Transnational Management Systems: An Emerging Tool for Global Strategic Management

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Introduction

One of the most significant business and economic trends of the late 20th century is the stateless corporation. A recent issue of *Business Week* reported (May 14, 1990, cover page) that a new type of company is emerging. Global companies conduct research wherever necessary, develop products in several countries, promote key executives regardless of nationality, and even have shareholders on three continents.

Many global companies are making decisions with little regard to national boundaries. Many heads of the world’s largest companies believe that the trend toward statelessness is unmistakable and irreversible due to the following advantages:9

1. **Solving trade problems**—Northern Telecommunication of Canada could win Japanese contracts by establishing manufacturing facilities in the U.S. because Japan favors U.S. over Canadian companies due to the politically sensitive U.S.-Japanese trade gap.
2. **Avoiding political problems**—A German company, BASF, has moved its cancer immune system research to Cambridge, Massachusetts, U.S. to avoid Germany’s stift environmental regulations concerning animal rights, safety, and a clean environment.
3. **Sidestepping regulatory hurdles**—SmithKline of the U.S. and Britain’s Beecham have merged to avoid licensing and regulatory hurdles in the U.S. and Western Europe.
4. **Winning technology breakthroughs**—Becoming a stateless corporation could mean the company will be better able to scour the globe for leading scientific and product development ideas.

With this changing global environment, a new type of support system, transnational management support systems (TMSS), is emerging. Computer-based management support systems are playing vital roles in the complex decision making process at multinational corporations (MNCs). For example, when Dow Chemical noticed the recent decline in European demand for a certain solvent product, the decision support system at the company responded quickly to suggest the reduced production of the chemical product at a German plant and a shift from the idle production capacity to another chemical product that was imported from the U.S.9

The purpose of this paper is to inform academicians and practicing managers of the emergence of transnational management support systems by:

- reviewing prior research on the development and applications of global management support systems;
- suggesting the definition and architecture of TMSS;
- describing unique functional requirements of TMSS in supporting operational, tactical, and strategic decision making processes of MNCs; and
- providing some practical benefits to the practicing managers and pointing out what managers need to know to introduce or improve their organization’s TMSS.
The Emergence of Transnational Management Support Systems

In the early 1970s, Decision Support Systems (DSS) focused on helping an individual user in an organization in a single location. In the 1980s, many companies shifted their attention to the application of DSS technology to large-scale organizational and global decision making. For example, General Motors, in association with EDS, developed PLANETS, a modeling system for business planning. The automotive section of GM manages the thousands of products that are manufactured and distributed by several hundred facilities worldwide. The Decision Support Systems of GM supports analysts and managers in making decisions, either independently or simultaneously regarding expansion at existing plants, buying or building new facilities, and the allocation of production volume among existing plants, to mention a few types of decisions. GM has developed the 80 major applications of this Decision Support Systems software, resulting in over a $1 billion cost savings and approximately 2% or 3% capital expenditure saving.

The forces unleashed by the telecommunication and microcomputer revolutions over the past decade have brought two significant phenomena: increasing global interdependence and internationalization of business firms. Furthermore, telecommunication are significantly changing the traditional ways of manufacturing, marketing, financing, decision making, and so on. For example, International Aero Engines was established in 1984 as a joint venture of five world leaders in jet engine manufacturing to produce the turbofan engine of the Airbus. The companies are Pratt & Whitney (U.S.), Rolls-Royce (U.K.), MTU (Germany), Fiat Aviazione (Italy), and Aero Engines (Japan). Each of the five shares responsibilities for producing particular engine modules or sections to be assembled as one final product. In the manufacturing process, each location generates large volumes of data such as master parts lists, bills of materials, and parts catalogs. Further, each plant has access to the data generated from other countries. Without the data network, it may not have been possible for five companies in five countries to function as one.

