Leveraging Business Performance through Information Systems

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Abstract: **The changing economic scenario and competitive corporate culture demands the needs for technology based solutions to various strategic and operational problems. Keeping the pace of growth firms deploy their resources with the aid of information systems, business intelligence, and knowledge Management. In the entire process of executing the value chain IT and IS are of paramount importance. This paper highlights the substantial impact of IS as different levels of the Organization. The authors also reflect the Effectiveness of Value Chain with the influence of IS as a support activity.**

Keywords: IS, Business Intelligence, Knowledge Management, Value Chain

I. INTRODUCTION

The present corporate lexicon is endowed with multifarious competitive challenges. Every business house position itself with new competitive strategies. In the entire entrepreneurial firmament technology appears to be the growth engine. Specifically IT emerges to be the performance enabler by strategizing and leveraging business functions. From corporate planning to implementation, IT stands as support systems. In the new economic millennium every firm differentiates itself with other through consistently focusing on information systems and innovation. In the post globalization period there is a thrust on a new Corporate Agenda i.e. "Knowledge Management" which essentially integrates three distinct fields of study 'Information Technology', 'Entrepreneurship' and Corporate Governance/ Business Governance. Undoubtedly IT is instrumental in translating the tacit knowledge into the winning impact of the organization. Responding to the need of the environment which is by nature turbulent, information systems offers enough flexibility towards adaptation and market orientation. In the process of developing the strategic intent of the organization information systems appears to be a major source of competitive advantage. In many instances modules like ERP and SAP remain vital in Corporate Restructuring and Integration. In this neo-liberal profile of the economy corporate conglomerates are experiencing high risk, uncertainty and various environmental threats. To forecast the unseen factors affecting the future potential of the business. Although economists have devised many prediction tools but it fails on many fronts of validity and reliability on the wake of cutthroat competition. The present need is to make a predictive analysis based on epitomized intelligence systems which can measure with accurate precision the degree of risk and uncertainty and extensively aid a decision maker. The recent history of India Incorporation reflects a good numbers of mergers, acquisitions, and amalgamations have taken place to boost the investment environment and capital market. The leaders ascribe it to the effective information systems that business houses believe in. In many occasions organizations are spell bound to process information systems towards forward and backward integration. In a nutshell Information systems are inevitable organs of a productive firm to reduce vulnerability and immunize a firm to stay competitive in the entire activities of its value chain.

II. BUSINESS COMPETITIVENESS

Ability of an economic firm to produce product or services that meet quality standards of the domestic and world market at process that are competitive and adequate returns on the resources employed or consumed in producing them. The presence of following components signifies competitiveness:

- Cost
- Quality
- Value Delivery
- Flexibility
- Adaptability
- Open for Learning
- Latest and advanced technology
- Effective and Efficient pattern of communication and Information flow
- MIS contributing to EIS and DSS
- Potential Skill Inventory

III. IT AND COMPETITIVENESS

Information technology has received significance research attention since last decade. From mid-1980s onwards, information technology started to make strategic impact. Following the trend, researchers started to focus on integration between information technology professionals and business managers in generating information technology capability and effective utilization. Majority of the researchers in resource-based view suggested the integration of human factor with information technology in generating sustainable competitive advantage. The discussion here

