INFORMATION MANAGEMENT IN GOVERNMENTAL PROCEDURES

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ABSTRACT

In the contemporary organizational world, information manage-ment and management information systems are interdependent. Ma-nagement Information Systems (MIS) plays a strategic role in effective information management as well as organizational management in ge-neral. An MIS formally organizes the information managers need to plan the future course of an organization and to make decisions on the optimal allocation of organizational resources. All governmental departments are concerned with information, whether as sources of information, as agencies in charge of information management or in-formation utilization. In governmental procedures, obtaining and ma-naging information by itself doesn't guarantee organizational success and the nature of public management is different from that of private management. As a result, a comprehensive Public Management Infor-mation Systems (PMIS) considering external control and sensitivity to political change should be developed in terms of governmental institutions.

1. Introduction

The adage "knowledge is power" does not ordinarily fit public organizations without some conceptual adjustments. Obtaining and managing information, by itself, does not guarantee success. Nor does the purchase of the most up-to-date computer hardware nor the application of the most current management information systems. Public management is so much more difficult than private management is that, for superior management the private sector-sufficient management skills have to be present as well as the necessary political skills (Ellwood, 1996, 53). By the same token, managing information and information resources in public organizations is more than a series of technical issues.

All government departments are concerned with information, whether as sources of information, as agencies in charge of information processing

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or as users. However, the following institutions play a major role in the information activities of government; (i) departments in charge of administrative operations, (ii) central statistical offices, (iii) libraries and documentation centers, (iv) national computing centers, (v) management services departments, (vi) national planning agencies. (UN, 1985, 4)

In this article, first the Management Information System (MIS) and its subsystems are defined and the distinctions among them are highlighted. Then, the effects of computing on organizational structures and decision making with respect to public sector organizations are discussed. Thirdly, by describing three unique features of information systems in public administration- access to information, guarantees to privacy, and benefit saving-, the newly developed concept " Public Management Information Systems" (PMIS) is compared with the traditional MIS concept. Finally, the influences of political authority and the environment external to the public organization are taken into consideration.

2. Management Information Systems and Its Subsystems

Often the terms of information systems and management information systems (MIS) are used interchangeably. However, as known, not every information systems plays a role in management (Bozeman & Strausman, 1990, 113). The management information system (MIS) is an integrated, user machine system for providing information to support operations, management, and decision making functions in an organization. According to Gordon B. Davis, an MIS has at least five subsystems, each of which serves a special need within the organization. These subsystems can be listed as following; the management support system, the decision support system, the accounting information system, the office information system, and the data manipulation and reporting system.

The management support system (MSS) primarily provides information to the low and middle-level managers on a timely basis or as needed in report form. As a matter of fact, the MSS is the oldest MIS subsystem and also the most highly developed. On the other hand, when a manager needs more information than that found in reports, he or she may use a decision support system. A decision support system (DSS) manipulates data through mathematical or graphic models so that the manager can answer questions that may be raised by information provided in a report. In fact, the degree of structure in the decision dictates whether MSS or DSS should be utilized. If the decision is unstructured (strategic) - that is, if it cannot be made using clearly defined policies- then the models and graphics supplied by a DSS should be used.

An Office Information System (OIS), on the other hand, attempts to make the work of so-called knowledge worker easier - often referred to as office automation- provides a free flow of information throughout the organization. OIS has the following four functions, which facilitate the flow of information; text and transaction processing, document distribution through electronic mail, electronic filing, and access to internal and external data bases. Data Manipulation and Reporting Systems (DMRS) are oriented toward the individual even more than office information systems. The DMRS allows the individual using a personal computer to manage the information at his or her disposal easily

Lastly, an Accounting Information System (AIS) is a subset of a management information system that differs from an MSS or a DSS in the type of information that is processed. An MSS or an DSS provides all types of information to managers to help them make better decisions while an AIS processes primarily economic and financial data. Moreover, an accounting information system provides this information for both internal and external users by generating financial information that can be included in the reports from a management support system or the models and graphics of a decision support system.

3. Computers and Organizational Processes in Public Administration

Few governments in the western world have remained untouched by the wave of computer revolution. The widespread and expanding use of computing by government and business is a phenomenon of the last three decades. The increasing power and sophistication of computer systems has had dramatic effects in organizations, as illustrated by the introduction of microcomputers in 1980.

