



## Strategic Information Management for Organizational Effectiveness

Kenebara, Florence A.

Business Administration, Niger Delta University, Wilberforce Island, Bayelsa State, Nigeria.

### ARTICLE INFO

#### Article history:

Received: 14 December 2015;

Received in revised form:

28 January 2016;

Accepted: 3 February 2016;

#### Keywords

Information system,  
Information technology,  
Information management,  
Business performance.

### ABSTRACT

In modern conditions of globalization and development of information technology, information processing activities have come to be seen as essential to the success of organizations. Information is not only an asset, it is also crucial to making key business decisions, whereas information systems is technology required for information processing. The application of information systems technology in businesses and organizations has opened up new possibilities for running and managing organizations, as well as improved management decision making. Improving information management practices is a key focus for many organizations, across both the public and private sectors. This is being driven by a range of factors, including a need to improve the efficiency of business processes, the demands of compliance regulations and the desire to deliver new services. In many cases, 'information management' has meant deploying new technology solutions, such as content or document management systems, data warehousing or portal applications. The work of managers in small and medium-sized enterprises is very information-intensive and the environment in which it is done is very information rich. But are managers able to exploit the wealth of information which surrounds them? And how can information be managed in organizations so that its potential for improving business performance and enhancing the competitiveness of these enterprises can be realized? The purpose of this paper is to give an understanding of the role that information systems have in decision making and to discuss the possibility of how managers in organizations can make the best use of information systems. This paper provides a framework of effective use of information systems and offers an alternate approach to investigate the impact that information systems technology have in management decision making.

© 2016 Elixir all rights reserved.

### Introduction

In recent years, information systems technology has become crucial and is playing a critical role in contemporary society. It is dramatically changing the way the economy and businesses are run. Business is conducted in a global environment and simply could not serve without computer based information systems. Furthermore, we are entering the information age because of heavy dependence on information technology and information systems usage. The use of information systems helps to change the way business and organizations work as well as help managers reduce uncertainty in decision making.

It is interesting to note that most authors (Lucey, 2005; Hicks, 1997; Gordon and Olson, 1985; Ward and Peppard, 2002) would agree that information systems are playing an increasingly important role in organizations of all types, regardless of their size. It is often stated that information systems is a tool to help improve management by using available information for decision making. According to Thompson and Beer (2000) in addition to more traditional systems which assist in the day-to-day business operations, information system is increasingly providing a competitive edge for the organization. Information management is practiced in organizations. Yet information is used by individuals in those organizations. The counterpoint between

the organization and its individual members has particular relevance to information management because of its responsibilities to both the organization at one level and to individuals at another level. This counterpoint means that we need to consider both the organization and its members in information terms as a starting point for developing strategies for effective information management in small and medium sized enterprises (SMEs).

Several studies have found and reported diverse findings regarding information systems usage in decision making (Davis and Olson, 1985; Hicks, 1997; Kumar and Mittal, Jawadekar etc.). We should emphasize that although decision making it is one of the areas that information systems have sought most of all to affect, there have been only a few existing studies that have dealt and examine the role of information systems in management decision making. Information systems usage to support managers in decision making falls into one of two general categories of systems that help users to analyze a situation and leave the decision up to him/her and systems that actually make some sort of recommendation concerning what action to take (Lucey, 2005; Haag and Cummings, 2006).

In this paper the focus is to give an understanding of the role that information systems have in managers' decision making and to discuss the possibilities how managers of

Tele:

E-mail addresses: [lizzy18938@yahoo.com](mailto:lizzy18938@yahoo.com)

organizations can make best use of information systems. This study provide researchers with a framework of information systems usage in decision making and offers the ways how information systems can help managers reduce uncertainty in decision making. Furthermore, we consider that our study is important since it helps not only to understand the role that information systems have in decision making, but also help to understand how this technology supports major components of management and decision making functions. Information systems is especially important to managers at the lower or operational level since it appears that they receive the most aid, since computers and information systems are best able to deal with well-structured problems for which these.

The paper also intends to provide a better understanding of management functions and roles and offers an alternative approach to investigate the role that information systems have in management decision making in organizations.

