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E-GOVERNMENT, INFORMATION AND COMMUNICATION TECHNOLOGIES IN PUBLIC SECTOR MANAGEMENT

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KNOWLEDGE MANAGEMENT IN THE CONTEXT OF GOVERNMENT

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Knowledge management is the big buzz-word in organizations today, especially in very large enterprises. It is said that a company that is not managing the explicit tacit knowledge it has available, is not really recognizing the full potential of its capabilities, or harnessing the brainpower within them. The anticipated benefits range from the cultivation of explicit and tacit intellectual assets to achieve efficiencies in operations, to innovations in products and business practices.

Today I will examine the definitions of knowledge management and the applications to business and to government. The development of a knowledge management strategy is seen as requiring cultural change, the incorporation of inter-organizational teams, identification of knowledge management assets, and the required facilitating information and communication technologies. Global and regional knowledge management practices in the context of government will also be examined.

Enterprises are realising how important it is to "know what they know" and to be able to make maximum use of the knowledge. This knowledge resides in many different places such as: databases, knowledge bases, filing cabinets and peoples' heads and are distributed right across the enterprise. All too often one part of an enterprise repeats work already done by another part simply because there has not been careful tracking of organizational expertise or experiences with a view to offering lessons learned, and make use of, knowledge in other parts. Most traditional company policies and controls focus on the tangible assets of the company and leave unmanaged their important knowledge assets.

Enterprises need to determine:

- what their knowledge assets and core competencies are;
- how to manage and make use of these assets to get maximum return.

Success in an increasingly competitive marketplace depends critically on the quality of knowledge organizations apply to their key business processes. For example the supply chain depends on knowledge of diverse areas including raw materials, planning, manufacturing and distribution. Likewise product development requires knowledge of consumer requirements, new science, new technology, marketing etc.

The challenge of deploying the knowledge assets of an organization to create competitive advantage becomes more crucial as:

- The marketplace, at the local and global levels, is increasingly competitive and the rate of innovation is rising, so that knowledge must evolve and be assimilated at an ever faster rate.
- Corporations are organizing their businesses to be focused on creating customer value. Staff functions are being reduced as are management roles...
structures. There is a need to replace the informal knowledge management of the staff function with formal methods in customer aligned business processes.

- Competitive pressures are reducing the size of the workforce which holds this knowledge.
- Knowledge takes time to experience and acquire. Employees have less and less time for this.
- There are trends for employees to retire, or to be retired earlier and for increasing mobility, leading to loss of knowledge.
- There is a need to manage increasing complexity as changes in strategic direction may result in the loss of knowledge in a specific area. Subsequent reversal in policy may then lead to renewed requirements for this knowledge, but the employees with that knowledge may no longer be there.

Caribbean governments are today challenged to define and implement strategies to operate efficiently and to innovate. To do this we must find successful methodologies for re-engineering and distributing the administration’s data, information and knowledge. How to distribute knowledge becomes the key question of successful re-organization and so, knowledge management must be seen as an important enabler as we determine how to define, implement, manage and evaluate e-government programmes in the Caribbean.

At issue is the definition of knowledge management and the component concepts. Thomas Davenport in discussing knowledge management and related concepts, has presented the following ideas:

**Data** are a set of objective facts about events or structured records of transactions. These records may give quantity, cost, colour, size, but usually fail to record why the purchase was made, how likely is a repeat purchase, request for a service the occurrence of an event.

**Information** on the other hand is “usually in the form of a document or an audible or visible communication. Information has a sender and receiver and is intended to change the way the receiver perceives something. “**It's data that makes a difference.**” Information moves around organizations through hard networks with visible and definite infrastructure, wires, delivery vans, satellite dishes, post offices, addresses, electronic mailboxes and soft networks or informal networks often invisible and less formal.

**Knowledge** is usually recognized as broader, deeper and richer than data or information.

Davenport and Prusak define "**knowledge as a fluid mix of framed experience, values contextual information, and expert insight that provides a**
framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers."

In organizations, knowledge often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices and norms.

**Knowledge assets** are the tacit and explicit knowledge regarding markets, products, technologies and organizations, that a business owns or needs to own and which enable its business processes to generate profits, add value, etc.

Knowledge management is not only about managing these knowledge assets but also about managing the processes that act upon the assets. These processes include: developing knowledge; preserving knowledge; using knowledge, and sharing knowledge.

