An integrated method to evaluate business process alternatives

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Abstract

Purpose – Globalization and digitalization have led to the need for a different view of international business. Computer technology, especially in the form of enterprise systems, presents the opportunity to apply best (or at least better) practices. Twentieth century enterprise systems were focused on internal optimization. Twenty-first century enterprise systems need to be much more open, and to focus on the demand chain, driven by serving customers better. To better fulfill this need, this paper aims to present a method for evaluation of business process alternatives focusing on demand chain needs.

Design/methodology/approach – A method integrating decision making and system approach principles is presented that includes use of soft systems approaches to identify goals and interrelationships among system parts, generation of alternatives, analysis of alternative performance on goals, refining alternatives to better satisfy goals, and multiple criteria selection analysis to recommend choice.

Findings – The method is demonstrated on a small business process design. This process can allow broader consideration of organizational goals and focus on customer demands.

Originality/value – The paper demonstrates how such a method might work to better support the design of enterprise systems in this dynamic new environment.

Keywords Supply chain management, Demand, Systems analysis

Paper type Research paper

Introduction

The networked global economy is the result of a number of different geopolitical, economic, technological, and social factors. Globalization and digitalization have been driving forces for the emergence of the e-global age (Lee and Lee, 2002). Effective value chain management is needed to support the global movement of goods, services, capital, and knowledge. Thus, supply chain management has become a critically important means of implementing strategy for most organizations.

Supply chain management (SCM) has been defined in a variety of ways depending upon the industry, scale, environment (domestic or global), and type of product service. However, perhaps a sufficient perspective of SCM for our purposes is that it is the process of managing various relationships and functions involved in the value chain from suppliers to producers to distributors to the end user, with the basic goal of maximizing customer value by providing customers with the right product or service, in the right quantity, at the desired time.

The impact of advanced information and communication technologies (ICT) during the past ten years, especially the exploding use of internet technology and e-business, has brought tremendous changes to SCM. The driving force behind these changes is the newly empowered customer, notably e-customers (Kuglin, 1998). The e-customer is internet-savvy and discriminating, with a great deal of information about the market in terms of products or services available and their characteristics, such as quality, price, and trustworthiness of the source. The e-customer can now dictate what he or she

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wants in terms of quantity, desired prices, and location of delivery. Furthermore, e-customers form their own communities, powerful enough to exercise influence on the entire value chain.

Perhaps the most important change that e-customers have brought to SCM is reversing the chain and transforming it into demand chain management (DCM). Some researchers argue that while SCM is a push system and DCM is a pull system, their downstream activities are basically the same. Thus, they believe that the distinction between SCM and DCM is quite superfluous (Vakharia, 2002). However, we disagree with this argument. While some firms may work exclusively with either SCM or DCM, others may actually have both SCM and DCM with different demand generation points, different distribution channels, and different approaches needed for customer relationship management (CRM).

DCM is a set of practices aimed at managing the entire value chain, motivated by the final customer and working backward to the downstream (Selen and Soliman, 2002). DCM's fundamental objectives are to develop synergy throughout the value chain, and to focus on meeting customer needs rather than focusing on optimization of the logistics and production system (Williams *et al.*, 2002). Close integration of operations between manufacturers, suppliers, and customers in DCM relies to some degree on business process reengineering (Frohlich and Westbrook, 2001). Thus, research in DCM includes Just-in-Time (JIT) manufacturing, mass customization, and use of third-party logistics.

Analysis and design of systems to support the end customer involves a number of alternative channels and forms. Contemporary marketplaces have diverse requirements, and one demand chain strategy is not best for all of these requirements. Focus is needed to ensure that demand chains are engineered to customer requirements (Childerhouse *et al.*, 2002). A strategic planning approach would help organizations choose and prioritize desired system features, leading to the identification of better designs of demand chain systems. Each organization needs to design its own path, best serving its unique position in the supply chain.