#### **What is Organizational Communication?**

Organizational communication is difficult to define. Richmond and McCroskey (2009) describe it as 'the process by which individuals stimulate meaning in the minds of other individuals, by means of verbal and nonverbal messages in the context of a formal organization'. Pace and Faules (1994, p. 20) suggest it is 'the display and interpretation of messages among communication units who are part of a particular organization. An organization is comprised of communication units in hierarchical relations to each other and functioning in an environment'. Miller (2006, p. 1) has this to say:

Most scholars would agree that an organization involves a social collectivity (or a group of people) in which activities are coordinated in order to achieve both individual and collective goals. By coordinating activities, some degree of organizational structure is created to assist individuals in dealing with each other and with others in the larger organizational environment. With regard to communication, most scholars would agree that communication is a process that is transactional (i.e., it involves two or more people interacting within an environment) and symbolic (i.e., communication transactions 'stand for' other things, at various levels of abstraction). To study 'organizational communication', then, involves understanding how the context of the organization influences communication processes and how the symbolic nature of communication differentiates it from other forms of organizational behavior.

#### **The Functions of Management**

The management process has four functions and is executed through a variety of decisions taken at each function of management (Jawadkar, 13-14). The planning function of management it is the formulation of what is to be done. Organizing function is a means by which human resources, physical assets, money and time are coordinated into efficient production of goods and services. The most vital function of management is directing or motivating function, which calls for the practice of high degree of skills based on sufficient knowledge. While, controlling function as the last stage in management tends to complete the full cycle of the process of management through which managers accomplish results (Kumar and Mittal, 20-22).

The activities of managers is characterized by decision making, which is a critical managerial function. Managers need information to take decisions, but also in order to act in a variety of management functions. Therefore, it is essential that information systems are required when organizations grow and management function is performed by people who are

highly specialized. The attention of managers increase rapidly from one issue to another, with very little pattern. When problem accrues all other matters must be dropped until it is solved. Therefore, usually there is simply not enough time for managers to get deeply involved in a wide range of issues. Research suggests that a manager's day is characterized by a large number of tasks with only small period of time devoted to each individual task. Furthermore, Crawford (1997), observed that given the nature of the work, managers tend to rely upon information that is timely and verbal even if this is likely to be less accurate than more formal and complex information systems.

The duties of the management can be summarized as follows:

1. Planning: This involves establishing goals, developing strategies and planning.
2. Organizing: This is the aspect where various responsibilities are assigned to individuals and groups.
3. Directing: This is the action of leading by communication and motivation.
4. Controlling: This involves evaluation and adjustment of organization performance.

#### **Some Definitions of Information**

Organizations are increasingly aware of the potential of information in providing competitive advantage and sustaining their success as evidenced in a number of published case studies and commentaries (Broadbent 1977). The descriptions of information as an asset and a resource are no longer unusual. However, the origin of these descriptions in classical economics ignores the place of information in the fabric of a political system or culture of an organization. If information is to provide competitive advantage then its full potential needs to be considered.

A very useful hierarchy of definitions of information (Braman, 1989) has been developed in the area of information policy studies. The hierarchy is applicable to organizations for a number of reasons; firstly, it recognizes the qualitative differences among definitions of information; secondly, its macro view is more appropriate to organizations than definitions based only on the individual as an information user; thirdly, it provides a range of definitions which are useful in different situations; and fourthly, it foreshadows the need for information policy in organizations. The hierarchy consists of four levels, each based on a category of definitions drawn from many different fields.

1. Information as a resource. "Information, its creators, processors and users are viewed as discrete and isolated entities. Information comes in pieces unrelated to bodies of knowledge or information flows into which it might be organized" (Braman, 1989: 236).
2. Information as a commodity. Complementary to definitions of information as a commodity is the concept of an information production chain through which information gains in economic value. The notion of information as a commodity incorporates "the exchange of information among people and related activities as well as its use" (Braman, 1989: 238) and implies buyers, sellers and a market. In contrast to the absence of power of information as a resource, information as a commodity has economic power.
3. Information as perception of pattern. Here the concept of information is broadened by the addition of context. Information "has a past and a future, is affected by motive and other environmental and casual factors, and itself has effects" (Braman, 1989: 238). The concept of information and its

processes is broadened so much so that information in this sense can be applied to a highly articulated social structure. Information has a power of its own although its effects are isolated. The example given is of information reducing uncertainty but only in regard to a single specific question.

4. Information as a constitutive force in society. Information has a role in shaping context. "Information is not just affected by its environment, but is itself an actor affecting other elements in the environment" (Braman, 1989:239). The definitions in this category "apply to the entire range of phenomena and processes in which information is involved, can be applied to a social structure of any degree of articulation and complexity, and grant information, its flow and use an enormous power in constructing our social (and ultimately physical) reality" (Braman, 1989: 214).