Computer is a simply a tool. It is not, inherently, a solution. Before the appropriate tool can be selected, both the problem and organizational processes, the objectives to be attained must be clearly defined (Isshiki, 1982, 2). Most of the research, concerning the utilization of computer and information systems in public administration, has been conducted by the URBIS (Urban Information Systems) Group at the University of California, Irwine and has dealt with computing in government, particularly local governments, both within the USA and in other developed countries.

Even though important differences exist between local governments and other public organizations, significant benefits are derived from selecting them as "laboratory animal" for study. In addition to that, comparison of findings from the studies across organizational context indicates that they are applicable to most public organizations and to private organizations in the service sector as well.

It is a fact that great speculation is made about the effects which computerization will have on organizations, but considerably less empirical research exists about the effects which computing does have on orga ni- zations. We need to focus on the context of computing and organizational structure and computing and decision making with respect to this section.

3.1. Computers and Organizational Structure

In terms of organizational structure, the issue is whether computing results in centralization or decentralization in the organization. As known, a centralized organization is one in which most decisions are made at the top by a single individual or small group. In other words, centralization refers to the distance between where a decision problem emerges and where in the organizational hierarchy decisions about that problem are made.

The utilization of computers in organizations can be said to bring about a centralizing influence in relation to two different factors. Leavitt and Whisler estimated that computing systems would execute routine decisions pass the remainder to top management along with monitoring and exception reporting systems that would signal needs for top management action. As a result, computing would centralize most organizational decision making by replacing human decision makers with machines and increasing top management control. The second factor has been said to be the economies of scale. According to those who approach to the point in terms of the economies of scale, the process of decision making would be easier to accomplish by centralizing the processing and storage of important information.

Charting an organizational future based on decentralism rather than centralism, democracy rather than bureaucracy, freedom rather than autocracy see computers as a key means for achieving organizational liberation (Booth & Pitt, 1984, 18). In fact, those who predict a decentra- lizing influence from computing have been less numerous than have those proclaiming centralization. Their point is that through decentralized access to central information (provided through timesharing systems, departmental minicomputers, distributed personal computers, and distribution of com- puter based systems) many decision previously handled by top mana- gement would be handled by middle management and operatives would exploit the opportunity provided by the technology.

As far as we are concerned, computing is neither a centralizing nor a decentralizing influence. In effect, the context or the environment in which computing is used is a much stronger influence on whether organizations centralize or decentralize than is the technology. Generally, computing in- volves elements of both centralization and decentralization, with central

managers and staff obtaining greater oversight across decision areas (e.g., budget, staffing, performance) and operating managers and staff obtaining greater latitude within them.

The conclusion can be drawn from the recent studies is that computing tends to reinforce the prevailing tendencies in organizations. Moreover, computing can be a powerful tool for facilitating structural changes determined for other reasons. For instance, centralization of fiscal control is facilitated by centralized financial accounting, which in turn is greatly facilitated by use of computerized accounting systems.

3.2. Computers and Decision Making

One major constraint on a rapid increase in efficiency and productivity in public sector organizations is the inadequate development of a system of collecting facts, organizing them and producing information that can be used in making and implementing decisions. (UN, 1985, 1) Computing's contribution to decision making is said to come from two features. First is enhancement of the ability to organize and maintain the base of factual information that must be used to understand the situation. This includes collection and storage of information, but more importantly, it includes the ability to retrieve the right information at the right time. Second is the provision of greater power to analyze information, particularly quantitative information.

Key decision makers in organizations should think and act strategically (Bryson, 1988, 46). The ultimate vision of computer-aided decision making is the decision support systems (DSS), in which the high level decision makers have on-line access to powerful models and all the data necessary to run the models under different assumptions. Decision support systems helps the top executives make some complex, unstructured decisions in an uncertain environment. Decisions made in organizations can be viewed as more or less structured (Bozeman & Strausman, 1990, 114).

Even though traditional computer-based information systems usually play a less prominent role in so-called "unstructured decisions", DSS are designed to have sweeping decision applications, including both structured and unstructured decisions. Sprague and Carlson define DSS's as interactive, computer-based systems that help decision makers utilize data and models to solve unprogrammed problems.

