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Christian Wagner
City University of Hong Kong

Richard Bergin
University of Southern California

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ENTERPRISE STRATEGY MANAGEMENT: THE NEXT ERP FRONTIER

Christian Wagner
City University of Hong Kong
iscw@cityu.edu.hk

Richard Bergin
University of Southern California
bergin@marshall.usc.edu

Abstract

Today's ERP systems provide an effective solution for transaction processing and business analytics with a focus on internal data. Yet ERP systems are not well suited for strategic management. This shortcoming has given rise to a new type of software, so called Enterprise Strategy Management (ESM) software. The article identifies the shortcomings of today's ERP systems with respect to strategic planning, and demonstrates the application focus and functionality of the new ESM systems, mapping them against a four phase model of strategy management. The article finds this new type of software useful in supporting workflow and data requirements of strategy planning, but unable to guarantee the success of the planning process.

Keywords: Enterprise strategy management, strategic planning, software

Background

With the ever-increasing adoption of enterprise resource planning by firms, the limits of this software category are becoming obvious. First, the type of planning enabled by ERP systems is largely operational or tactical. Second, the planning process is not sufficiently focused on the future, as ERP systems information is based on past transactions. Third, ERP systems deal predominantly with quantitative data, while a large portion of high-level, strategic planning is non-numeric in nature. As a result, while ERP is still maturing, the real growth areas to this technology should be expected to come from extension areas, i.e. areas where other software applications interact with core ERP systems (compare "ERP Keeps Plugging Along as the Foundation of Enterprise Management", AMR Research, January 10, 2001). At the forefront of these extension areas are applications that support business strategy.

According to AMR Research, business strategy is at the core of the planning methodology and software world, although only few applications presently support this type of task ("The Case for Automating Strategy", AMR Research, February 20, 2001), now called Enterprise Strategy Management. This article is intended to provide insights into this emerging extension area of ERP. We have structured the article as follows. We first review the limits of present ERP systems. The article then identifies the needs of enterprise strategy management. This is followed by an overview of software approaches to the problem. The article then goes into more detail on one particular approach to enterprise strategy management software which operationalizes the highest level (Phase 4) of planning. This particular approach is described and its limitations are identified. The article finishes with an assessment of potential future developments, and a summary.

ERP Software Overview

Current ERP systems focus on internal transaction based processes. The major components of such systems are financial, human resource, supply chain management, as well as sales and manufacturing modules (compare for instance O'Leary, 2000).

Financial systems manage receivables, payables, and cash, and consolidate financial data to facilitate analysis at a higher level of aggregation. Human resource systems focus on standardizing processes such as payroll, expenses, evaluation and planning. Supply chain systems manage production interdependencies related to inventory, production planning, shipping / receiving, purchasing and quality control. Manufacturing systems coordinate production activities by providing structured planning

documentation, tracking and revision control tools. Sales systems aggregate selected financial, supply chain and manufacturing information to manage customer driven information processes. The modules are integrated by a unified set of applications that utilize one shared database. This fosters integration, efficiency of transaction processing, and operational control.

Due to their tight data and process integration, ERP systems facilitate the sharing of information among *functional areas* allowing them to integrate real-time business activities into an information process. ERP systems contain applications that allow each functional area to access various information processes that extend across the enterprise. This extended access provides greater transactional efficiency and a higher level of aggregation in terms of reporting and analysis, thus offering enterprise wide operational control and planning support. This, however, also defines the key focus of ERP systems, namely transactional efficiency, and low-level planning, with a focus on data that is mostly gathered from inside the organization. Furthermore, the focus is predominantly quantitative, as a review of some typical ERP modules (here, Peoplesoft) illustrates. Among Peoplesoft's analytic (planning) applications, we find *Workforce Analytics*, which enable users to proactively manage salary, benefits, environment, and growth opportunities to help attract staff. *Customer Relationship Management Analytics*, which offer insights about customers' buying patterns, pre- and post-sales behavior, and retention factors to determine customer service levels. *Financial Analytics*, which provide strategic and financial measures to help identify the most profitable aspects of the business. *Supply Chain Analytics*, which improve supply chain effectiveness. ERP software (here, Peoplesoft) may contain numerous measures and derived metrics, designed to monitor and control supply chain performance. In addition, ERP software also may contain some industry specific applications, such as profitability analytics for the financial industry. Overall, current ERP systems integrate financial data and standardize manufacturing, supply chain, and human resource practices. These applications and data sets focus mainly on the internal operations and provide a mechanism to monitor those processes. ERP does not however, provide strategic management functionality that both focuses on the external environment and the overall planning process.