The hierarchy of definitions of information presents a broadly based view of information and one which reflects the images of organizations which have been discussed. The traditional view of information management has focused very much on information as a resource and as a commodity and on information management as providing a service to the organization. That service has taken the form of providing access to information in a range of sources including on-line commercial databases, archival collections, websites and in-house databases. The definition of information as perception of pattern extends information management into a place in achieving the goals of an organization. It is as a constitutive force though that information is most potent as a basis for future action and innovation. Information management shifts from service provision to strategy formation.

From these definitions, the following implications can be drawn:

1. Information management needs to encompass the full range of information from a resource to a force for change and development.
2. Information can be integrated into organizational processes and so it can influence organizational culture, structure and work patterns.
3. Information management can properly address information products, information services, information flow and information use in an organization.
4. Useful measures of the effectiveness of information management can be based on the impact of information on the organization.

This consideration of organizations and information has provided some implications for information management. They elaborate the scope of information management in organizations and provide a context for information management. The implications have been drawn together in a number of propositions presented below.

**Proposition 1**

Information and its management contributes to the achievement of organizational goals

**Proposition 2**

Information management is contextualized by the organization

**Proposition 3**

To be as effective as possible information management assumes a broad view of information

**Proposition 4**

Information can be value laden so too can be information management practice

**The Work of Managers**

The classic view of managerial functions as planning, organizing, communicating, coordinating and controlling (Fayol, 1949) suggest a rational and ordered approach to management activities. Yet studies of managers in their workplaces present a picture of an approach to managerial activities that is quite different. A brief overview of a number of studies based on questionnaires and observation of managers in their workplaces highlight the seemingly active, informal, fragmented and chaotic nature of managerial work. One study (Mintzberg, 1975) identified ten different roles for managers. The roles were categorized into three groups to form an integrated view of what senior managers do. The interpersonal roles of figurehead, leader and liaison stem from the manager's formal authority. The informational roles of monitor, disseminator, and spokesman derive from the manager's interpersonal contacts. In this role the manager emerges as the "nerve centre" of the organizational unit (Mintzberg, 1975: 55). The decisional roles of entrepreneur, disturbance handler, resource handler and negotiator arise from the manager as the formal authority of the organizational unit who can commit the unit to action. This approach to managing acknowledges the action-oriented, outward-looking and ritualistic aspects of managerial work as well as managers' strong preferences for verbal media in finding information.

Another study of managers at work identified three major processes in which they are engaged (Kotter, 1982): agenda setting, network building and implementing their agendas through networks. The key challenges for general managers reflect the information and people oriented demands of these three processes: "figuring out what to do (making decisions) in an environment characterized by uncertainty, great diversity, and an enormous quantity of potentially relevant information" and "getting things done (implementation) through a large and diverse group of people despite having relatively little control over them" (Kotter, 1982: 20).

Networking is a feature of another view of managerial work. Three other categories of activity developed from the research of managers and their subordinates were routine communication, traditional management and human resources management. Networking includes interaction with outsiders and socializing/politicking inside and outside the organization; routine communication activities include exchanging information and handling paperwork; traditional management activities consist of planning, decision making and controlling; and human resource management includes motivating/reinforcing, disciplining/ punishing, managing conflict, staffing and training/developing. This study distinguished between successful and effective managers, between those who are promoted and those who have "satisfied, committed subordinates and produce organizational results" (Luthaus, *et al.*, 1988: 62). We are reminded that managers have their own career interests as well as interests in the organizations in which they work. The categories of activity contribute differently to success and effectiveness. Networking had the strongest relationship with success, whereas routine communication had the strongest with effectiveness. The type of activity with the weakest relationship with success is human resource management and with effectiveness the weakest is networking.

The final study considered here explores the work of middle managers. It suggests that managing relationships, finding innovation, creating a mindset and facilitating learning are integral to creating competitive advantage. The study of

middle managers focusses on strategy formation, a process that moves away from the overly rational, command and control model of strategy as a two stage process of formulation and implementation and has "more to do with learning than planning" (Luthaus *et al.*, 1988: 39). Four distinct roles for middle managers in strategy were identified: championing strategic alternatives; synthesizing information; facilitating adaptability; and implementing deliberate strategy. By engaging in these roles, middle managers link strategic purpose and organizational action. These studies of managerial work range across managers at different levels in organizations from senior management to middle management. They also span different kinds of organizational structures from the more traditional hierarchies to post-entrepreneurial organizations with leaner, flatter structures and participative, team-based work units.