The purpose of this paper is to develop a soft systems version of goal analysis with the intent of viewing information systems design as a system with interacting parts with a shared purpose. Identification of goals in the demand chain can be a way to develop conceptual models to better understand problems in interaction among system parts. This process will lead to a broad set of alternatives. Within the context of a demand chain, this approach will lead to a system design that improves operations for all concerned to provide the best value to the customer.

Demand chain processes

Retailing modules have been among the most difficult functions for enterprise resource planning systems (ERP) to support, due to the less structured nature of processes involved (Light, 2001).

There are five basic channels for retailers to provide customer contact:

(1) traditional brick-and-mortar stores where customers can physically view products and talk to human sales personnel;

(2) telephone contact, where customers can talk to a human, but cannot see the merchandise,

(3) mail order, where customers neither talk to humans nor see the merchandise;
(4) web sites, where customers do not talk to humans, but can efficiently access a broader set of sources; and
(5) mobile technology, using handheld devices to access internet sites, with personalized agents providing customized information to the customer.

Internet operations are expected to supplement bricks-and-mortar retailing operations. Implementing web operations is going to require re-engineering retailing functions. Demand chain views expand the personalization of retailing, and call for further re-engineering. There are a number of retailing processes that are impacted by application of demand chains, as reviewed in Table I.

Issues in moving to demand chain focus

The reasons to move to demand chain focus are primarily to provide better service to customers by taking advantage of information technology to better identify customer needs. This can supplement the gains obtained from supply chain focus, which provide efficiencies in accomplishing work by eliminating redundancies and expanding market access.

The adoption of unified systems such as ERP would be expected to reduce the operating cost of information systems, as data would be centralized, standardized, and more efficient access would be provided. Countering the positive aspects of unified systems is the added cost of re-engineering and system acquisition and implementation, as shown in Table II.

Retailers seeking to implement demand chain concepts will face a number of choices. First, they need to determine which of the five basic channels of customer contact they will provide. These can be viewed as independent decisions applying marginal analysis, but often there are synergies from various combinations of channels. Bricks-and-mortar outlets obtain important benefits from supplementary channels. Internet and mail-order contacts can point customers to physical stores. A

Function	Bricks-and-mortar processes	Internet processes	Demand chain processes
Merchandising	Merchandise planning	Same	Demand driven
	Product development	Same	More responsive
	Supplier selection	Broader selection	Same as internet
	Ordering	Expedited	Further expedited
	Allocation	Same	More responsive
	Pricing	Same	Can be dynamic
Distribution	Receiving	Better control	Same as internet
	Shipping	Better control	Same as internet
	Returns	Same	More contact
Selling	Store management	Web access	Can customize
	Merchandise presentation	Web presentation	Can customize
	Customer service	Web link	Can personalize
	Promotion	Add web exposure	Can apply CRM
Marketing	Customer identification	Broader clientele	CRM
	Market research	Could do online	Can tailor product design
	Advertising	Same	Can focus advertising

Table I.
Retailing functions by concept

major benefit is that internet and mail-order customers tend to be more profitable to retail firms. Regardless of the channel through which they make their final purchase, internet and mail-order contacts can provide profitability in indirect ways. It is expected that mobile contacts will be even more profitable per customer. All channels receive important benefits from the other channels. One important function of a web site is pointing potential customers to traditional bricks-and-mortar stores. Internet sites, telephone contacts, and mobile devices can provide customers with fast, no-pressure product information. All of these channels and mailing channels can induce potential customers to obtain more information at the physical retail outlet. ERP vendors will argue that it is obvious that each retailing organization must adopt all possible technologies in order to keep up with their competition. The recent faltering of the information technology economic sector shows that not all information technology is necessarily profitable. Management is responsible for identifying those combinations that are reasonable for consideration. Each alternative involves cost in re-engineering analysis as well as subsequent cost estimation.