The management of multinational corporations' decision making must deal with extreme complexities due to the multiplicity of currencies, taxes, languages, and sovereign governments. Decision Support Systems alone are not sufficient to handle such complexities. Effective management of global complexities necessitates the integration of three types of decision technology.

The Definition and Architecture of TMSS.

Transnational management support system is an evolving concept for the decision making process of MNCs. TMSS is an integrated system of decision support systems (DSS), expert systems (ES), and executive information systems (EIS). TMSS supports the operational, tactical, and strategic decision making process of MNCs in an attempt to integrate organizational decision making across functional fields, planning horizons (long-, medium-, and short-range) and national boundaries.

The TMSS can be best designed as a network of management support systems (DSS, ES, and EIS that links a set of management support systems (MSS) in the headquarters with a set in each foreign and domestic subsidiary. Management support systems in each subsidiary consist of an array of Executive Information Systems, Expert Systems, and Decision Support Systems. The decision support systems in the TMSS may include individual DSS, group decision support systems, distributed decision making systems, and organizational DSS in each operating country. The functions of Executive Information Systems may be even more important in the management of MNCs. Tracking performances of the consolidated corporation as well as each subsidiary against plans is, indeed, the critical activity of the top management of MNCs.

Unique Functional Requirements of TMSS

Complexities of global decision making require several distinctive functional requirements of TMSS as well as the generic functional requirements of DSS, expert systems, executive information systems in a uni-national environment. Generic functions of DSS, for example, include on-line retrieval, display and manipulation of data (current, historical, internal, and external), inventing decision alternatives, and choosing alternatives based on the computation of the consequences of each possible decision. Several distinctive functional requirements of multinational decision support are classified into two levels: operational and strategic.

Operational Management Support Requirements.

- Requirement #1: Global Data Access. To many global companies, on-line access to corporate data has already become vital for their
success in managing numerous overseas subsidiaries. An essential function of TMSS should be to allow corporate managers desktop, on-line access to corporate statistics in order to monitor global operations from headquarters. Global networks of MNCs provide real-time communication links with foreign and domestic subsidiaries through an all-digital system integrating voice, data, video, and video conferencing systems. Many MNCs are progressing toward complete worldwide linkage of corporate data bases in foreign marketing and manufacturing facilities. Texas Instruments’ network, for example, allows 76,000 employees to access data bases in 20 data centers around the world. According to the company’s senior vice president of information systems [12, p. 49], “Whenever we report our financial data, as soon as someone hits an enter key—wherever they are in the world—that information comes back to a central data base from which we can do our financial rollups at the general ledger and forecast levels.”

- Requirement #2: Global Consolidated Reporting. Numerous accounting and financial reports need to be integrated into a global consolidated report. Consolidating financial statements is a crucial activity for sensitivity analysis of any multinational financial decision making. Thus, TMSS should be able to provide accurate, timely information for planning, controlling, and budgeting. Other reports for internal control include inventory, receivables, sales, cash flow by currency, cash and capital expenditure budgets, and product line income statements for each foreign subsidiary, the parent company, and the consolidated entity.

Tactical/Strategic Management Support Requirements. At tactical or strategic levels, a host of complex management tools are needed to deal with various multinational management issues such as risk management, conflict management among host and home governments, parent companies, and foreign subsidiaries.

- Requirement #3: Providing Effective Means of Communication between the MNC Headquarters and Its Subsidiaries. Strategic planning involves participation from all units of the corporation including headquarters, foreign subsidiaries, regional offices, divisions, and groups. Although theory suggests that global strategic management requires stimulative inputs from planners at functional, business, and corporate levels of each operating country, and that the interactive/iterative flow of the decision making process is extremely important for strategic planning of MNCs as well as domestic corporations, empirical research found no such interactions through a formalized pattern of top-down/bottom-up interactions. For example, Ghetman investigated how MNCs make decisions to restructure their international strategic portfolio or close plants overseas and concluded that “the foreign subsidiaries seem to carry most of the decision making effort for their own plant closures, while for strategic portfolio readjustments during which they change owners, they are not consulted.”

