strategic weapon which provides companies with opportunities to become more effective and to gain a competitive advantage by lowering the company's cost to provide goods and/or services, providing information to differentiate the company and its product from the competition, and increasing the company's ability to coordinate its activities (1, 14).

Executives should be involved with the development of small business information systems (SBIS) for three reasons. First, a computer-based information system provides a valuable tool for improving the quality of decision making within their organization (13). This is of particular importance as it relates to the development of a business strategy which depends on the output of the SBIS. Second, since SBIS provide executives with the information needed to make decisions and develop effective strategies, only through their involvement with its development can executives be assured they are receiving the information needed. Third, effective SBIS development capitalizes on the investment made to automate. Most small businesses use computer-based information systems only for applications such as inventory control, payroll, accounts receivable, accounts payable, and general ledger (13, 18). Executives' involvement in SBIS planning enhances the likelihood the computer will be used to generate **significant information for management decision making.** .

The role played by SBIS has expanded in scope and significance, and usually outpaced efforts to manage it. This paper addresses three issues in managing SBIS: technical issues, **organizational issues, and the approach to information systems investments. The technical**

aspect focuses on the necessity of a structural approach for control and planning. Section 2 discusses the concepts of alignment and impact of SBJS. Section 3 contrasts the bottom-u p control and the top-down control for SBIS. The organizational issue emphasizes necessity of an integrated information systems plan and its linkage to the small business objectives. Section 4 addresses an integrated approach for SBIS planning. Section 5 states the approaches to information systems investments. Finally, practical suggestions for SBIS are presented in Section 6.

ALIGNMENT AND IMPACT

Strategic planning is a systematic approach by a given organization to make decisions about issues which are of fundamental and crucial importance to its long-term health and vitality (20). Withou t proper strategic planning for information systems, systems projects are of ten built piecemeal, resulting in incompatible, redundant, and inflexible information systems. A major purpose of strategic planning is to provide a process for developing a strategy for information systems within an organization on the basis of an overall plan (10). Since small business firms must keep abreast of the dynamic environment in which they compete, effective strategic planning is the key to capitalizing on the opportunities of SBIS.

Alignment is the state of having the information system strategy mirror organizational strategy, while impact refers to the effect that the information system strategy has on the organization (2). Both have become especially crucial in today's competitive environment as executives search for ways to employ information systems to gain competitive advantages. An example of such a use would be the ability to retrieve informat ion about the effect of price changes on product demand in a company.

Since each strategy component has its own set of goals, actors, and cost limitations, the process is not straightforward. Strategies are in constant flux, changing with the rise and fall of political fortu nes, personnel turnover, marketing changes, government actions, etc. It must be recognized that strategic planning for SBIS is a process (11), not something which is easily packaged and employed to coordinate organizational units as a guide for their planning.

The SBIS planning process is business-driven. The planning process should align activities with overall organizational strategy, focusing the portfolio of SBIS on a company's goals. SBIS planning needs identif ying the areas in which high-payoff opportunities are likely to be found. However, the most proper prescription for a small business executive is to integrate SBIS into management and control processes on a daily basis, rather than depend on formal and strict procedures. '

Information systems architecture refers to the overall structu re of all information systems combined (28). This structure consists of the applications for the various managerial levels of the organization and applications oriented to different management activities such as planning, control, and decision making. I nformation systems architecture also includes databases and supporting sof tware. An information system's architecture guides future development for an organization (26). For small busi.ness executives, information systems architecture should also allow response to diverse short-term information demands.

It would appear that SBIS can be aligned to organizational strategy as well as impact that strategy, by the development of a flexible resource base. A strong resource base, that includes data, network, and applications, can be used to respond quickly to change in the small business environment as opportunities and th reats present themselves. The architecture has to be u p-dated as the needs of the users become better known or the business environment changes significa ntly.

BOTTOM-UP VS. **TOP-DOWN CONTROL**

Planning provides a systematic framework within which executives may control. Two approaches of the framework are bottom-up control and top-down control. The bottom-up control is a traditional approach in which different functional areas are employed without consideration for integration and optimization at the organizational level. As a resut!, small business firms find that the systems developed by bottom-up control become increasingly incomprehensible, incompatible, and redundant because of the lack of overall top direction.

On the other hand, small business executives may seek a proper top-down control of different SBIS strategies. A top-down control requires an organizational approach to design and evaluation of the information systems, since there are information requirements and cost-benefit criteria that must be met across the business f irm (3). A company-wide information systems pol icy provides a unified outlook and springboard for the information systems planning process (4).

Organizational goals drive the needs of the SBIS, which in turn drive the capabilities of the information fu nctions of the small business organization. More importantly, problems and feasible solutions in building SBIS are usually organization-specific. The top-down approach is issue directed and developed in an organization-specif ic environment. It will help the small business to_ build a process tailored to fit its specific needs and method of operation for its SB!S.

The iop-down control operates on the principle of functional decomposition. As a first step, the firm's current information system is reviewed in very global terms. Graphic representations for the processes, flows, and data stored can be employed. The preliminary document will then be decomposed process by process until the processes cannot be decomposed further. The results may provide a schema of the firm's information flow. After carefully reviewing the results, the general req uirements for flow and exchange of data should be met before any information system can be effectively used and integrated into the overall corporate framework. Af ter the existing system has been decomposed, the new or modified system can be designed in a similar way. The highest level of the decomposition can be updated in the input and output information flows. The bottom level may represent modules of software that will ultimately be produced in the final system.

SBIS need to be positioned to better support the functional areas in the small busi ness firm. In order to reveal hidden vulnerabilities and unique strengths, an assessment of the feasibility of information system's use in a particular organization is required. The top-down approach should not only identif y and manage the scope of SBIS but also should develop an agenda to demonstrate how to manage the process of the SBJS. Executives must be involved in improving information systems planning· and identif ying the actions needed to respond to the critical issues in strategic planning (11).