Systems view

System theory has a long tradition, beginning in Western scientific culture with von Bertalanffy's (1968) biologically based general systems theory. It proved to be a basic reorientation in scientific thinking, opposed to the reductionist view traditional to Western science. Systems consist of interacting components with a common goal, often incorporating feedback mechanisms to keep the system efforts coordinated to accomplishing that goal. System components interact, yielding a system output greater than is explained by the output of its individual components. Von Bertalanffy argued that General Systems Theory would show value if it opened new perspectives and viewpoints capable of experimental and practical application. Even for problems where quantification was impossible due to complexity or uncertainty, systems principles could be applied qualitatively, leading to better understanding.

General Systems Theory principles have been widely applied in the study of human systems. This includes information systems. Checkland (1999) credited Herbert Simon with originating systems thinking applied to organizations. Simon's key concept was that management was making selection decisions in pursuit of goals and objectives. Simon (1997) stated that the main requirement in the design of organizational communication systems is not to reduce scarcity of information, but rather to combat the glut of information. Viewing an information system simply as the sum of its parts would lead to mechanisms to generate more information within an organization without consideration of the impact on other system components. Should an

Issues	Demand chain positives	Demand chain negatives
Customer loyalty	More personalized service	
Cost	Operating efficiency	Cost of re-engineering Cost of system acquisition Cost of training
Real-time response	Can adapt to change more quickly	Equity: need to present image of fairness in pricing

Table II.
Positives and negatives of demand chains

information system be judged on the volume of its output, the receivers of these reports would have no means of coping with being over-informed. Viewing information systems as systems in the GST sense would begin with identifying information requirements, and then designing the system to generate that information, focusing on what Rockart (1979) referred to as critical success factors. ERP systems are usually based on business process re-engineering to various degrees, also applying GST principles. In the ERP environment there are attempts to attain optimality through best practices. Of course, it is not easy to get everything just right, and while we would argue that the systems view helps organization information systems, human organizations involve high levels of change and uncertainty, both within systems and dealing with external environments. Therefore systems in human organizations rarely attain optimality, and in those rare cases where they do, they are rarely able to maintain it.

Simon (1997) also applied systems thinking to his ideas about decision processes. He gave the decision-making activities of:

- setting the agenda;
- representing the problem;
- finding alternatives; and
- selecting alternatives.

The first generation of management information systems in America was widely considered to have failed because, their designers sought to maximize the information provided to managers rather than protecting managers from irrelevant distractions (Simon, 1999). Thus we can argue that a non-systems view of information systems led to failed systems. The concept of emergence is important. Emergence contends that the parts of a complex system have mutual relations that do not exist for their parts in isolation (Maturana and Varela, 1998). Feedback control is a system component, requiring recognition of goals, measurement of performance, comparison of performance with goals, and correction when differences were detected.

Bounded rationality is a key concept from the work of both March (1978) and Simon (1999). Rational choice makes sense if the future consequences of current actions and future preferences are known. But that is rarely true. Individual preferences are often fuzzy and inconsistent, and appear to change over time. Furthermore, people often protect themselves by obscuring the nature of their preferences, making rational utility analysis problematic. Simon argued that actual human choice behavior was more intelligent than it appeared. The use of aspiration levels, incrementalism, and satisficing rules were argued to be sensible under general business decision-making circumstances. In some instances, goal programming efforts considerably changed the spirit of decision analysis, moving it toward a role of exploring the implications of constraints and away from the concept of the optimal solution.

Vickers (1965) differentiated himself from Simon, using a more explicitly dynamic conceptual model of an organization. Vickers argued for the ubiquitous interaction of priority, value, and cost. He rejected the use of a weighted utility function to compare criteria, and insisted on the information concept of matching, along with the reciprocal process of a system operated on by judgment. Vickers was influential in the work of Checkland (1999).

Systems Thinking, Systems Practice (Checkland, 1984) tried to avoid reductionism. Checkland and Holwell (1998) focused on information systems as centrally concerned with the human act of creating meaning. Soft systems applies conceptual models to compare alternative solutions to problems, and to better identify changes that can lead to improved system performance.

