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Decision support system and knowledge-based strategic management

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Abstract

Decision Support Systems (DSS) are popular tools that assist decision-making in an organisation. The importance of Knowledge Management (KM) is also recognised due to its contributions in decision-making in organisations. DSS have been synergised with knowledge management systems and have evolved from earlier concepts of "data processing" and Management Information Systems (MIS) to their current form as indispensable IS aid for decision-making. The most common application of the synergy of DSS and KM can be found in Group Support Systems (GSS). GSS support group functions like brainstorming, idea evaluation, and communication facilities. Links between Knowledge Management (KM) and Strategic Management of business are also discussed. KM has the potential of enabling businesses to gain competitive advantage through a detailed study of the environmental factors. This way, DSS are automatically viewed as key support functions, as they enable knowledge operatives and decision-makers to make well informed decisions through effective study of semi- and ill-structured variables in the external environmental factors.

Key Words: Decision-making, Decision Support Systems (DSS), Knowledge Management (KM), Group Support System (GSS), Strategic management, Strategy

Introduction

A Decision Support Systems (DSS) is a popular tool of Information Systems that supports decision-making processes. A DSS has been defined as an interactive and adaptable computer-based Information System that supports non-structured management problems too (Turban and Aronson 2000). Through the use of DSS, decision-makers were able to find solutions to various problems. These include semi- to ill-structured problems that involved multiple attributes, goals, or objectives (Nemati, Steiger, Iyer and Herschel 2002). Information systems have been frequently linked with Knowledge Management (KM) to enable businesses to arrive at a more informed and scientific decision. Knowledge Management can be described as the practice of capturing tacit knowledge and converting it to explicit knowledge. This is achieved through processing the existing explicit knowledge by filtering, storing, retrieving, and disseminating it. This adds actionable value to the knowledge. Actionable value can also be added by creating and testing new knowledge (Nemati, Steiger, Iyer and Herschel 2002). Uses of Decision Support Systems (DSS) enhanced by the concept of knowledge management (KM) have also been found in successfully managing the strategy of organisations in business. This section reviews literature on the historic development of Decision Support Systems (DSS) and the applications of the concept of Knowledge Management (KM) and looks at how the combined concept is applied in the field of strategic management.

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The History of Decision Support Systems

Information Systems were developed in the 1960s with the aim of facilitating business functions like billing, payroll, inventory control, and accounts payable (Kautish and Thapiyal 2012). Such organisations and processes were simply referred as 'data processing' up until the 1970s, when they became known as Management Information Systems (MIS) (Berson and Smith, 1997). The primary aim of MIS was to assist organisations in decision-making processes by making information available in transaction processing systems (Kautish and Thapiyal 2012). The early application of MIS in businesses was viewed as a cumbersome and confusing process, and very few such implementations were successful. It is consistent with the view of Marchand and Peppard (2012) that Information Technology (IT) often fumbles analytics resulting in failure of projects. However, Kautish and Thapiyal (2012) argue that it is largely due to misunderstanding of IT professionals of the nature of managerial work.

The birth of DSS can be traced back to the efforts of Gorry and Scott Morton (1971) when they tried to improve MIS by combining Anthony's categories of managerial activities (Anthony, 1965) and Simon's decision types (Simon, 1977). The table representing the framework for DSS is presented below.

	Strategic Planning	Management Control	Operational Control
Unstructured	E-commerce	Career paths	Grievances
Semi-structured	Forecasting	Budgeting	Assignments
Structured	Dividends	Purchasing	Billing

Fig: 1. Examples of Gorry and Scott Morton decision types (Courtney, 2001)

While MIS was dealing with processes like billing, inventory control and accounts and relied on accurate data that was obtained primarily from sources internal to the organisation, DSS on the other hand depended on external data as many of its applications were strategic in nature (Fig 1). This meant that the data was often ill-defined and required a different approaches. Courtney (2001) defines a more developed model of decision-making in a DSS environment in Fig. 2.