### Some Concepts of Information

Because managers in organizations use information and it is integral to their work we need to be clear about what information is at the level of individual users of information. There are two perspectives which are useful to a consideration of information management in organizations. One comes from the field of information and communication, the other from management. The first is central to the user-oriented paradigm (Dervin and Lilan, 1986) in information studies and it developed as an alternative to the traditional supplier-oriented paradigm which dominated earlier developments in information systems and the applications of information technology to information services. This perspective posits that information is a process that applies to adaptive and creative behaviour. It relies on "information which describes reality, the innate structure or pattern of reality ...." (Dervin, 1977: 22) and "ideas, the structures or pictures imputed to reality by people" (Dervin, 1977: 22). Individuals move between subjective, internal information and objective, external information by a set of behaviours, or the "how" of the information process.

Similar categories of information have been derived from an analysis of dictionary definitions (Buckland, 1991): information-as-thing, information-as-knowledge and information-as-process. Information-as-knowledge is intangible and to be communicated needs to be expressed or represented in some physical way so becoming tangible information-as-thing. The point is made that information-as-thing has a "fundamental role" in information systems (Buckland, 1991: 352), not only computer-based systems but also libraries, museums and collections of potentially-informative objects which might include people, products and events.

The second perspective, based on an analysis of successful companies in Japan, is centred on the individual as a creator of new knowledge (Nonoka, 1991). It draws a distinction between explicit and tacit knowledge. Explicit knowledge is formal, systematic and codified rather like information-as-thing. Tacit knowledge is highly personal, consisting of technical skills and "know-how" as well as having cognitive dimensions such as implicit mental models and beliefs which shape our perceptions of the world. There are similarities among information-as-knowledge and tacit knowledge.

This perspective links individual and organizational knowledge. New knowledge always begins with an individual and it is this individual's personal knowledge which is transformed into organizational knowledge which is of value

to the organization as a whole. There are four patterns suggested for creating knowledge in an organization and some indications of the creation process through the spiral of knowledge (Nonoka, 1991: 97-99) are given. These are similar to information-as-process.

1. From tacit to tacit which occurs when one individual shares tacit knowledge directly with another for example through observation, imitation, conversation so that it becomes part of another's tacit knowledge base. This knowledge rarely becomes explicit.
2. From explicit to explicit which occurs when an individual combines discrete pieces of explicit knowledge into a new whole, for example when a finance director puts together information collected from different sources in the organization in a financial report.
3. From tacit to explicit which occurs when tacit knowledge is articulated, for example when the finance director develops a new approach to budgetary control based on tacit knowledge. The explicit knowledge created draws on the director's experience, judgment, insight and know-how and it is then available for sharing with others in the organization. This process extends the organization's knowledge base.
4. From explicit to tacit which occurs when explicit knowledge is shared throughout the organization and others internalize it to broaden, reframe and extend their own tacit knowledge. For example, the finance director's approach to budgetary control is used by others in the organization and it is eventually taken for granted as one of the organization's tools or resources.

These two perspectives on information present a contrast between information as an object and information as a construct. Both kinds of information are necessary for managers in organizations. Not only do managers use information as one of the resources available to them but they also have a role in knowledge creation for themselves, their co-workers and their organizations. Because information as a tangible object is usually easier to capture, store, retrieve and disseminate, particularly with the ever-expanding range of communication and information technologies available to organizations, there is a risk that the value of intangible information as a user construct will be overlooked. Yet, it is the "informal, anomalous, multifaceted, interdisciplinary, idiosyncratic individualistic aspects of information transfer" (Bawden, 1986: 210) which is central to creativity and innovation.

### Purpose of Information Management

#### Information management contributes to the achievement of organizational goals

There is little doubt that information does contribute to the success of organizations. Whether information is regarded as a resource or a force for change and development it is clear that information can contribute to the achievement of organizational goals. The assumptions are made that the goals of an organization are explicit, thus are known throughout the organization and there is some way determining the extent to which the goals have been met. A survey of high performing companies in the UK (Owens *et al.*, 1977) found almost universal acceptance of the view that information is a valuable asset. The more successful companies were concerned with information management issues and some were working towards the creation of an information culture as a way of ensuring continued success. In the words of one manager interviewed in the study:

Information is an asset and, thereby, we should maximize the value from that asset, and make it available to all those who can obtain value from it. This manager's concern with the need to link business strategy and information has been shared by managers in other countries in the western world (Broadbent, 1992). A key factor in linking or aligning business strategy and information has been information technology, a tool essential for business success in a global economy. The potential for information technology and information to transform organizations is evident in those companies which have redesigned their business processes. Information and information technology have acted as enabling and integrating tools for survival and growth in rapidly changing environments.