Goal analysis method

In this paper, we propose a soft systems version of goal analysis with the intent of viewing information systems design as a system with interacting parts with a shared purpose. Identification of goals can be a way to develop conceptual models to better understand problems in interaction among system parts. This process can lead to a broad set of alternatives. Analysis of systems models can lead to identification of weak points, which can lead to redesign to overcome such problems, thus leading to the analysis of the system leading to better system solutions. Within the context of a demand chain environment, this can lead to a win-win environment and a system design that improves operations for all concerned.

The method begins based on Simon's decision making activities (steps 1-3 and 6). Soft systems analysis, possibly supported by system dynamics modeling, is used to support steps 4 and 5. Finally, step 6 can be accomplished by multiple criteria methods:

(1) set the agenda;

(2) represent the problem to identify goals;

(3) find (or generate) alternatives;

(4) analyze alternative impact of goals;

(5) refine alternatives to better satisfy goals;

(6) select.

Demonstration of method

Business processes are the procedures through which organizations get their work done. If a customer places an order, a business process is needed to record the order, determine if stock is available or if new stock is needed (through purchase or production), send the item to the customer, bill the customer, and monitor the status of the transaction throughout. Every organization has many processes. The success of organizations is determined in part by how well they develop accurate, efficient procedures to implement management strategies.

Step 1: set the agenda

Computer automation provides many ways to accomplish these tasks in a more accurate fashion, collecting useful information relative to all stages of the transaction. Assume that our small organization has seen demand for its products increase not only in quantity, but also in the breadth of product line, making it very difficult for existing systems to keep up. There are a number of tasks that need to be accomplished to take and complete orders. The process reflecting a demand driven web-based enterprise system:

- provides sales personnel with product information on price, quality, and availability by time;

- forecasts demand by item;
- tracks inventory records;
- determines the most efficient way to acquire goods to stock (making internally when time and planning allow; buying from alternative sources for rush orders if appropriate);
- determines the most efficient way to ship goods to customers in light of customer needs;
- establishes and implements policies for production (what to make each day, how many); and
- establishes and implements policies for customer billing (which affects their relationship with the organization).

The board of such a growing organization has opportunities to better accomplish this work. We have applied the initial aspects of systems analysis by identifying the flow of actions shown in Table III.

Step 2: represent the problem to identify goals

There is a need for management to identify what it is that they want to accomplish. Soft system approaches discussed above can very helpful in this step. We consider the following objectives for management consideration in demand chain redesign:

- customer retention;
- new customer acquisition;
- flexibility of the system to change;
- ability to measure performance; and
- supply chain stability.

Additionally, the cost and time of implementation of each alternative would be considered.

Step 3: find alternatives

The next step of the systems approach is to generate alternative solutions. These alternative solutions are not final, and can be refined at a later stage if none are deemed

Event	Data	Physical items	Records
Customer query	Price, availability		Demand
Sale closed	Order		Demand Order by customer Order by item
How to fill	Inventory Alternate sources	Inventory	On-hand Unfilled orders
Shipping addresses	Alternative carriers	Loaded items	Completed orders Shipped
Production planning	Expected demand	Raw materials	Demand forecasts Production by lot
Billing addresses	Accounts receivable		Payments received Past due

Table III.
Business process actions

completely acceptable. Implicitly, the current method of doing things is an alternative (although not necessarily attractive). At the other extreme, the business could adopt a vendor solution. There are, in fact, many enterprise system vendor solutions available. Here we use two vendors, A and B. Vendor A has submitted two proposals. It also is possible that modifications of vendor systems can be made to better fit computer products to a particular business's operations, although this involves the creation of additional work. Both vendors have provided proposals including modifications. At this stage, let us assume the alternatives in Table IV have been generated for initial consideration. Vendor B does not do electronic linkage.