Strategy Management

Overview

The previous section outlined the value, but also the limitations of present enterprise resource planning software. It has been suggested repeatedly (e.g., "ERP Systems – The Basics", Darwin, 2000, <http://www.darwinmag.com/learn/erp/basics.html>) that ERP systems are less about planning and more about the enterprise and its integration. As we also illustrated previously, any planning is focused inside the organization, is quantitatively orientated, and is based on past data. Unfortunately, this range of capability covers only a small portion of the task of strategy management, as demonstrated for instance by Gluck et al. (1980). Gluck et al. introduce a four phase model of management, with increasing levels of management capability for successive levels.

Four Phase Model

Strategy management has undergone an evolution, and can be differentiated into different phases of maturity, for instance according to Gluck et al. (1980):

Phase 1 – *Financial planning*, is described by a functional focus and annual budgets. Simple techniques are used for budgeting, and the planning goal is to meet budgets. Accordingly, the focus is very much internal.

Phase 2 – *Forecast based planning*, incorporates multi-year (e.g., 5-year) budgets, gap analysis (between targets and actual performance), planning and static allocation of resources. This planning process forecasts sales and market growth, and estimates income, expenses, and overall balance sheets. This analysis is also quantitative in nature and highly internally focused.

Phase 3 – *Externally oriented planning*, is defined by situation analysis and competitive assessments, evaluation of strategic options, and dynamic allocation of resources. Company planners look increasingly outside the organization, identify attractive market segments, competitive advantages, and then plan to move the company's product portfolio accordingly.

Phase 4 – *Strategic management*, is characterized by a well-defined strategic framework, a strategically focused organization, widespread strategic thinking capability, and reinforcing management processes. The company's fundamental goal is to change its business environment through innovation. Instead of being a competitor, the company redefines the industry and separates itself from the competition. Obviously, this lofty goal requires

very significant strategic planning, combined with high levels of innovation, and the ability to execute. The focus of this form of planning is highly external, as well as largely non-quantitative and non-“algorithmic”.

The model suggests that companies at a lower level of maturity will be focusing more on quantitative issues, internal aspects, and on adjusting to an existing market environment. In contrast, more mature organizations (with respect to strategy management) will be externally focused, plan not just “by the numbers”, and attempt to creatively shape the environment. In recent years, a new model of strategy management has emerged which roughly lies between Phase 2 and Phase 3 of Gluck et al.’s classification. The new model of strategy management is around the “balanced scorecard” (e.g., Kaplan and Norton, 1996). As this model has been adopted by numerous software developers, it will be discussed briefly within the next section.

Balanced Scorecard Model

The Balanced Scorecard model by Kaplan and Norton (1996) is described as a management system, rather than a measurement system. It is quantitative in nature (a scorecard), but the scoring focuses on future oriented success factors. For each such factor, the system requires definition of objectives, measures, targets, and initiatives. Consequently, the scorecarding combines both quantitative (e.g., targets) and non-quantitative (initiatives) characteristics. This characteristic, as well as its forward-looking nature differentiates score carding from the more traditional financial planning approaches. At the same time, balanced scorecarding does not help planners with the tasks of vision and strategy formulation, both of which are assumed to be given. As a result, balanced scorecarding describes an approach located approximately at the boundary between Phases 2 and 3 of Gluck et al.’s methodology.

Enterprise Strategy Management Software

Different planning models obviously pose different challenges to a software based solution. From an information technology perspective, the highly quantitative and internally focused planning and control processes (Phases 1 and 2) are clearly much better supported. In essence, present ERP technology can well enable these planning models, as ERP systems (or their extensions) are typically quantitative in nature and have access to vast amounts of internal data, generated by the organization’s transaction processes. Hence, systems such as SAP’s “EIS” module of the R/3 system enable a strong reporting capability with some planning components attached to it. Similarly, Comshare’s Management Planning and Control (MPC) software provides corresponding capabilities (more so than a basic reporting system such as SAP-EIS). Hence, when we map existing software products against planning processes, we can identify the following matches (see Table 1).

Table 1. Software Support for Strategy Management

Vendor/Application Example	Planning Process Supported	Functionality
SAP-EIS	Phase 1: Financial reporting	Summary reporting, drill-down and similar eis functions.
Comshare Management Planning and Control	Phase 1-2: Financial planning, resource allocation, initiative planning	Planning, budgeting, consolidation, and management reporting.
Gentia Enterprise Performance Management	Phase 2-3: Strategic planning based on a defined set of strategic factors in four key areas.	Balanced scorecard (part of a suite of reporting, analysis, and modeling tools).
Deloitte and Touche Strategy Print	Phase 3: Strategy formulation	Focuses primarily on strategy formulation, integrating Deloitte and Touche / Braxton proprietary strategy and financial tools.
NextStrat NextSTRAT	Phase 4: Strategy planning, alignment, implementation, and reporting	Encompasses entire process of strategy formulation, alignment, implementation, and tracking, using proprietary methodology.

