ABSTRACT

Decision support technology, expert systems, executive information systems, and artificial neural networks have been reported to be useful tools to enhance the performance of managers as they helped them to gain more knowledge, experiences, and expertise and consequently enhance the quality of the decision making. They can also be used as a training tool to transfer the knowledge of the expert to middle and top management and thus improve the performance of new employees. This communication reports the conclusions of a study conducted to verify the impact of the use of the EDSS technology (expert decision support systems) on the performance and satisfaction of new employees in the business world. A laboratory experiment using the control groups and the treatment groups was held to test the research model. The results indicate that EDSS technologies do have a positive impact on the performance of the users.

Keywords: decision making, decision support technology, expert systems, executive information systems, artificial neural networks

INTRODUCTION

With market globalization, the world economy is becoming increasingly knowledge and information intensive. It is more than ever critical for organizations to be able to capture and distribute intelligence and knowledge in order to innovate and survive under the new complex business environment.

Feigenbaum (1988) has defined an expert system as an intelligent computer program that uses knowledge and inference procedures to solve problems that are difficult enough to require significant human expertise for their solution. Decision support technologies and intelligent systems are computer-based tools developed to provide managers with relevant information about internal operations and its business environment, and also supply them with experts’ knowledge and models to facilitate decision making.
Many types of intelligent systems have been implemented and used to support business users in their decision-making process. The most popular ones are decision support systems, executive information systems, expert systems and artificial neural networks (ANN). Even though these systems serve a particular target and fulfill a particular purpose, they all share the bottom line: help the users to enhance their decision making.

At the present time, the decision support technologies mainly applied are decision support systems, executive information systems, expert systems, and artificial neural networks. They differ significantly in scope and purpose. Table 1 presents a brief summary of their differences based on their use, users target, goals, time horizon, objective, knowledge focus, decision process, and kind of information used.

The development of information systems based on the combination of two or more techniques or/and technologies has been a solution to overcome the limitations presented by individual technologies. From a managerial viewpoint, it is assumed that the integration of DSS and ES technology could improve a decision-maker performance in a strategic planning environment by helping him to identify problems and providing relevant theoretical models (Wong & Monaco, 1995).

The current trend of combining expert systems (ES) and decision support systems (DSS) technologies is supported by most major researchers in the field. The resulting system has been called expert DSS (EDSS), intelligent DSS (IDSS), expert support system (ESS), and knowledge-based DSS (KDBSS) (Najdawi & Stylianou, 1993).

The incorporation of expert system technology in the development of DSS can help to overcome some of the shortcomings of the DSSs, such as improving the user system interface and scenario integrity, making the DSS more effective, effi-

Table 1. Comparison of decision support technologies

<table>
<thead>
<tr>
<th>Systems</th>
<th>DSS</th>
<th>EIS</th>
<th>ES</th>
<th>ANN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use</td>
<td>Active</td>
<td>Passive</td>
<td>Active</td>
<td>Active</td>
</tr>
<tr>
<td>Users</td>
<td>Line and Staff Managers</td>
<td>Senior Managers</td>
<td>Line and Staff Managers</td>
<td>Line and Staff Managers</td>
</tr>
<tr>
<td>Goal</td>
<td>Effectiveness</td>
<td>Expediency</td>
<td>Effectiveness and efficiency</td>
<td>Effectiveness and efficiency</td>
</tr>
<tr>
<td>Time horizon</td>
<td>Present</td>
<td>Past</td>
<td>Past</td>
<td>Past</td>
</tr>
<tr>
<td>Objective</td>
<td>Flexibility</td>
<td>Internal and external monitoring</td>
<td>Expertise availability</td>
<td>Experience availability</td>
</tr>
<tr>
<td>Knowledge focus</td>
<td>Decision</td>
<td>Business</td>
<td>Domain and experience</td>
<td>Learning by experience</td>
</tr>
<tr>
<td>Decision Process</td>
<td>Semi-structured</td>
<td>Non-structured</td>
<td>Non-structured</td>
<td>Non-structured</td>
</tr>
<tr>
<td>Information</td>
<td>Quantitative (modeling)</td>
<td>Quantitative and heuristic</td>
<td>Heuristic</td>
<td>Quantitative</td>
</tr>
</tbody>
</table>
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