#### **A process approach to information management supports the integration of business strategy and information**

The calls for integration come from at least three different communities: information management, information systems and management. Successful companies are those that adapt to and shape their environments and do so by using and creating information in a process of continuous improvement and innovation. Information management has been described in one particular model as a continuous cycle of related activities which encompass the information value chain. The activities in the cycle (Choo, 1995: 24-26) are:

1. identification of information needs defined by subject matter requirements and situation
2. information acquisition involving evaluation of current sources, assessment of new sources and matching of sources to needs
3. information organization and storage of the organization's memory or its knowledge and expertise
4. information products and services aimed at enhancing the quality of information
5. information distribution through sharing information informally or formally
6. Information use in the creation and application of information in interpretation and decision making.

Very crucial is organizational learning and the development of individuals. For example, information organization and storage activities will ensure that the organization's knowledge is made available to individuals or groups in an organization and is built on. Information distribution activities can develop fresh insights and novel solutions which can then be captured through organization and storage activities and made available for later use. The activities of identification of information needs and information use are not always regarded as components of information management. Yet it is these two activities which require the integration of business strategy and information. Information needs will arise in the context of the organization's goals and the objectives of work teams and it is this context which surrounds the use of information.

The integration of business strategy and information also suggests different ways of organizing work and designing the organization. Teams are very appropriate to strategy formation and achieving competitive advantage. In the learning organization there are three groups of experts who need to work together as knowledge partners. The groups are domain experts in the organization who create and use knowledge, for example operators, professional managers; information experts with "skills, training and know-how for organizing knowledge information systems and structures that facilitate the productive use of information and knowledge resources"

(Choo, 1995: 198); and information technology experts who have specialized expertise in building and developing the organization's information infrastructure.

The focus of each group of experts is different. Organization effectiveness is the focus of the domain expert, enlightenment is the focus of the information expert and process efficiency is the focus of the information technology experts. As the partners in the teams work together they will create, organize and use knowledge. The partners will engage in learning and in furthering the organization's objectives. They will assume information responsibility within the team and for themselves (Drucker, 1998).

Key factors for success in SMEs reinforce the need for integration of business strategy and information. Managers in firms see their success as dependent on their organization's ability to accommodate and manage change and to respond to changes in their environments. The key factors are:

- relationships with customers and suppliers
- flatter management structures and better use of resources
- training and quality
- environmental issues (Abell, 1994: 236)

Each of these factors rests on information, its use, creation, storage and distribution. Issues of the quality of information (in terms of its accuracy, validity, timeliness), its accessibility, availability, presentation, ease of use, and its organization and storage are the concern of teams or task forces developing strategy or engaging in projects in relation to any one of these factors.

#### **The Scope of Information Management**

Information management is contextualized by the organization and is value-laden. The earlier discussion of images of organizations suggests different approaches to information management in organizations. While the objectives of information management will be linked to the effectiveness of organizations, information management practice will vary across organizations. For example, in the organization which is like a machine, the information management function might be centrally located in a unit established to control internally generated information. This unit would have links to an IT unit. There might also be a library in the organization which provides an information service based on externally generated information. Depending on the industry sector, the market place, the culture and the nature of work in the organization, such a structural arrangement for information management might be appropriate.

By contrast, in the organization which is like a learner, the information management might be decentralized in a federal structure which supports teams but locates some information management functions centrally. Each team will be responsible for providing information to know how databases accessible through the organization's intranet. Compared to the previous example, the objectives for information management and priorities for services will be quite different. Some notable differences are:

- distinctions made between internally and externally generated information
- the reuse and sharing of information arising from activities in each organization
- the relationship among library, information management and IT staff
- the applications of IT
- the value attributed to information
- the information ethos

• Measures of success used by the organization and by information management.

It needs to be recognized that the differences in these two examples are valid. There is no one approach to information management which is inherently more effective than any other. An important element in information management is information politics which indicate the assumptions made about how people generate and use information in organizations. Some models of information politics (Davenport *et al.*, 1996) that have been developed include:

- Technocratic utopianism: a heavily technical approach to information management stressing categorization and modelling of an organization's full information assets.
- Anarchy: the absence of any overall information management policy leaving individuals to obtain and manage their own information.
- Feudalism: the management of information by individual business units or functions, which define their own information needs and report only limited information to the overall corporation. The definition of information categories and reporting structure by the firm's leaders, who may or may not share the information willingly after collecting it.
- Federalism: an approach to information management based on consensus and negotiation on the organization's key information elements and reporting structures.

