The Executive Dashboard: Fact or Fiction

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Abstract
Information Technology has come a long way from the humble payroll accounting system to integrated suite of business applications, ostensibly to assist corporations to manage their businesses more effectively. IT disciplines in some corporations even have a Chief Information Officer at the executive VP level with considerable clout and influence in orchestrating the pervasiveness of IT at the all levels of the corporation. This has fueled a great appetite of expectations from major system houses to develop and deploy the IT/ information thinking notably at the middle and top level of management. There is ample evidence that moneys and efforts have been deployed, however the results are mixed. This paper discusses the challenge of deploying IT and systems thinking in the corporate suite: a collection of tactical and strategic information displayed about the performance of the business not very different from the information displayed to a driver in the dashboard of an automobile.

Introduction
As any senior executive and middle management will acknowledge, information systems will make the difference between success and failure of the corporation. Information technology has risen over the last decade to develop a long list of management information systems that provide a seamless integration between important functions such as finance, marketing, engineering and operations. Within the umbrella of the above four functions, we saw the proliferation of quality, distribution and transportation, management of supplier, customers, contracts administration.

Evolution of MIS
During its infancy, the development was centered on computerizing manual tasks in a reliable manner, later came the need for relating all business transactions within each function into its impact on the General Ledger. This kept the finance chiefs happy and legitimized the existence of MIS. MIS used to report to the controller. Once the finance house was in order, the manufacturing and operations people realized the value of MIS and accordingly nurtured the development of modules for material planning, shop floor control and purchasing. During this period we saw team ups between hardware and software vendors of the likes of IBM and industry pioneers of the likes of J.I. Case and Black and Decker and professional societies like American Production and Inventory Control (APICS) . Results of this collaboration were a body of knowledge that furthered the basic understanding of transactional elements of first line and supervisory management. Note however, the tactical and strategic levels of management were relatively untouched by these developments.

Beyond Transactional MIS: Management
Theory defines transactional MIS as dealing with activities at the lowest level in the organization, such as issuance of raw material, completion of an operation, closing a work order, receiving a part, paying a supplier etc. The considerations for system design are fairly simple and reports produced are very standard and similar to manually produced reports. These systems met the needs of first level supervisors and assisted decision making of middle level managers. It also met the survival needs of the corporation. Moreover hardware, software and training costs were significant and only the larger corporations could afford them. Most information needs of middle managers and Top management were met by a cadre of staff assistants and individuals with analytical and presentation skills. Companies that had complex information intensive business like banks, airlines, insurance and some heavyweights like IBM and P & G to name a few had developed very specialized MIS departments to generate appropriate reports to manage the business.

Triggering Events
As corporations became larger, with multi-plant global operations and as hardware costs dropped, system houses slowly awoke to the possibility of developing software for tactical applications faced by management. System designers not only had to model the computational details surrounding a tactical problem, but also contend with the diverse decision making styles of middle managers, the intuitive, the analytical and a mix of the two. The MBA schools also did their part to incorporate IT hardware and software courses into some of the curriculum. Business became more competitive with decision making response times shorter: the confluence of these factors put a heavy premium on information on demand to manage effectively.

Middle Management Needs
Middle managers in operations, marketing,, engineering, and finance had to make decisions that utilized what-if-analyses that needed query language capabilities. Optimal solutions were not possible owing to the dynamic nature of the decision and lack of formal approaches. A sampling of these decisions were:
- Forecasting demand for new products
- New product design to cost
- Variable budgets and balance sheets
- Project management: cost/schedule/control
- Multi-plant sourcing production operations
- Effect of marketing promotions on sales
- Concurrent design and manufacturing
- Use of suppliers and customers in design
- After sales product life cycle management
- Production inventory policy simulation

With dwindling staff support, the only avenue for making such complex decisions was to upgrade the MIS system. The Enterprise Resource Planning System also known as ERP systems was the answer to the problems faced by middle management and most manufacturing and service companies today have such systems either on a mainframe or LAN servers using a PC based system architecture.