Therefore, **Knowledge management** involves the identification and analysis of available and required knowledge assets and knowledge asset-related processes, and the subsequent planning and control of actions to develop both the assets and the processes so as to fulfil organizational objectives. Knowledge management is not only about managing these knowledge assets but managing the processes that act upon the assets. These processes include: developing knowledge; preserving knowledge; using, and sharing knowledge.

**Knowledge Management** started in most companies as the creation and use of electronic repositories, with a healthy dose of human issues like having a knowledge-oriented culture and structure. Since then, however, it has grown amoeba-like to swallow a variety of other topics. Organizational learning, for example, is increasingly being drawn into the KM fold, as are other variations on the learning theme (distance learning, performance support and so on). Business intelligence, which I define as the art of turning data into knowledge, is now often discussed as a branch of knowledge management. (Davenport)

Although some writers like Karl-Erik Sveiby define knowledge management as "the art of creating value from intangible assets", Implementation of knowledge management in fact involves activities in information management, information technology, and human resources development. Component activities of knowledge management have been undertaken by librarians and other information professionals, educators, master craftsmen with apprentices or interns, database administrators and other information technology personnel. The holders of the new titles Chief Information Officers, Chief Knowledge Officers, Knowledge Engineers, Knowledge Analysts, Knowledge Architects, Intellectual Capital Directors and Controllers are also forming part of the professional groups involved in knowledge management.

What then makes the difference between the normal activities of these professionals and ventures into knowledge management? An important factor is the emphasis on achieving organizational strategies, and the consequent need for cultural change, increased teamwork, integration of content and information.
technologies and continuing development of related organizational policies. There must be real links between the knowledge management activities and the corporate strategy.

**Knowledge Management strategies for business**

In business, the firm needs to increase the efficiencies of its operations, to introduce innovative products and services, all with a view to improving the bottom line. Customer satisfaction is essential as well as being able to forecast where customer preferences will go in the future. Data collection and information flows in the context of knowledge management must therefore contribute to intelligent and timely business decisions.

Governments are increasingly being required to determine, define and forecast the needs of their citizens as clients and to develop, modify and adjust services to match these needs. Working within the context of knowledge management can provide some solutions to these needs.

The process of making business decisions requires understanding the context in which the problem has arisen. Contributing factors to the problem would include the situation within the firm, as well as the situation in the local and global environment in which the firm operates. The decision maker evaluates possible ways to solve the problem, collects information to support each of the possible solutions, makes a choice among the possible solutions, and evaluates the results.

Information to support decision making may come from various sources including:

- Structured information: reports and analyses
- Unstructured information: Memos, email, web sites
- Collaboration and business processes: meetings, seminars, conferences
- Experience: review of processes, lessons learned, evaluations

These resources can provide solutions to problems, but in many cases the various sources are organized by category, by department, unit, lack of integration of content and information technology can lead to difficulties in accessing all the relevant information on which decisions should be based. The existence of numerous disconnected applications all addressing a small portion of the firm’s information needs can cause users to employ multiple applications to do business. These applications rarely give the user the information needed to make decisions, and rarely incorporate the results of experience and lessons learned by people in the firm.
Implementing knowledge management involves several processes and stages

Selecting relevant data, information, knowledge: the process of selection and de-selection must be ongoing in keeping with the organizational strategy.

Capturing knowledge and explicitly recording the tacit knowledge within the firm

Cataloguing and storing information and placing the information in a central area where all members of an organization who have a need to know, have access to it

Transforming it for use in other contexts (when appropriate), that is making connections among pieces of information to create new approaches

Disseminating knowledge and transferring it to people when and where they need it.

In all organizations there is scope for using information products and services to achieve organizational objectives. We can consider some uses of information already held within an organization.

For example, the marketing manager of a supermarket chain faces new competition and wants to tap into customer loyalty. Recognizing that the company records information about each customer when they make purchases, the marketing manager would launch a campaign to build loyalty among customers by developing a series of targeted marketing campaigns around the individual customers' buying habits. Through efforts called data mining, the organization would discover which characteristics of customers and products purchased can predict the likelihood of future purchases, and the incentives to which individual consumers respond.

Although Caribbean governments have had monopolies on many services there is sometimes the need to market some services, and in other cases to compete with other agencies local or external.