The federalism model is probably most appropriate to the organization as learner, although it is possible that a number of models could co-exist in an organization. The models reinforce the point that the context of the organization is an important influence on information management and a reminder that it may in fact act as a barrier to the development of sound information management practice.

The issue of context is applicable to SMEs as well as large organizations. It may be particularly relevant to SMEs which are interested in establishing strategic partnerships with external information services. SMEs will need to clearly state their expectations of any service providers and to evaluate the organizational context of any partners so that the risks associated with potential sources of difference can be assessed. Information management must adopt a broadly-based approach to information. If information management is to influence the development of the organization then it should recognize as many categories of information as possible, as broad a range of sources and media as possible, and as broad a range of uses of information as possible. The information provided by the information expert in work teams should be seamless and all information created by the team which is likely to be of value should be organized and stored by the information expert. The information will no doubt be stored on many different media including discs, maps, photographs, brochures, samples, diagrams, videos, reports, printouts, all of which are part of the organization's memory and history and have the potential to be reused in later projects. The tacit knowledge of the team becomes explicit knowledge for the next team or task force working on a similar project.

Information experts have a role in enhancing the information capabilities of individuals in organizations. Efforts to adapt human behavior to the information systems have not been successful. IT offers some potential for developing interactive systems which should be capable of adapting to human behavior. Systems are needed for identifying information need by supporting IT experts and managers in articulating their information needs, capturing information or tacit knowledge for storage in databases and

adding value to information. There are a number of approaches to adding value to information already in use but there is room for further development. In organizations information experts might discuss with managers their media preferences, information use strategies and barriers they have encountered in using and applying knowledge. Information experts can then begin tailoring information products and services to enable managers to make decisions, solve problems, think strategically, scan the environment and carry out other aspects of their work roles. One approach adds value to information to help information users match the information provided by a system with their needs (Taylor, 1985). The added values include ease of use, noise reduction, quality, adaptability, time-saving and cost saving. Another approach is directed toward reducing information overload for managers by increasing the quality of information. Some of the values are related to the scarcity of information and the degree of confidence a manager places in information.

It is possible for SMEs to adopt a broadly-based approach to information and ensure that the information they need in order to maintain their competitive advantage is accessible and usable. There are a number of published studies and commentaries outlining managers' information behavior and from them further approaches for adding value to information can be developed. The studies challenge some common assumptions held by information professionals about managers' attitudes to information, their use of it in decision making and the strategies they develop to cope with vast quantities of information.

#### **Implementing Information Management**

Managers are in a unique position to integrate information and business strategy. Successful implementation of information management presupposes senior management support, expressed most visibly in funding priorities and through information-related activities and projects from training programs to information system enhancements. The integration of information and business strategy presupposes a learning organization which is team based. Managers as domain experts are able to use and create information and knowledge so that both information and business strategy are embedded in the innovations, products, processes or services developed by the team.

It is in their daily work that managers have opportunities to integrate business strategy and information. In the knowledge creating company (Nonaka, 1991) there is a continual shift in meaning as new knowledge is diffused through the company. At times the confusion created by this shift escalates to ambiguity and even chaos which can lead to fresh insights and a new sense of direction. The job of managers is then to "orient this chaos towards purposeful knowledge creation" (Nonaka, 1991: 103). Senior managers articulate metaphors, symbols and concepts about the company's future, middle managers orient the chaos with their co-workers on company teams. In the learning organization, middle managers make explicit the tacit knowledge of senior managers and their co-workers and incorporate it into new technologies and products. In this sense, managers are knowledge engineers. In other words, middle managers and their teams create information as an object on the basis of the information constructs of others.

This process is similar to some definitions of knowledge work. One refers to "activities using individual and external knowledge to produce outputs characterized by information content" (Davenport *et al.*, 1996: 54). Another suggests that

knowledge work characterized by variety and exception and is performed with a high level of skill and expertise. Included in knowledge work processes are activities such as education, accounting, research and development, law and management processes of strategy and planning (Davenport *et al.*, 1996). This view suggests that there are five different processes in knowledge work:

1. Finding existing knowledge, understanding knowledge requirements, searching for it among multiple sources and passing it on to a user. An example is a competitive intelligence process in an insurance company.
2. Creating new knowledge in say creative processes in advertising or research activities in a pharmaceutical firm.
3. Packaging knowledge created externally to the processes. An example is the editing, design and proofing processes in publishing.
4. Applying existing knowledge, for example is a surgeon applying existing medical knowledge.
5. Revising knowledge. Examples are the reuse of existing components in an engineering project or the residential development of former warehouses.