Many applications exist at the lower end of the strategy management software spectrum. While SAP/EIS may be predominantly a reporting tool, vendors such as Comshare, or Hyperion offer significantly more sophisticated planning solutions. Comshare’s Management Planning and Control system (MPC 4.0), for instance, is a web-based software package that links and integrates

quantitative data and work related to strategic planning, budgeting, forecasting, financial consolidation, management reporting and analysis. Comshare's software has the ability to for instance represent non-quantitative organization initiatives and can tie them to metrics. The strategy planning process, however, is methodologically not part of the system. Strategic goals are assumed to be *a priori* given. (www.comshare.com). Gentia's strategy management software EPM (Enterprise Performance Management) system is based on Balanced Scorecard. The product is considered to be the focal point of strategy management and is certified by the collaborative Balance Scorecard. EPM provides a web-based interface to facilitate an anywhere anytime any terminal access. The EPM product tends to provide strategic management functionality for both phase 2 and phase 3 evolution. (www.gentia.com)

Deloitte's Strategy Print and NextStrat's NextSTRAT software appear to be the only representatives of strategy management software that can facilitate Phases 3 or 4. Little has been written about Strategy Print, originally developed by Braxton, a strategy consulting firm acquired by Deloitte & Touche. The software, maps part of the strategy management process, focusing predominantly on planning. NextStrat's NextSTRAT software, by comparison, spans the entire strategy management process in three stages that are described as Aim (formulation), Align (alignment), and Act (implementation and monitoring). Without discussing any particular vendor's software solution in detail, the next section will discuss the requirements of such software, based on the nature of the management task (at Phases 3 and 4).

Components of Enterprise Strategy Management Software

Support for the Management Process (Phases 3 and 4)

The fundamental difficulty associated with enterprise strategy management software is the fact that the task to be supported is wide and open (instead of narrow and deep), in need of creativity and judgment, and largely non-quantitative. Hence, it defines a area which traditionally has not been the domain of computer based problem solving, not even in the realm of knowledge based systems. Hence, software support cannot guarantee a good outcome, it instead has to focus on process and on problem structuring.

In absence of the ability to compute a satisfactory outcome, an ESM software needs to limit itself to support, especially process support. One of the lessons learnt, from SAP, was that the provision of a *reference model* (see Keller et al., 1998), which represents best practice in process and data for a particular task (based on research and competitive benchmarking) and significantly enhances the usefulness of such a software. With respect to process support, a key aspect will be, in the language of Nunamaker et al. (1991), the need to reduce process losses, and amplify process gains. Both these concepts are discussed in more detail in the following sections.

Software

Process

A typical (Phase 3 or 4) strategic planning model might contain the following core elements: external environment analysis, internal environment analysis, strategy definition, strategic financial planning (Phase 1 or Phase 2 task), product & market planning, and implementation planning (compare for instance Wells and Doherty, 1994). Note that different strategy planning models will have different processes associated with them. Nevertheless, there is a high level of overlap between the models.

External environment analysis analyzes current trends and uncertainties, as well as the current business environment (markets and competitors), as related to the company vision. The goal is to identify opportunities and threats. The process might have marketing research analysts review pertinent industry data and research reports to identify trend statements, and then map them against the vision to see which ones are supportive or counter-productive. The process may generate other outputs, such as scenarios.

Internal environment analysis looks inside the organization. Drawing on competencies, the current organizational structure, current products and current markets, it identifies strengths and weaknesses. The process frequently relies on interviews and similar internal data gathering methods, together with a summarization of that data, and comparison against trends and uncertainties, to separate the parts of the company's internal profile into strengths and weaknesses. Note that based on the company's direction, a current capability might be a strength (if it is needed in the future), but also might be a weakness (if it is not needed in the future and if it hinders the transition towards new capabilities).

Strategy definition is a process, largely carried out by senior planners, to define the direction in terms of specific goals (whose implementation can be measured by metrics), strategic programs (road maps to achieve the goals), and strategic constraints (criteria that have to be fulfilled in addition to the goals).

Strategic financial planning is another high-level planning process, following strategy definition, but focused mostly on budgets and driven by the CFO function.