To facilitate the organization-wide planning process, TMSS should provide an effective means of communication between the headquarters and its subsidiaries. The advancement in management support systems technology during the last two decades certainly facilitates multinational planning. The technology includes distributed decision making (DDM) systems and four group decision support system alternatives (local area decision network, wide area decision network, decision room, and teleconferencing systems) suggested by DeSanctis and Gallupe.

Due to the decreasing cost of computer hardware and software and the acceptance of a worldwide standard, teleconferencing (video conferencing) systems have become a powerful tool for executive meetings, R&D, and many other applications. In the near future, we expect to see more advanced forms of video conferencing systems that are capable of translating voice and characters simultaneously.

- Requirement #4: Providing Planning Risk Management Support. Worldwide integration is characterized as global unification of functional strategies (production, finance, marketing, and R&D) through a network of subsidiaries in which R&D, production, and marketing tasks are centrally allocated and coordinated to achieve global economies of scale. Due to the social and political diversity of operating countries, MNCs must adapt their planning to many country-specific factors. To be an effective strategic decision support tool, TMSS must aid this process of finding a proper balance between integrative and adaptive planning methods.

Global Strategic Management Support. Supporting the strategic management process is the core role of TMSS. The strategic planning and control systems at MNCs aim at rationalizing resources more effectively on a global basis.
to respond to rapid environmental changes, such as increased political and foreign exchange risks and global competition. The strategic planning process begins with evaluating the company’s philosophy, mission, and definition of business (Step A). Step B is a realistic and subjective evaluation of the firm’s present strengths and weaknesses and an assessment of major competitors. An analysis of major opportunities and risks and the specification of key issues for entire corporate units (Step C) must precede Step D, formulating objectives for each unit of the MNC. The specific objectives are to increase the firm’s return on investment by expanding investment in profitable product lines and divesting country and product lines that do not meet the firm’s mission and definition of business. The next step is the choice of a strategy among four generic international competitive strategies—global high-share strategies, global niche strategies, national high-shares strategies, and national niche strategies. (For a detail of each strategy, see.) Step E is the formulation of various global competitive strategies including new entry, expansion, diversification, and functional strategies, based on specific goals of corporate headquarters and foreign subsidiaries. A subsequent step is the formulation of contingency strategies, action programs, and operational plans (Step F).

One of the objectives of DSS is to support a whole range of decision making processes. In Step A, scanning the international environments (political, economic) was the crucial activity. The economic and technological domains of the external environment have been ranked as the

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**Figure 1. Model for Comprehensive Strategic Planning for Multinational Corporations**

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most crucial factors in making strategic decisions by top management of many MNCs in the U.S. and Europe. A recent survey revealed that international environmental scanning activities had been integrated as a part of information systems to regularly monitor a broad range of environmental and foreign risk factors. Many executives reported their frustrations due to the "inability to organize for environmental scanning" and "delay between external developments and interpretation." To satisfy these needs, transnational MSS should be able to effectively collect, analyze, and interpret environmental scanning data to extract meaningful information. Therefore, in Step A, EIS subsystems of the TMSS should be a major element in the top management's MSS.

In Steps B, C, and D, global decision support systems with international teleconferencing systems can increase the effectiveness of these processes. In Step E, corporate goals are converted into global strategies, which can be most effectively supported by the TMSS. In this conversion process from specific objectives to specific strategies, the multiplicity of the economic, political, legal and cultural forces in global environments must be taken into consideration. In addition, management decisions regarding global operations are further complicated by the multiplicity of the environments.

When making any global decision, several global risks must be considered, including political, foreign exchange, and tax risks.

- Requirement #5: Conflict and Political Risk Management Support. As world markets consolidate, the trend will accelerate, raising some critical questions about sovereignty, national interest, and potential conflicts between companies and their own governments. The focus of conflict management in MNCs is not on conflicts among individual managers or executives, or intraorganizational conflicts. Rather, it is on interorganizational conflict among MNCs, host governments, home governments, and multilateral organizations.