ORGANIZATIONAL ISSUE

What small business really needs is not a fragmented approach but an integrated approach that will fully integrate all the SBIS functions and technologies into the organization. A major objective of SBIS is to achieve a n information-based comparative advantage which is grounded on a support of decision-making capability. SBIS planning does little for the organization if the plan is not created to provide support for the overall organizational goals.

As SBIS is integrated into the vital operations of the small business, such as customer and supplier systems, it is crucial that SBIS planning at the strategic level become integrated with the business process. To accomplish this, a strategy set transformation (SST) method (9) can be used. The overall organizational strategy is viewed as an information set consisting of the mission, objectives, strategies, and other strategic variables (e.g., managerial sophistication, proclivity to accept change, important environmental constraints, etc.) Strategic planning serves as the process of transforming the organizational strategy set into an information system strategy set consisting of information system objectives, constraints, and design strategies.

In order to establish a proper linkage between the organization's strategic plan and its SBIS planning, four steps need to be taken (8). These steps are adapted for small business as follows:

1. Assess and evaluate the current organizational objectives and strategies of the small firm, such as how it is structured and how it functions.

2. Evaluate the current state of information technology in terms of data, application, and architectures. A comparison should be made between the current state of information technology in the small business firm with the existing state of technology available.

3. Forecast the organization strategic position in the future in terms of the firm's objectives and strategies.

4. Evaluate the required state of information technology needed to support the strategic position in the future. Identify feasible opportunities and make a strong commitment ' to use SBIS for increasing management's effectiveness, improving productivity, and augmenting product-service differentiation.

The strategic planning process for SBIS does not end with these four steps; it is an ongoing procedure that small business executives will repeat over and over. With each round, executives will gain experience, and the steps become much easier.

The user profiles (29)'can be used to generate and evaluate ideas during the integration process. The basic promise of the user profiles is to classify users' work activities according to factors relevant to the development of information systems in the organization. These factors include primary activity (planning, control, operations),

- primary concern (strategy, resources, tasks),
- organizational support (excellent, good, poor),
- decision-making (structured, less structured, unstructured),
- information resource (internal, external, or both),
- time frame (short-term, long-term),   ·
- communication (written, spoken, or both),

Because of their narrower product lines, smaller customer bases, and very limited resources, small businesses find that each factor is necessary for the SBIS planning. Small businesses need a different approach to the SBIS planning because of the following characteristics: resource poverty, a less informal organizational structure, and their adaptability to change (25).

Small businesses may enhance their performance through the informal application of basic decision making practices (17). Small business firms deemphasize formal written documentation. To support the executive's lack of planning orientation, skill, or time allocation, Robinson (16) suggested that if small businesses are to utilize strategic planning as an effective management tool, a major necessity is the comprehensive inclusion of outsiders in the planning effort. Thus, while strategic planning is crucial for small firms and may be practiced informally, their unique limitations would recommend the inclusion of outside consultants to assist in the planning effort.

SBIS INVESTMENT APPROACHES

Research has stressed the importance.of taking an investment approach to the planning of the information systems. McFarlan et al. (6) suggest that there is a variety of pressures which make planning necessary. The most important are rapid changes in information technology, scarcity of skilled people and other management resources.

Two investment approaches available to management are identified by Yap (27): the tactical approach and the strategic approach. The tactical approach is characterized by the lack of company-wide policy relating to the development of information systems which could result in an incoherent investment strategy. In many situations, small business chose a minicomputer system for its accou nting f unctions, without giving due consideration to some other related activities which could have been identified to be crucial for the company. The strategic approach may be viewed as a coordinated investment pla nning which will provide a sense of unified direction for the development of an information system. The strategic approach will provide the top-down guidance which is necessary for the raiional development of integrated SBIS.

A small business should produce an investment plan to provide strategic guidelines for information systems investments (24), and identif y opportunities for the applications of SBIS. We suggest that the tactical approach is likely to lead to incompatible integration in SBIS, whereas the strategic approach is likely to lead to a more effective exploitation of SBIS through the development of integrated systems. The top-down approach, as mentioned in Section 3, allows small business to focus and direct its total information assets, costs, and efforts on meeting its real information needs in a cost-effective manner. The top-down approach commits small business executives to participate in developing SBIS at all phases of investments. To effectively develop integrated SBIS, the small business manager must develop an opportunity-oriented management process. This process must include a mechanism to ensure that the organization receives maximum value and return for the SBIS investment.

SUGGESTIONS

In summary, several guidelines are suggested for developing SBIS as follows:

1. Executives must appreciate the expanded role and diversity of SBIS if they ensure that the expected benefits are being realized and that the overall application of SBIS is linked to organizational goals.

2. Establish an early focus on SBIS planning. The SBIS plans must support a number of different types of competitive strategies for the small business. They include lowering costs, creating new business, and changing scope. However, one of the most important problems in the SBIS planning process is to make sure it identifies and selects SBIS applications that fit the priorities established by the small business.

3. The planning horizon is the second concern. The determination of the length of the planning horizon·might be problematic, vitally impacting on organizational effectiveness anp the choice of an appropriate organizational form (7). However, the planning horizon should be two years or less for most small firms (19).

4. SBIS should include both external and internal environmental information. A recent study
    ' indicates that small business executives received outside help in external resources form
    only twenty percent of the time (22). The external resources, among many others, in-
    clude government reports, demographic studies, trade publications, marketing surveys,
    and community consultants. A key external issue is the analysis of the firm's communi-
    ty. Bacause small businesses usually serve a localized market, SBIS must strategically
    cope with the external change.

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