Strategic product and market planning is a high-level planning function from a marketing and product planning perspective. The process may be driven by high C-level staff in product development, marketing, and the strategic business units.

Implementation planning takes the strategic plans into the realm of implementation. Reviewing gaps between current state and the company's plans for the future, initiatives and projects are identified to bridge those gaps. In addition, metrics (and milestones) are defined to monitor strategy implementation. This step transitions the strategy into tactical planning.

A quick analysis of these processes reveals several key characteristics.

1. Processes are driven by internal and external information. The organization cannot be assured that all the relevant information is at hand and has to actively search for emerging trends from oftentimes inconsistent data. (El Sawy, 1985)
2. Many of the processes are loosely structured and not algorithmic. For example, the creation of future scenarios is highly speculative (e.g., external environment analysis). The envisioning of future products or markets requires brainstorming, combined with analytic evaluation to match the possible with the feasible.
3. Many of the activities within these processes require data presentation, categorization of smaller data items into larger and more meaningful chunks, and evaluation and selection of the most relevant, the most meaningful, or the most preferred (e.g., internal environment analysis).
4. The activities carried out in the planning model involve different types of individuals. Several activities require research and analysis by company research staff or outsiders. These tasks can be potentially done "off-line" and individually. Others tasks demand face-to-face meetings by executives for sense-making, idea generation, and decision making. Subsequent implementation oriented tasks can then be delegated to less senior individuals who complete them off-line.

These characteristics help us clarify the requirements for software to support enterprise strategy management.

First, (as previously mentioned) the software will not be able to "do it alone". Neither analysis, nor interpretation, nor decision making, nor implementation can be put into an algorithm that automatically produces the right solution. The software can at best support the process. The paradigm for this type of support is analog to that described by Nunamaker et al. (1991) for group decision support. The software amplifies process gains, while reducing process losses. As many of the strategy management processes are carried out face-to-face, the software should consequently incorporate components for group brainstorming, idea categorization, and decision making.

Second, ESM software will have to not only support same-time and same place group processes, but also different-time and different-place individual activities. The outcome of all of these has to be captured through an appropriate data model. Hence, a key contribution of such software will be the reference data model to store all relevant strategy information in a structured format for later be review, modification, and evaluation. Knowledge of the relevant data elements and their structure is therefore a key component of such software. Also, the software will need to have (automated) information feeds. They should include past operational data, but also forward looking data, including feeds to trends data provided by the major research organizations, or technologies such as web crawlers, agents, and triggers to flag new or changed information.

Third, ESM software will have to have a workflow component in it. The software will need to know the sequence in which information needs to be generated, when it is to be updated, whether information changes need to flag follow-up action, and whom to send information to.

In summary, effective enterprise strategy management software will need to incorporate (at least) the following components:

1. Data capture, recording, and reporting capability for all relevant data objects within the strategy.
2. Linking of internal and external analysis capabilities with live data feeds to allow updates of trend information, capability information, or measurement of progression towards strategy implementation.
3. Groupware tools to enable strategy formulation, consisting of brainstorming, idea categorization, and idea prioritization.

4. Workflow tools to structure the strategy formulation and implementation workflow, to send triggers upon detection of deviation from plans, and to provide closed-loop reporting, informing the decision making team when a plan deviation has been corrected.

Taken together, these capabilities still cannot assure success an strategy formulation and implementation, but they can leverage technology to structure and improve an otherwise relatively unstructured process.

Structure

In order to adequately represent an organization’s strategy, an enterprise strategy management software needs the ability to capture all relevant data elements. Knowledge of the process is clearly not enough to provide planning consistency and to offer re-usability of data generated in prior planning efforts. Hence, one of the challenges of ESM software development is the identification of appropriate data models. While software data models are by-and-large proprietary, existing (not software based) strategy planning methodologies provide us with an insight into typical data elements. Schoemaker (1992) for instance suggests a number of relevant data elements, focusing on scenario based strategic planning.

Essential data objects for Schoemaker’s view of strategy management are represented in Table 2.

The methodology focuses largely on vision formulation, based on external and internal analysis. It provides few prescriptions for vision implementation or implementation monitoring. Nevertheless, Schoemaker’s select set of data objects provides an insight into the types of data a strategy management software must be able to record, present, and meaningfully link.