would be focusing on the information technology competence of the management personnel in the firm. In order to be the agent in integrating the information technology with the organization effectively, individual must possess sufficient Information technology competence. However, Knowledge alone is obviously insufficient. Tippins and Sohi Proposed that information technology competence must made up of three components; knowledge, operations, and objects in an organization. Applying to the individual level, an effective agent must be knowledgeable in information technology, willing to utilize information technology in daily operations, and provided with information technology facilities and supports. These co-specialised resources will be indicated in term of the ability to understand and utilise the information technology for the benefit of the firm. Information technology knowledge refers to the extent of technical knowledge about objects such as computer based systems . This knowledge is able to convert into competence when it is utilised or exploited. Information technology operations indicate the utilisation of information technology in daily operations of the firm. However, information technology knowledge and information technology operations can only exist if the firm does prepare a platform for information technology. Therefore, information technology objects refer to availability of hardware, software, and personnel to support the performance of information technology operation. Possession of information technology knowledge, information technology operations and information technology objects are indicating firm ability to acquire, deploy, and leverage information technology functionality in combination or copresence with other resources to shape and support business processes in value adding ways. Some researchers have included experience and education in information technology as part of information technology competence as well. According to Bassellier et al., experience in information technology refers to the activities taking place in a particular organizational which includes experience in information technology projects and experience in the management of information technology. However, this study argues that experience and education in information technology can have impact on information technology competence of individual rather than can be viewed as part of information technology competence as indicated by Bassellier et al.. In line with Ucbasaran, Wright, and Westhead argument, experience will provide skills, competencies and resources for the future. Thus, experience in information technology is expected to supply knowledge in information technology, to make individual more willing to utilise information technology, and more willing to invest in information technology facilities. Naqvi discussion on the best practice in information technology education to build information technology competence among the students has indirectly indicated that the education in information technology is one of the prerequisite for information technology competence of an individual [1].

A. Integrating Information Systems with the Business

In a broad scope the term Information system is a scientific field of study that address the range of strategic, operational and managerial activities involved in gathering process, storing, distributing, and use of information, and its associated technologies in society and organizations. It is an interaction between the Organization's Technology and Business Process. The following figure illustrates the relationship in a more conceptual way:

Computer Science & Information Systems Relationships In the Business World
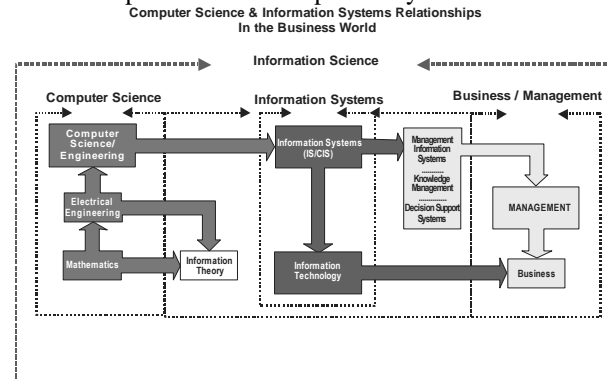
As the Organization hierachy moves vertically upward information systems also vary with different requirements. The figure depicts the broad understanding of information systems at
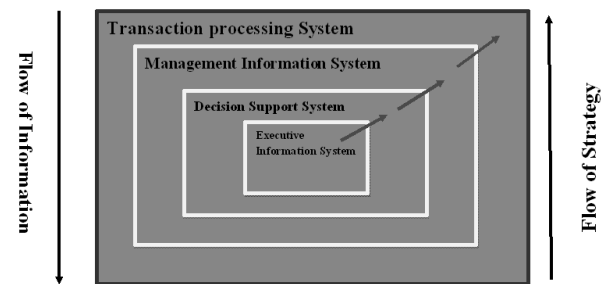
various levels.

B. Transaction Processing Systems

Transaction processing systems (TPS) automate the handling of data about business activities or transactions, which can be thought of as simple, discrete events in the life of an organization.

Data about each transaction are captured, transactions are verified and accepted or rejected and validated transactions are stored for later aggregation. Reports may be produced immediately to provide standard summarizations of transactions and transactions may be moved from process to process in order to handle all aspects of the business activity.

The analysis and design of TPS means focusing on the firm's current procedures for processing transactions, whether these procedures are manual or automated. The focus on current procedures implies a careful tracking of data capture, flow, processing and output. The goal of TPS development is to improve transaction processing by

speeding it up, using fewer people, improving efficiency and accuracy, integrating it with other organizational information systems or providing information not previously available [2].