DSS focuses on decisions made at a higher level in the organization, usually by top managers and executives (Kavanagh, Geutal, Tannenbaum, 1990, 19). To distinguish between the DSS and MIS, it is observed that " the unique perspective of DSS's that goes beyond the traditional MIS is the

opportunity to custom fit computer systems to a particular decision making environment. Other characteristics of DSS's are their flexibility in software design, user friendliness, emphasis on analysis, ability to alleviate infor ma-tion overload, centralized databases, interactive capability, multiple display techniques and equipment, and rich potential to adapt to human cognitive processes while minimizing technical detail.

Public managers have the authority for and responsible for such pro-cesses as policy formulation, planning, implementation, decision making, and control. Each of these managerial functions can be performed more effectively if the organizational information system support the relevant decision making requirements. Currently, public managers use DSS most often in connection with expenditure and program analysis decisions and less often for development of agency policy.

As an example, the Brooks Act in the US Federal Government divides the responsibility for policy making (Office of Management and Budget), setting standards (National Institute of Standards and Technology), and procurement (General Services Administration) for automatic data pro-cessing. Naturally, this structure creates significant dependencies and constraints upon individual agencies that prevent long-run rational planning (McDonough, 1982, 28-31).

As system development continues and public managers become more skilled in the use of DSS, public managers ought to have the recognition that DSS is different from other computer-based systems. Moreover, the effective use of DSS requires public administrators to blend their managerial judgement with the technological opportunuties.

4. Conclusion and Recommendation for Public Management Information Systems

Although there is no agreement on what an MIS is, most definitions assume an integration of hardware and humanware (Sackman, 1967, 42). According to Sackman, an MIS is an evolving organization of people, com-puters, and other equipment, including associated communication and sup-port systems, an their integrated operation to regulate and control selected environmental events to achieve system objectives. In fact, the underlying thought behind most MIS concept is to harness the information processing power of machines and humans working in groups to facilitate management effectiveness.

Generally speaking, the MIS is supposed to take information gene ra-ted by routine communications, organizational transactions, and service/ product-relevant data and to condense, package and distribute the infor-

mation in a fashion that enables more effective management. In other words, management is psychologically and intellectually able to make good use of information derived from the system.

MIS is tied to the organization's transaction-processing systems. In business organizations such routine transactions as purchase orders, sales requests, and so forth are enfolded into information systems, usually employing computers to help compile and store the information. In public organizations, on the other hand, transaction-processing systems are quite similar but might focus on client services and service demands, in addition to purchasing, accounting and budgeting information. With respect to public sector organizations, payroll, personnel, tax refunds, social security benefit calculations and electronic fund transfers are examples of transaction based application systems.

As known, the MIS/DSS literature was developed almost by business school scholars and business practitioners. In addition to that, people working in information management roles in public organizations are more likely to have business-related disciplines than either public administration or computer science. Issues such as the contribution of information system to profit, management control, and cost savings are often seen as paramount. In essence, such public sector issues as external access to information, guarantees of privacy, and "benefit savings" are not of great interest in the mainstream information systems literature.

It is useful to distinguish MIS employed in private organizations and MIS utilized in public sector organizations (PMIS). In effect, the concept of PMIS was developed by Bozeman and Bretschneider in 1986 to underscore the importance of the public sector context for information management. Government organizations function in an environment that is much different from that faced by private business organizations. Due to that, the existing theoretical framework for research in MIS is criticized for its lack of attention to the external environment of organizations.

When it comes to measure the effectiveness of MIS employed, the criteria respected by private sector cannot merely applied to the PMIS due to the nature of public sector. In other words, in terms of public sector to measure the effectiveness besides productivity, a traditional measure of managerial effectiveness, several additional performance measures should be used, such as accountability, benefit saving, delivery of service.

On the other hand, externally based evaluation is rare in private sector. In contrast to private sector, the MIS in public sector is in place not only to meet the demands of the organization and its employees, but also that of public at large. Moreover, PMIS is expected to comply with public's attitude towards privacy. The degree to which the PMIS responds to

external request for data is another concern in evaluating PMIS. Private organizations   provide more information merely to government regulators and sporadically trade in secondary markets. However, public ones have to respond to superior government bodies, private citizens and peer agencies. (Bozeman & Straussman, 1990, 120-124)

Concisely, external control and sensitivity to political change indicate a different, less rational approach to MIS planning in the public sector. The PMIS framework differs from conventional MIS framework by emphasizing environmental factors rather than internal characteristics of the organization. Today's hardware and software should consider tomorrow's needs and technological possibilities, and planning for MIS should be forward looking and comprehensive.