These five processes are used by managers and all are dependent on information. By engaging in these processes in their role in strategy formation managers are able to integrate information and business strategy. These knowledge work processes are possible in SMEs. Smaller organizations might in fact have more flexibility in moving to project teams. They may also have advantages in being able to apply existing knowledge or create new knowledge through innovation. The task of information management is to enable managers to engage effectively in knowledge work. Key contributions by information management include:

- developing information filters so that that volume of information is contained
- enhancing the quality of information
- building know-how databases
- facilitating information sharing across teams

Managers in SMEs supported by effective information management and information experts, like their colleagues in large organizations, are well placed to integrate information and business strategy. The effectiveness of information management can be measured by the extent of knowledge creation or innovation in organizations. The evaluation of information management needs to take into account different views on information. Evaluation based solely on information as object or tangible information will be misleading. The focus of evaluation needs to include also information as a construct and information processes. One approach to the evaluation of information management could be based on the processes of information management discussed earlier. Another approach might be based on innovations in the organization and might include consideration of the information capabilities of managers and their co-workers. The measures of the effectiveness of information management will be very similar in SMEs and large organizations. They will be directed towards teams and the organization itself. Some measures will require evaluation over a period of time, for example when the information ethos of an organization is used as an indicator of effective information management. Other measures might be applied over shorter time periods for example in the evaluation of training programs. The indicators will require qualitative and quantitative measures. The challenge is to identify what it is that information and learning have made possible in an organization.

Information management has multiple meanings. Its meanings are shaped by different perspectives on information, on organizations and on the work of managers. Information management has the potential to transform organizations but only when information and business strategy are integrated. Managers in SMEs and large organizations have a key role in putting information to productive use and ensuring that their organizations are successful. In the words of Drucker:

"... Knowledge is the only meaningful resource today. The traditional "factors of production" - land (i.e. natural resources), labour and capital - have not disappeared, but they have become secondary. They can be obtained, and obtained easily, provided there is knowledge. And knowledge in this new sense means knowledge as a utility, knowledge as the means to obtain social and economic results. These developments, whether desirable or not, are responses to an irreversible change: *knowledge is now being applied to knowledge*. Supplying knowledge to find out how existing knowledge can best be applied to produce results is, in effect, what we mean by management. But knowledge is now also being applied systematically and purposefully to define what new knowledge is needed, whether it is feasible, and what has to be done to make knowledge effective. It is being applied, in other words, to systematic innovation" (Drucker, 1993: 42).

In organizations, information management is the key to systematic innovation and to the benefits that innovation brings.

### Conclusion

Information systems form an integral part of modern organizations and businesses and are designed to support management activities, in particular, better decision making.

Management has four distinct functions and each requires support from an information systems, as well as information are required at three different levels of decision making and information systems has to support each level. Although, effective use of information systems in management decision making gives power to managers and help organization succeed, it is necessary to claim that there is not enough empirical studies and results that examine the role of information systems technology in decision making and much work needs to be done in broadening the role of information systems on professional and managerial life.

Finally, it is possible to state that while information systems have made great contributions to organizations, managers should rise their understanding what information systems is, and what information systems can and cannot do. Today, understanding the role of information systems that information processor has on an organization, is crucial for running a successful business. In the future information systems can be absolutely crucial to business survival.

### References

- Abell, A. (1994) Information use and business success: a review of recent research on effective information delivery. In: M. Feeney and M. Grieves (Editors), *The Value and Impact of Information*, London: Bowker Saur, 229-253.
- Bawden, D. Information systems and the stimulation of creativity, *Journal of Information Science*, 12, 203-216.
- Best, D.P. ed. (1996) *The Fourth Resource: Information and Its Management*. Aldershot, Hants: Aslib/Gower.
- Braman, S. (1989) Defining information: an approach for policymakers, *Telecommunications Policy* 13, 233-242.
- Broadbent, M. (1977) The emerging phenomenon of knowledge management, *Australian Library Journal* 46, 6-23.