As Gladwin and Walter noted, effective conflict management must be a continuous and major element in the line manager's DSS to support the process of scanning, forecasting, design, and choice. In the scanning stage, it is critical to scan, filter, and interpret information concerning the potential emergence and actual character of conflict. In the next stage of forecasting, information gathered in the previous stages is used to predict the potency and demands of various interest groups. After that, alternative sets of means and corresponding effects are invented and evaluated to select a best choice.

The integration of political assessment into global management decision making has been an important subject in all functional areas of multinational business management such as investment and divestment, capital budgeting, plant location, and financing and capital structuring.

In addition to foreign exchange and political risks, tax implications complicate the decision making process. A further complication arises from the combined effects of the various risks. A global decision will involve some or all risks, which may be conflicting. For instance, a decrease in the level of tax risk as a result of a certain decision may result in an increase in the level of other risks.

- Requirement #6: Global Foreign Exchange Risk Management Support. A mix of freely floating (no government intervention), managed floating, and fixed exchange rates characterizes today's international monetary system. Relative currency values change every day. Consequently, an essential task of management of global corporations is to minimize the potentially negative impact of these fluctuations. There are numerous examples of real-world companies which were forced out of business due to mismanagement of the foreign exchange risks such as the British company Laker Airways. From 1979 to 1982, the company's failure to anticipate and deal with the substantial exchange rate change between the U.S. dollar and British pound resulted in the company's bankruptcy.

The long-run health of an MNC can be best maintained by emphasizing management of economic exposure. This requires integrated efforts involving various functional strategies. TMSS can support the global financing decision process by recommending either a matching strategy or a portfolio approach.

**Essential Steps For Designing And Implementing TMSS**

Since TMSS is an evolving concept, there are no current examples of the ideal system with all the functional capabilities described here. Managers need to know several essential steps to introduce or improve their organization's TMSS:

1) There are several prerequisites: well-functioning TPS, MIS, individual DSS, and group DSS.
If your organization is in the early stage of information technology adoption, any attempt to build TMSS should be avoided.

2) Global telecommunication networks and distributed database management systems (DBMS) are the next level of prerequisites.

3) Once the two levels of prerequisites are met, organizational DSS must be designed and implemented in each unit (headquarters and each foreign subsidiary). Carter et al. [2, p. 4] define organizational DSS as "a DSS that is used by individuals or groups at several workstations in more than one organizational unit who make varied (interrelated but autonomous) decisions using a common set of tools." The practical step-by-step guidance to implementing organizational DSS is clearly discussed in their book.²

4) The final stage is building integrated TMSS that consists of a network of individual DSS, group DSS, distributed decision making systems, organizational DSS, expert systems, and EIS.

**Practical Benefits of TMSS**

TMSS is a viable weapon for improving the effectiveness of global strategic and tactical management processes by:

1) analyzing the multinational, multifunctional, or multibusiness consequences of the decisions;
2) evaluating the trade-offs between long- and short-term effects of a decision that seeks to balance the conflicting goals of long- and short-range planning;
3) facilitating the interactive and iterative flow of the multinational strategic decision making process.

**Conclusions**

Today’s global manager can no longer be the hunch-player with myopic or tunnel vision who used to rely heavily on intuition and judgment. Global managers need global vision. The complexities of global decision making in MNCs requires the large array of decision technologies we have been developing since the early 1970s. The TMSS are the last frontiers of computer-based decision technologies to be conquered as we enter the age of the global village. Multinational decision making presents today’s managers with unprecedented challenges that can only be managed properly by this emerging tool, the transnational management support system.

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Dr. Eom has published over 25 articles concerning decision support systems and expert systems and serves on the editorial boards of the Journal of Global Information Management and the Journal of Financial and Strategic Decisions.

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**Endnotes**