BIBLIOGRAPHY

Andersen, David F., Sharon S. Dawes, **Government Information Management**, New Jersey: Englewood Cliffs, 1991.

Booth, S., Pitt D., "Continuity and Discontinuity: Information Technology as a Force for Organizational Change", in **The Computer Revolution in Public Administration**, GB: Harvester Press, 1984.

Bozeman, Barry., Straussman, J.D., **Public Management Strategies**, CA: Jossey Bass Inc., 1990.

Caudal, Sharon; "Managing Information and Technology for Results", *The Public Manager*, Spring 1994.

Caudle, Sharon; "Reengineering and Information Resources Management", *The Public Manager*, USA, Winter 1994-95.

Chandler, Ralph C., Jack C. Plano; **The Public Administration Dictionary**, II. Edition, CA: ABC-CLIO, Inc., 1988.

Ellwood J. W. "Political Science", in **The State of Public Management**, Kettl, D.F., Milward H.B. (eds), Baltimore: The John Hopkins University Press, 1996.

General Accounting Office, **Information Management and Technology Issues**, December 1992.

General Accounting Office, **Perceived Barriers to Effective Information Resources Management**, September 1992.

Isshıkı, Koichiro R.; **Small Business Computers: A Guide to Evaluation and Selection**, New Jersey: Prentice Hall Series in Data Processing Management, 1982.

Kavanagh, M. J., Geutal H. G., Tannenbaum S. I., **Human Resource Information Systems. Development and Application**, MA: PWS-KENT Inc., 1990.

Kenneth L. Kreamer., John Lesile King. "Computing and Public Organizations", *Public Administration Review*, Special Issue 1986.

Laudon, Kenneth C., Jane P. Laudon; **Management Information Systems**, The Macmillan Publishing, Inc., New York: 1994.

McDonough, F. "It A'int Necessarily So", *Government Data Systems*, V: 11, 1982.

McKeown, Patric G., **Living with Computers**, Florida: Harcourt Brace Jovanovich, Inc., 1986.

Pricilla Regan. " Privacy, Government Information and Technology", *Public Administration Review*, Special Issue 1986.

Stallings, William; **Computer Organization and Architecture: Principles of Structure and Function**, New York: The Macmillan Publishing Company, 1990.

Stevens, J.M., McGowan, Robert P.M, **Information Systems and Public Management**, New York: CBS Publishing, 1985.

Thierauf, Robert J.; **Decision Support Systems for Effective Planning and Control: A Case Study Approach**, New Jersey: Prentice Hall, 1982.

United Nations, **Modern Management and Information Systems for Public Administration in Developing Countries**, New York: UN Department of Technical Co-operation for Development Publication, No: E.85.II.H.1, 1985.

ÖZET

Modern organizasyonlar dünyasında, 'Bilgi Yönetimi' ve 'Yönetim Bilgi Sistemleri' birbirine bağlı olgulardır. Yönetim Bilgi Sistemleri (YBS), uzun dönemde kurumsal kaynakların optimal biçimde özgülenmesi konusunda bilgi yöneticilerine (information managers) katkı sağlayarak, etkin bilgi yönetimi ve genel anlamda etkin kurumsal yönetim açısından stratejik bir işlev yerine getirmektedirler. Kamu sektöründe yer alan kurum ve kuruluşlar, kimi zaman bilginin kaynağı olarak, kimi zaman ise bilgi yönetimi ya da kullanımında yetkili birimler olarak bilgi yönetimi ile ilişkilendirilmektedirler. Bilindiği gibi, kamusal süreçler açısından, salt bilginin temini ve yönetimi kurumsal başarı için yeter şart değildir. Kamu yönetiminin doğası, işletme yönetiminin yapısından farklıdır. Dolayısıyla, kamu sektöründe faaliyet gösteren kurum ve kuruluşlar açısından, dışsal denetim ve siyasal değişime duyarlılık faktörlerini dikkate alan kapsamlı bir Kamu Yönetimi Bilgi Sistemleri (KYBS) konsepsiyonu geliştirilmelidir.