This is an initial set of alternatives which require further analysis of impact on goals to see if there are features that might not be improved. The soft systems intent is to examine current alternatives for weaknesses, as a basis for developing better solutions.

Step 4: analyze alternative impacts on goals

The systems view can lead to a better understanding of the expected impact of alternatives. There are a number of tools available to support this step. System dynamics, developed by Forrester (1961, 1971, 1994), can support soft systems analysis by analyzing complexity and risk. It has its roots in general systems theory (von Bertalanffy, 1968; Ackoff, 1960) and the work on cybernetic systems of Stafford Beer (1967) and others. Open systems theory views organizations relative to their environments, with a continuous flow of information between the organization and the environment. System dynamics models can reflect interaction between dynamic markets, uncertain production systems, and cash flow features of operating businesses. Cybernetic systems are complex, probabilistic, and purposive, with feedback and control. This feedback and control is a characteristic of system dynamic simulation models. More recent books in system dynamics include Coyle (1996) and Sterman (2000).

Checkland (1984) extended the idea of systems modeling to include mental models, viewing systems as consisting of interacting parts working toward some end, with the same feedback control discussed by Beer. The primary extension provided by Checkland was a soft systems view, incorporating expert (or at least experienced participant) input of subjective data as the basis for hypothesized relationships.

Alternative	Features
Current	Described above
Vendor A, proposal 1	Financial and accounting module, production planning, retail
Vendor A proposal 2	Financial and accounting module only
Vendor B	Financial and accounting module with integrated production planning
Vendor A, proposal 2 modified	As Vendor A2, with extensive modifications
Vendor B, modified	As Vendor B, with extensive modifications
Vendor A, proposal 1, electronic	As Vendor A2mod, with e-business linkage
Vendor A, proposal 1 modified, electronic	As Vendor A2mod, with e-business linkage
Current with electronic	As Current, with web site developed internally

Note: Vendor B does not do electronic linkage

Table IV.
Initial alternatives

Soft systems methodology is quite good at obtaining qualitative assessment of impacts, although as a subjective method, it relies on interpretive judgment. For instance, Forrester (1994) reported limitations of subjective methods such as soft systems methodology to accurately predict the effects of system changes on system behavior, attributing this limitation to the inability of human debate to capture all feedback relationships. While not all interactions can be expected to be identified, some system nonlinearities due to interactive benefits can be picked up through assessing impacts of alternatives combining features. System dynamics modeling can provide quantification of these opinions and assessment of expected risk, and soft systems modeling has been integrated with system dynamics by Lehaney and Paul (1996), Oliva and Lane (1998), and Mora *et al.* (2003).

To demonstrate the method, we begin with analysis of the expected impact of each alternative on stated goals. By applying whatever quantitative (system dynamics) or subjective mental models (resulting from soft system analysis about expected impact of alternatives on performance), a decision maker or group can generate their opinion of how each alternative solution would perform, as shown in Table V.

Here the current solution is the base, with no added cost and time of implementation. However, customer retention is expected to be low, and few new customers expected to be acquired. There is no performance measurability, little flexibility to change, and poor support throughout the supply chain.

Vendor A offers five versions of their product. Their suggested version is A1, costing $12 million for installation over 12 months. This would be expected to do well on four of the other five factors included, but is relatively inflexible. A less expensive version would be faster to install and would still provide excellent measurability and stability over the supply chain, but would not be expected to retain or attract as many customers. Modifying this version to provide the desired customer retention/attraction features would be a little less stable over the supply chain, but would provide more flexibility. Adding electronic capabilities to Vendor A's version 1 would be very attractive in retaining and attracting customers, and do relatively well on the other three measures, but would be very expensive and would take longer to install. Modifying this version to firm requirements is possible, but would take even longer to install.

Vendor B did not have electronic capability, and thus provided two versions. Their base proposal was relatively good on all seven measures, but not excellent on any. A modified proposal matching company needs would be slightly more expensive and time-consuming, but would provide improved expected performance on customer retention and flexibility.