- Broadbent, M., Lloyd, P., Hansell, A. & Dampney, C.N.G. (1992) Roles, responsibilities and requirements for managing information systems in the 1990's, *International Journal of Information Management* 12, 21-38.
- Browne, M. (1993) *Organizational Decision Making and Information*. Norwood, NJ: Ablex.
- Buckland, M. (1991) Information as thing, *Journal of the American Society for Information Science* 42, 351-360.
- Burk, C.F. & Horton, F.W. (1988) *Info map: A Complete Guide to Discovering Corporate Information Resources*. Englewood Cliffs, NJ: Prentice Hall.
- Choo, C.W. (1995) *Information Management for the Intelligent Organization: the Art of Scanning the Environment*. Medford, NJ: Information Today.
- Davenport, R.H., Eccles, R.G. & Prusak, L. (1996) Information politics, *Sloan Management Review* (Summer), 53-65.
- Davenport, T.H., Jarvenpaa, S.L. & Beers, M.C. (1996) Improving knowledge work processes, *Sloan Management Review* (Summer 1996) 53-65.
- Dervin, B. & Nilan, M. (1986) Information needs and uses, *Annual Review of Science and Technology* 21, 3-32.
- Dervin, B. (1977) Useful theory for librarianship: communication, not information, *Drexel Library Quarterly* 13, 16-32.
- Diamantopoulos, A. & Souchon, A.L. (1996) Instrumental, conceptual and symbolic use of export information: an exploratory study of UK firms, *Advances in International Marketing* 8, 117-144.
- Drucker, P. (1988) The coming of the new organization, *Harvard Business Review* (Jan-Feb), pp.
- Drucker, P. (1993) *Post-Capitalist Society*. New York: HarperCollins.
- Fayol, J. (1949) *General Industrial Management*. London: Pitman.
- Floyd, S.W. & Wooldridge, B. (1996) *The Strategic Middle Manager: How to Create and Sustain Competitive Advantage*. San Francisco: Jossey Bass.
- Grant, R.M. (1996) Toward a knowledge-based theory of the firm, *Strategic Management Journal* 17, 109-122.
- Grimshaw, A. ed. (1995) *Information Culture and Business Performance*. Hatfield, Herts: University of Hertfordshire Press.
- Jawadekar, J.W. *Management Information Systems, Text and Cases*.
- Johannessen, J.A. & Olaisen, J. (1993) The information intensive organization: a study of governance, control and communication in a Norwegian shipyard, *International Journal of Information Management* 13, 341-354.
- Kalseth, K. (1991) Business information strategy, *Information Services and Use* 11, 155-164.
- Kanter, R.M. (1989) The new managerial work, *Harvard Business Review* 67, 85-92
- Kotter, J.P. (1982) *The General Managers*. New York: Free Press.
- Lucey, T. *Management Information Systems*. 9<sup>th</sup> Edition. Thompson learning, London.
- Luthaus, F., Hodgetts, R.M. & Rosenkrantz, S.A. (1988) *Real Managers*. Cambridge, MA: Ballinger.
- Mintzberg, H. (1975) The manager's job: folklore and fact, *Harvard Business Review* 53, 49-61
- Moreton, R. (1995) Transforming the organization: the contribution of the information systems function, *Journal of Strategic Information Management* 4, 149-163
- Morgan, G. (1986) *Images of Organization*. Beverly Hills, CA: Sage.
- Nonaka, I. (1991) The knowledge-creating company, *Harvard Business Review* (November-December), 96-104
- Oppenheim, C. (1997) Managers' use and handling of information, *International Journal of Information Management* 17, 239-248.
- Owens, I. & Wilson, T.D. with Abell, A. (1997) Information and business performance: a study of information systems and services in high performing companies. *Journal of Librarianship and Information Science* 29, 19-28
- Owens, I., Wilson, T.D. & Abell, A. (1996) *Information and Business Performance: A Study of Information Systems and Services in High Performing Companies*. London: Bowker Saur.
- Porter, M.E. (1985) *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: Free Press.
- Senge, P.M. (1990) *The Fifth Discipline: the Art and Practice of the Learning Organization*. New York: Doubleday Currency
- Simpson, C.W. & Prusak, L. (1995) Troubles with information overload moving from quantity to quality in information provision *International Journal of Information Management* 15, 413-425.
- Spender, J.C. (1996) Making knowledge the basis of a dynamic theory of the firm, *Strategic Management Journal* 17, 45-62
- Taylor, R.S. (1985) *Value-Added Processes in Information Systems*. Norwood NJ: Ablex.
- Victor, B., Pine, B.J. & Boynton, A.C. (1996) Aligning IT with new competitive strategies. In J. N. Luftman (Editor), *Competing in the Information Age: Strategic Alignment in Practice*, Oxford: Oxford University Press, 75-94.