Another example could see the manager of a Parish Library preparing a work plan to implement a telecentre. The manager prepares the work plan on her PC, then stores it on a public space on the system of the Jamaica Library Service. The following year, the manager of another Parish Library is preparing a similar work plan for a telecentre in his Parish Library. The second manager can retrieve the first manager's work plan, tailor it for the local situation, and submit it. The second Parish Library saves a significant amount of time by leveraging the work of the first. In some organizations, the information about the original work plan also includes lessons learned from the experience, recommendations for creating a telecentre, and contact information for members of the team.
Within government agencies there are always possibilities for sharing experience of this type, and with the increasing decentralization of ministries and services, there can be value to systematic sharing experiences and lessons learned.

At the International Development Research Centre (IDRC), an agency of the Canadian government, all projects funded by the corporation are included in a database so that all staff can review these projects by topic, organization, or by subject, and lessons learned. An important aim was to establish linkages between projects, and to take advantage of the experience in projects already funded.

These examples are normally considered part of the development of a knowledge management environment. They show effective use of existing information resources and practices as well as ways in which sharing information on practices and experiences can lead to the development of a learning organization.

**Knowledge management spans a continuum**
The scope of knowledge management ranges from the efficiency end of the continuum to that of innovation. Efficiencies are expected from the development of a database of data and information and the ability of workers to have efficient access to it. In large organizations a starting point could be a database of expertise and experience within an organization which is available to all. This and similar databases to share information on the organization are good starting points of knowledge management.

Sveiby has posted on his website information on some 40 Knowledge Management initiatives taken by companies and practitioners world wide. Some of these initiatives are summarized below by category:

**External Structure Initiatives**
**Gaining information and knowledge from Customers**
**General Electric's Answer centre USA:** GE has since 1992 collected all customer complaints in a database, that supports telephone operators in answering customer calls. GE has programmed 1.5 million potential problems and their solutions into its system. There is direct relevance to the services which governments offer, and the needs to achieve customer satisfaction.

**Offer Customers Additional Knowledge**
**Agro Corp USA** sells fertilisers and seed. Data on farmers’ soils are combined with weather forecasts and information on crops. Analyses are fed back to the farmers via sales representatives to help farmers select the best combinations of crops.
**RADA (the Rural Agricultural Development Agency of Jamaica) and UWI's International Centre for Nuclear Sciences (ICENS) are working together on determining the impact of mineral deposits on some food crops and are**
identifying means of keeping the impacts at a safe level. This information is being shared with farmers via RADA's Extension services. This information will aid in producing safe crops and also ensure that these crops can be competitive on the global market.

Create New Revenues from Existing Knowledge

**Skandia Switzerland**  A back office system developed by Scandia worldwide is sold to Swiss insurance companies.

**Learn from simulations and pilot installations**

**IKEA Sweden**  The global furniture retail company uses a customized simulation (not computerised) of what the IKEA business successful to induct all new recruits. Overviews of decentralized systems are particularly important to new recruits, and to ensure that people working within these systems are able to keep up to date with changes.

Developing a knowledge management framework  (Artificial Intelligence Applications Institute (AIAI) Edinburgh, Scotland)

The knowledge management framework used by AIAI was originally based on work by van der Spek and de Hoog. It identifies the knowledge assets a company possesses, and requires answers to the following questions:

- Where is the knowledge asset?
- What does it contain?
- What is its use?
- What form is it in?
- How accessible is it?
- How can the knowledge asset add value?
- What are the opportunities for using the knowledge asset?
- What would be the effect of its use?
- What are the current obstacles to its use?
- What would be its increased value to the company?
- What actions are necessary to achieve usability & added value?
- How to plan the actions to use the knowledge asset?
- How to enact actions?
o How to monitor actions?
o How to review the use of the knowledge asset to ensure added value
o How to determine if its use produces the desired added value?
o How can the knowledge asset be maintained for this use?
o Did the use create new opportunities?

Governments in considering the implementation of knowledge management, have to face the challenge that public sector organizations are major generators of data and information. Data exists in abundance in government organizations. It is often collected but not always linked to qualitative analyses. The above framework can assist governments in identifying their knowledge assets, and in doing preliminary audits of the internal resources.

A Knowledge Management Strategy for Government

Knowledge management in the context of government requires technical, content and policy initiatives. Some governments have realized the value of increasing development of knowledge intensive services, and the manufacture and marketing of knowledge intensive products.