C. Management Information System

A management information system (MIS) is a system that provides information needed to manage organizations efficiently and effectively. Management information systems involve three primary resources: technology, information, and people. It's important to recognize that while all three resources are key components when studying management information systems, the majority of users consider the most important resource to be people. Management information systems are regarded as a subset of the overall internal controls procedures in a business, which cover the application of people, documents, technologies, and procedures used by management accountants to solve business problems such as costing a product, service or a business-wide strategy. Management information systems are distinct from regular information systems in that they are used to analyze other information systems applied in operational activities in the organization. Today, the term is used broadly in a number of contexts and includes (but is not limited to): decision support systems, resource and people management applications, enterprise resource planning (ERP), enterprise performance management (EPM), supply chain management (SCM), customer relationship management (CRM), project management and database retrieval applications[3].

D. Decision Support System

DSSs include knowledge-based systems. A properly designed DSS is an interactive software-based system intended to help decision makers compile useful information from a combination of raw data, documents, personal knowledge, or business models to identify and solve problems and make decisions.
Typical information that a decision support application might gather and present are:
- ❖ inventories of information assets (including legacy and relational data sources, cubes, data warehouses, and data marts),
- ❖ comparative sales figures between one period and the next,
Projected revenue figures based on product sales assumptions

E. Executive Information System

An executive information system (EIS) is a type of management information system intended to facilitate and support the information and decision-making needs of senior executives by providing easy access to both internal and external information relevant to meeting the strategic goals of the organization. It is commonly considered as a specialized form of decision support system (DSS). The

emphasis of EIS is on graphical displays and easy-to-use user interfaces. They offer strong reporting and drill-down capabilities. In general, EIS are enterprise-wide DSS that help top-level executives analyze, compare, and highlight trends in important variables so that they can monitor performance and identify opportunities and problems. EIS and data warehousing technologies are converging in the marketplace.[5]

F. Knowledge Management and IS

Knowledge Management System (KM System) refers to a (generally generated via or through to an IT based program/department or section) system for managing knowledge in organizations for supporting creation, capture, storage and dissemination of information. It can comprise a part (neither necessary nor sufficient) of a Knowledge Management initiative.

The idea of a KM system is to enable employees to have ready access to the organization's documented base of facts, sources of information, and solutions. For example a typical claim justifying the creation of a KM system might run something like this: an engineer could know the metallurgical composition of an alloy that reduces sound in gear systems. Sharing this information organization wide can lead to more effective engine design and it could also lead to ideas for new or improved equipment.
A KM system could be any of the following:
1. Document based i.e. any technology that permits creation/management/sharing of formatted documents such as Lotus Notes, SharePoint, web, distributed databases etc.
2. Ontology/Taxonomy based: these are similar to document technologies in the sense that a system of terminologies (i.e. ontology) are used to summarize the document e.g. Author, Subj, Organization etc. as in DAML & other XML based ontologies
3. Based on AI technologies which use a customized representation scheme to represent the problem domain.
4. Provide network maps of the organization showing the flow of communication between entities and individuals
5. Increasingly social computing tools are being deployed to provide a more organic approach to creation of a KM system.

KMS systems deal with information (although Knowledge Management as a discipline may extend beyond the information centric aspect of any system) so they are a class of information system and may build on, or utilize other information sources. Distinguishing features of a KMS can include:
1. Purpose: a KMS will have an explicit Knowledge Management objective of some type such as collaboration, sharing good practice or the like.
2. Context: One perspective on KMS would see knowledge is information that is meaningfully

organized, accumulated and embedded in a context of creation and application.

3. Processes: KMS are developed to support and enhance knowledge-intensive processes, tasks or projects of e.g., creation, construction, identification, capturing, acquisition, selection, valuation, organization, linking, structuring, formalization, visualization, transfer, distribution, retention, maintenance, refinement, revision, evolution, accessing, retrieval and last but not least the application of knowledge, also called the knowledge life cycle.

4. Participants: Users can play the roles of active, involved participants in knowledge networks and communities fostered by KMS, although this is not necessarily the case. KMS designs are held to reflect that knowledge is developed collectively and that the "distribution" of knowledge leads to its continuous change, reconstruction and application in different contexts, by different participants with differing backgrounds and experiences.