Adding electronic capabilities to the existing firm system would cost much less than the vendor alternatives, and would take only four months. However, it would provide degraded ability to measure firm performance, would have troublesome connectivity over the supply chain, and would provide only good customer retention/acquisition capabilities and flexibility.

Step 5: refine alternatives to better satisfy goals

This step can begin with reduction of alternatives, eliminating those that are unacceptable. One way is to filter alternatives through required constraints. For instance, management may want to keep installation cost below $10 million. This

Table V. Matrix of expected system impact

Alternative	Cost ($)	Time (months)	Customer retention	New customer acquisition	Flexibility to change	Performance measurability	Supply chain stability
Current	0	0	Low	Low	Low	None	Poor
Vendor A1	12m	12	High	High	Low	Excellent	Very good
Vendor A2	5m	6	Good	Good	Low	Excellent	Very good
Vendor B	6m	8	Good	Good	Good	Good	Very good
Vendor A2mod	8m	15	High	High	Good	Excellent	Good
Vendor Bmod	7m	11	Very high	High	Very good	Good	Good
Vendor A1 electronic	15m	14	Excellent	Excellent	High	Good	Very good
Vendor A1mod electronic	13m	18	Excellent	Very good	High	Very good	Excellent
Current with electronic	3m	4	Good	Good	Good	Terrible	Fair

would eliminate alternatives Vendor A1, Vendor A1 with electronic support, and Vendor A1's modified proposal adding electronic capabilities.

Management may also demand installation within 12 months. This would eliminate Vendor A2's modified proposal (as well as two Vendor A1 proposals eliminated by cost).

If performance measurability was assessed as terrible (or none), that would be a good basis for alternative elimination. Here that eliminates the proposal involving the current system, and the current system with electronic upgrade.

The remaining alternatives are Vendor A2's basic proposal, Vendor B's basic proposal, and Vendor B's modified proposal. However, the point is not to settle for given alternatives, but to refine alternatives and obtain better solutions. None of the remaining alternatives have electronic support. Vendor A2 can be asked to add electronic support, Vendor B asked to consider electronic linkage while reducing risk.

Step 6: selection

We can now measure expected impact of each alternative on all criteria as shown in Table VI, to include cost and time. More detailed analysis, such as system dynamics simulation, may provide more specific measures.

These alternatives provide solutions more in line with the firm's needs. Tradeoffs are implicitly included by developing solutions feasible to the firm's budget and time requirements, gaining improved performance in customer retention/acquisition relative to the current system, as well as more flexibility, performance measurability, and supply chain stability.

Profiles

Multiple criteria analysis can first mechanically provide profiles of relative performance over the alternatives (here we have nine alternatives, combinations of two decision variables). A chart giving profiles over the nine alternatives is shown in Figure 1.

This profile shows the relative advantages and disadvantages of each alternative. For instance, Vendor A's second proposal is very good on cost, time, measurability and stability, but poor on customer retention, new customer acquisition, and flexibility. The proposal by Vendor B adding electronic capabilities is pretty much the reverse. The weakness of Vendor B's basic proposal is customer retention and new customer acquisition. The weakness of Vendor B's modified system is time. The weakness of Vendor A's second proposal adding electronic capabilities is flexibility. There are compensating advantages for all five alternatives.

There are many multiple criteria techniques, some presented in detail in Olson (1996). The profile approach is based on Korhonen (1988). The pre-emptive approach is based on Lee (1972). One multiple criteria approach is to pre-emptively set targets for criteria, and then prioritize these target attainment levels to be used as a contingent filter in a process of elimination. For instance, in this case (Table VII), decision makers might select the target attainment levels shown by priority.