Governments have adopted the electronic and telecommunications facilities which have become available in the region. The Internet is now one of the visible signs, which has allowed people to be connected, and to exchange information. It therefore provides one of the basic requirements - electronic networking - for communication of information and knowledge.

Policy making at various levels is essential for the changing environment in which knowledge management would operate. Electronic government can simply be based on the possibility of making specific pieces of information available, or on making services available electronically. Most governments have websites for ministries, departments, corporations, and agencies to communicate information and in some cases to receive feedback.

There is however much further to go in meeting the demands of citizens the and challenges of knowledge management. We must have a vision of an integrated set of communications networks, which can result from interconnection of the information technologies and the content held on various databases and legacy systems. Offering online services such as taxation, passport services, or the issuing of certificates are important first steps. The Government of Jamaica has made some important advances in this area including posting the passport application forms on the website of the Ministry of National Security and Justice.
The need for leadership
Knowledge management as the vehicle to promote the accomplishment of an organization's strategy can be expected to lead to increase the competitiveness of the organization. According to Janet Caldow, Director of the IBM Institute for E-government, "leaders who define e-government in a narrow sense - simply moving services online - miss larger opportunities which will determine competitive advantage in the long run"

Caldow identifies seven leadership milestones as integral to becoming an e-government and to running an e-government. They are: Integration of content and of infrastructure, economic development, e-democracy, e-communities, intergovernmental operations, policy environment, the Next Generation of the Internet.

At this time the most important is assurance that integration of content and technology provide the basis of "one stop shopping" for government services. Our short or medium term vision shows citizens being able to access a portal to obtain information on governments’ services to transact business with the government, and to purchase licenses or permits, In the long term the objective will be to reduce the number of departments a citizen has to contact to obtain a required service.

The development of portals has become a means of reducing some of the difficulties experienced by users in accessing information required. A knowledge portal or a vertical portal (vortal) is a (single point of access) window which can be customized therefore enabling users to have access to selected and evaluated data and information. To be effective a portal must be connected to the Internet and also to intranets and extranets, and ministries, departments and agencies must work with the vision of seeing interactions from the point of view of the citizen, customer or client. This will also mean working in collaboration with networked organizations that should have work flow linkages with other departments and information technology systems.

Knowledge management in the context of government will involve each ministry, department or corporation focusing on its own strategy within it priority areas. An important difference between business and government is that the number of citizens who are likely to use the services.

In the content of government services in the Caribbean there will be need for the citizenry to have access to such portals. Telecentres such as those set up in the public libraries in Jamaica by the Jamaica Library Service and by the National Library of Jamaica provide examples of access points where information on services can be accessed via the Internet. In addition to providing access to the Internet these centers provide training to the public and have begun providing access to local information resources.
The telecentres established by the Jamaica Sustainable Development Network in collaboration with the Government of Jamaica, the UNDP and the University of the West Indies also provide opportunities for citizens to access government services via such portals.

**Conclusions and Recommendations**

Knowledge management is a concept which can contribute to the competitive advantage of Caribbean governments. **Governments** should begin to undertake information and knowledge audits of the resources available and the ways in which they can be deployed to achieve competitive advantage. This should include development of methods to evaluate and assign accounting value to intangible assets.

Knowledge management is heavily dependent on the existence of reliable infrastructure for developing services and for enabling citizens access to electronic based services. **Governments** should ensure that there is reliable information and communication infrastructure available to facilitate development of and access to these services.

Knowledge management in government must involve the intra-governmental integration of resources to reduce the number of locations a citizen has to consult to obtain a given product or service. **Governments** should work on establishing vertical portals, which will provide "one stop shopping" for government products and services.

Effective knowledge management in the context of government requires that citizens can have reliable access to the necessary infrastructure at low cost. **Governments** should review the experience of telecentres such as those established by the Jamaica Library Service, the National Library of Jamaica and the Jamaica Sustainable Development Network. These and other such centers should be incorporated into the mechanisms to be used in a pilot project for providing public access to governmental portals.

Implementation of knowledge management strategies by Caribbean governments will require cultural changes including increasing the capacity to work on multidisciplinary teams, and the ability to share information within organizations and across governmental agencies. **Governments** should establish programmes for training and human resource development in this area.
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