5. Instruments: KMS support KM instruments, e.g., the capture, creation and sharing of the codifiable aspects of experience, the creation of corporate knowledge directories, taxonomies or ontologies, expertise locators, skill management systems, collaborative filtering and handling of interests used to connect people, the creation and fostering of communities or knowledge networks.

A KMS offers integrated services to deploy KM instruments for networks of participants, i.e. active knowledge workers, in knowledge-intensive business processes along the entire knowledge life cycle. KMS can be used for a wide range of cooperative, collaborative, adhocracy and hierarchy communities, virtual organizations, societies and other virtual networks, to manage media contents; activities, interactions and work-flows purposes; projects; works, networks, departments, privileges, roles, participants and other active users in order to extract and generate new knowledge and to enhance, leverage and transfer in new outcomes of knowledge providing new services using new formats and interfaces and different communication channels.

The term KMS can be associated to Open Source Software, and Open Standards, Open Protocols and Open Knowledge licenses, initiatives and policies. The KMS of an Organization has the potential to effectively lead an Organizational Learning [6].

G. *Role of "IS" in Value Chain Analysis*

Value chain analysis is a sequential process of value creating type of activities which is in essence the amount that the buyers will be willing to pay for the product or service that an organization provides. An organization is profitable only to the extent that the value it has received will exceed the total costs required to create its product or service to the customer.
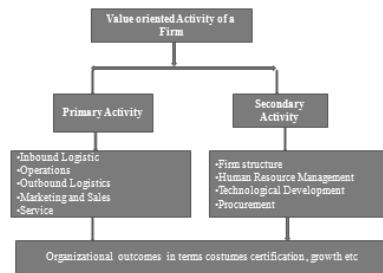
Porter (1985) discussed the inbound logistics is the first of the primary activities within the value chain and deals with the receiving, storing, and distributing of inputs to the final product or service (raw materials). One would measure the efficiency and effectiveness of the material and inventory control systems. The operations activity is associated with the actual transformation of the inputs into the final product or service by ensuring efficient plant operations, appropriate level of automation, quality control systems, and efficient workflow design. The outbound logistics are associated with the collection, storing, and distribution of the final product or service to the ultimate buyer. This is done by evaluating the effectiveness of the shipping process and quality material handling equipment. The marketing and sales activity deals with the purchases of products and services by the end users and the inducements involved in an effort to get the customers to actually purchase the product or service. The final primary activity is the area of service, which is associated with the provision of service to enhance or maintain the overall value of the product or service.

Technology has played an important role in the value chain in many factors, according to Saran (2007, October 20). The information systems group is one of the four support activities within the value chain is related to a wide range of activities. Dess, Lumpkin, & Eisner (2007) indicate that these include activities that may be personified in the actual processes, equipment, and the product itself. The effectiveness and efficiency of the information systems and technology activities are measured by: (a) effective research and development activities for processes and product or service initiatives, (b) positive collaboration between research and development with other departments within the organization, (c) organizational culture to enhance creativity and innovation, (d) top IT professional qualifications, and (e) the ability to meet deadlines and quality on the delivery of software and technical development projects.

Donlan (2007, March) indicates the importance of the relationships of information systems among the value chain activities is urgent as both the technical side of the organization and business side must be aligned in order to achieve overall mission and vision of the organization in their strategic initiatives. The information systems are often

the phenomena within an organization (internal analysis perspective) and the involvement within the industry and its competitive environment (external analysis perspective). The technological side of the activities often will be involved in trade secrets, innovative production processes, patents, copyrights, and trademarks, which are all tangible resources within an organization. For example, Carnival Cruise Lines has a reservations core system that is surrounded by state-of-the-art systems that generates a competitive edge with its innovative production and service processes [7].

IV. CONCLUSION

The decision makers, strategy builders, insightful corporate thinkers are sharply focusing on developing business model with the aid of highly flexible information systems. It appears to be an indispensible component of an organization system in all the primary and supporting activities. With a focus on continuous development the IT and Software firms are also making them engaged towards more efficient intelligence systems for performance orientation. The present IS apprehend to create the future organizations with much reduced cost and increased wealth. As competition is inevitable and future is volatile, the IS can be the unique solution to the complexities.

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