Needs of Top Management
At the corporate suite the need for effective decision making is dictated by the internal and external environment faced by the corporation. Internal environment data is available in the ERP database, however it should be distilled to present the vital few information from an infinite variety of data. Data mining is an important consideration. Another factor is the decision making style of the individual. Numerical data is detailed and needs longer "Read Time" as opposed to graphical data. Longer "Read Time" comes at the expense of " Reduced Think and Act" time. Another twist to this scenario is the manager's preference for numerical data versus graphical data. At one extreme of this preference are marketing personnel who prefer graphics data, while at the other extreme are the engineering types who are comfortable with numerical data. This really begs the question, "Should all top managers really use the same signals to do their jobs effectively?" Unfortunately, there is no golden rule here.

If internal data seems difficult to deliver, external data is even more so. External data is broadly grouped under the immediate stakeholders that affect the business and the societal climate that can help or hinder the business.

The immediate stakeholders are suppliers, customers, local government, trade groups, competitors and shareholders.

The societal influences are i: Economic, like interest rates, unemployment, cost of living, GDP trends; ii: Technological, like patent protection, technology transfers, R & D discoveries and inventions; iii: Political, like Tax laws, trade regulations, environmental laws, and iv: Sociocultural like population age, ethnicity, lifestyles and consumer activism.

MIS using external data is industry specific and has data source limitations and is generally difficult to model with internal data. Impact of external data on internal data and performance results are difficult to model and are uniquely processed by the decision maker based on situational logic, i.e. what has worked in the past.

Thus, any information platform for decision support for Top Management is incumbent and industry specific. This increases the complexity and raises the ante for design and deployment of such systems

Is it Executive Dashboard?
Based on the foregoing narrative, it becomes clear that informational needs for Top Management for capturing key performance indicators (KPIs) using internal and external data is fairly difficult. In the past six years, system developers and users (Top management) have taken significant strides to define the system architecture, data flow, data filters and finally data displays. This effort has been successful for internal data with drill down capabilities.

The typical dash board (from a sampling of implementations) would include such data as:
- Telecom access to total daily sales with drill down by product line or market segment
- Daily cash receipts, disbursements with drill down by plant, customers, suppliers
- Daily shipments from multi-plant operations with drill down by product lines
- Daily plant head count with drill down by plant
- Balanced Scorecard and six sigma metrics per ISO 9001 requirements
- Daily sales bookings, sales prospects

- Daily results of marketing programs
- Daily call center volume and customer satisfaction metrics with drill down by major customers
- Daily inventory / production activity levels with drill down by product lines

System Design

Most implementations used backend data from the ERP web portals and any other web portals that has secure data. Some installations have this access from a home web page with data filters thru a Crystal report writer. The user interface is simple and the displays are tailored to the individual's decision making style. Internal data is easier to handle than external stakeholder data. The most difficult data stream is the external societal data. The difficulty lies in synchronization and sourcing the data and displaying it to the manager. More difficult is construction of intuitive and or simulation models that use societal and stakeholder data to construct business intelligence models that can solve a specific class of problems.

The more sophisticated models are still being developed and taught at MBA schools that have faculty specialized in quantitative strategy and deployment of such strategy for executive decision making.

As always there are the pioneers in industry who out of sheer necessity made impressive advances in such modeling methods. However information about their pervasive use is not certain.

Success Factors

Industry is replete with examples of companies that have spent substantial dollars in development and deployment but have yet to show bottom line results. A general rule of thumb, the more difficult the concept, the more extensive the time and dollars to develop the application. However this should be made transparent to the user; Top management.

The odds of being successful in this endeavor are greatly enhanced by the following:
- Identifying the KPIs for each executive position and customizing the dash board
- Determine the data needs and past analysis done in the executive suite. This involves interviewing staff assistants on how business is done.
- Plan access and security issues. Scrub the source data
- Provide multi level drill down capabilities. Most Top managers like to see the source of data and intermediate filters
- Understand role of Information Technology and application software and how it dictates system life cycle. Users cannot be easily weaned from their pet applications
- Understand that many Top managers are not IT savvy and may lag behind the system life cycle curve.
- Remember Top managers underwrite the costs of the system

Conclusions

The Executive Dashboard is in for the long haul. It is not a fad that will die out, but is a decision making tool that will adorn the corporate suite.

The first generation of Executive Dashboard has shown great promise, the system is available, however its use in the corporate suite has just caught on. Both system houses and industry together with academia will define its future