This set of preemptive priorities can be applied as follows:

- priority 1: all alternatives acceptable;
- priority 2: all alternatives acceptable;

Alternative	Cost ($)	Time (months)	Customer retention	New customer acquisition	Flexibility to change	Performance measurability	Supply chain stability
Vendor A2	5m	6	Lose 9 percent	100,000	Low	Excellent	Very good
Vendor B	6m	8	Lose 9 percent	100,000	Good	Good	Very good
Vendor Bmod	7m	11	Lose 8 percent	400,000	Very good	Good	Good
Vendor A2 + elec	7m	7	Lose 5 percent	300,000	Low	Excellent	Good
Vendor B + elec	8m	10	Lose 4 percent	600,000	Very good	Good	Very good

Table VI. Matrix of relative alternative performance over criteria

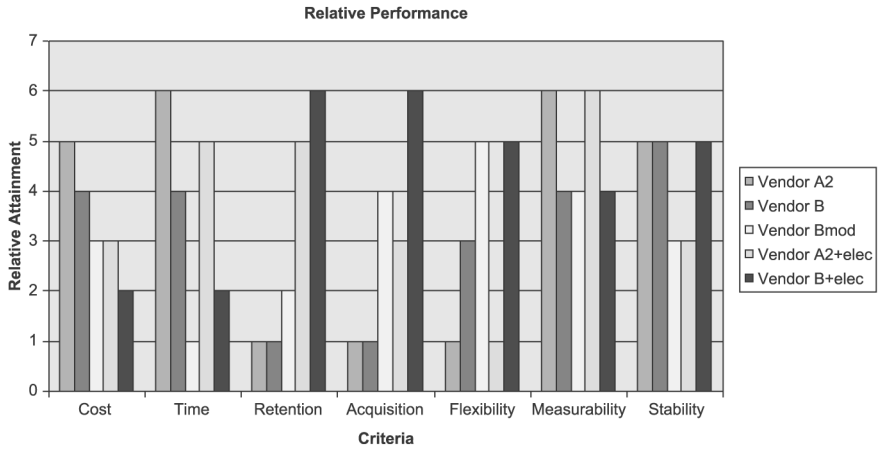

Figure 1.
Profiles of alternative performances

Priority	Criterion	Standard
1	Cost	≤ $10 million
2	Time	≤ 12 months
3	New customer acquisition	≥ 300,000
4	Old customer retention	≥ 90 percent
5	Supply chain stability	At least good
6	Cost	≤ $9 million
7	Flexibility	At least good
8	Cost	≤ $8 million
9	New customer acquisition	≥ 500,000
10	Cost	≤ $5 million
11	Measurability	At least good
12	Data availability	At least good

Table VII.
Pre-emptive targets by priority

- priority 3: eliminates alternatives Vendor A2 and Vendor B;
- priority 4: all three remaining alternatives pass;
- priority 5: all three remaining alternatives pass
- priority 6: all three remaining alternatives pass
- priority 7: eliminates alternative Vendor A2 + electronic
- priority 8: both remaining alternatives acceptable; and
- priority 9: eliminates alternative Vendor Bmod.

Since there is only one remaining alternative, Vendor B's system with electronic capabilities is selected. If all remaining alternatives were eliminated, that alternative closest to the eliminating goal would be selected, or subsequent priority goals used to make the selection.

This pre-emptive approach is that applied in goal programming. It is a very workable means to reflect managerial judgment. Theoretically, it has been criticized for

not investigating tradeoffs among alternatives. The last method presented addresses this feature.

Conclusions

Demand chain focus on customer demands calls for changes in business system design. This includes the design of enterprise systems. There is a need to be more open, to link customers as well as all elements of the demand chain, to include suppliers. There is a need for approaches to enterprise system design and selection capable of reflecting the more complex interactions and multiple attributes important in system selection.

We have presented a method based on Simon's view of decision making, and the broad concepts of soft systems analysis, and goal programming. This process can allow broader consideration of organizational goals and focus on customer demands. We used specific techniques in our example. Other techniques could be substituted in particular phases of the method, but our intent was to demonstrate how such a method might work to better support design of enterprise systems in this dynamic new environment.

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