Table 2. Key Elements of a Strategy Management Data Model (based on Schoemaker, 1992)

Data Item	Description
Scope	“Angle of view” for the strategy definition. For example, domestic versus international. Defines what is considered and what is not.
Stakeholder	Outside players who need to be considered in the strategy formulation because they have enough influence to affect the organization’s performance.
Scenario	A state of the world described by all trends combined with a set of uncertainties. Based on a time frame, scope, and stakeholder definition.
Trend	A highly likely future influence on some aspect of the world. Examples include economic, political, societal, technological, or industry trends. Trends are described by “what they do” and their impact.
Uncertainty	An unlikely influence on some aspect of the world. For example, strength of the economy, or industry structure, or technology breakthrough.
Segmentation Criterion	Factors by which the industry can be meaningfully separated. E.g., by product, distribution, application, or market.
Industry Segment	Part of the industry, defined based on a combination of values of particular segmentation criteria (e.g., particular product in a particular market, distributed in a particular way).
Core Capability	Assets, skills, resources that are part of the “fiber” of the organization and which are difficult to imitate or replicate by others. (I.e., cannot be “bought off the shelf”).
Core Capability Matrix	Data structure that describes which core capabilities are necessary to successfully compete in a given industry segment within a given scenario.

Current Stage of Implementation and Frontiers

ESM software is at present still in its infancy. First, most presently available software only supports Phase 1 or Phase 2 of strategy management, with software for Phase 3 or Phase 4 just now appearing on the market. As a result, data models and project models are yet emerging, and support beyond the “mechanics” of enterprise strategy management is essentially not available.

Comparing the development again to that in ERP, we should expect that the next wave of such systems would be based on an analysis of best practices in strategy management (if available). With such an approach, the strategy management processes of leading organizations would be codified, their process and data abstracted, and then placed in a software system that can support a number of planning methodologies.

Another meaningful extension would come from the content knowledge gathered for instance by strategy consulting firms active in a particular industry (e.g., automotive) or a particular type of strategy planning (e.g., strategy of new product development).

With the domain specific knowledge available for that industry or the particular strategy task, even a “mechanistic” software could ask the right questions, suggest “templates” for a particular strategy, and could have a more customized data model at hand.

Summary and Outlook

Our previous arguments document the strengths and limitations of both traditional ERP software and the emerging enterprise strategy management software. ESM software holds the promise of transforming strategic planning from a cyclical activity carried out by a few planners or outside consultants into an on-going activity that completed by a large group among the organization’s management.

While ESM software cannot replace the creative planning and problem solving capabilities of senior managers, it can structure the process, capture the generated information, and match plans against actual data and trends generated inside and outside of the organization. As a result, it can narrow the gap between an envisioned strategy and the executed strategy, whether the gap arises from unforeseen outside influences, or from the inability to internally deliver as planned. Organizations (and their management) who are willing to accept the overhead of having to learn a new planning methodology and operate within the realm of that software, may achieve significantly higher effectiveness of strategy execution. At the same time, the planning methodologies and their software implementations are still in their infancy. Codification of existing methodologies and development of mechanisms to capture strategy knowledge will be the great challenge for the future.

References

- El Sawy, O. “Personal Information Systems for Strategic Scanning in Turbulent Environments: Can the CEO Go On-Line,” *MIS Quarterly*, (9:1), 1985, pp. 53-60.
- Gluck, F.W., Kaufmann, S.P., and Walleck, A.S. “Strategic Management for Competitive Advantage”, *Harvard Business Review*, July/August, 1980, pp. 154-161.
- Kaplan, R.S. and Norton, D.P. “Using the Balanced Scorecard as a Strategic Management System,” *Harvard Business Review*, January-February 1996, pp. 75-85.
- Keller, G., Ladd, A., Curran, T. *SAP R/3 Business Blueprint: Understanding the Business Process Reference Model*. Prentice Hall, 1998.
- Nunamaker, J.F., Dennis, A.R., Valacich, J.S., Vogel, D.R., and George, J.F. "Electronic Meetings Systems to Support Group Work," *Communications of the ACM*, (34:7), 1991, pp. 41-61.
- O’Leary, D.E. *Enterprise Resource Planning Systems : Systems, Life Cycle, Electronic Commerce, and Risk*. Cambridge University Press, 2000.
- Schoemaker, P. “How to Link Strategic Vision to Core Capabilities,” *Sloan Management Review*, (34:1), 1992, pp. 67-81.
- Wells, D.L. and Doherty, L.M. *A Handbook for Strategic Planning*. Publication No. 94-02, Department of the Navy Total Quality Leadership Office, Washington, DC, 1994.
- Will, L., Hienger, C., Strassenburg, F., Himmer, R. *SAP R/3 Administration*. Addison-Wesley, 1998.