KEY INFORMATION SYSTEMS ISSUES IN THE PORTUGUESE FINANCIAL SECTOR

Manuel João PEREIRA
Rodrigo de MAGALHÃES

Faculdade de Ciências Económicas e Empresariais
Universidade Católica Portuguesa
Palma de Cima
1600 Lisboa-Portugal
Phone: 351-1-7214000
Fax: 351-1-7270252

ABSTRACT

The Portuguese financial system has been undergoing profound changes since 1986, the year in which the sector opened itself to private initiative, and public institutions were privatized in Portugal. Information Systems play a fundamental role in this process and will continue to be of paramount importance in a period where a concentration of large financial groups is occurring. An investigative work analyzes the most critical issues now and in the future, in accordance with perceptions from administrators and directors, and conclusions about the trends of Information Systems in the financial sector are discussed.

INTRODUCTION

Several research studies have recently been conducted on key Information Systems’ issues in several countries: in the United States (Ball & Harris-1982[1], Hartog & Herbert-1986[16], Hinze & Wetherbee-1987[2]), Wood-1988[30], Clark-1992[4]) in Singapore (Rao-1988[24]), in Australia (Watson-1988[26]) and in England (Parker & Idumden-1988[21], Hirschheim et al.-1992[7], Galliers et al.-1992[13]) and all of Europe (Davenport & Boden-1988[6]). Here we will be referring only to the conclusions of the most recent studies.

In 1992, a study was published [4] in order to determine the key issues in information systems in the US. The methodology used was through direct interviews tailored for IS managers. In this study, the principal factors indicated as critical by IS executives were:

1. The evolution of organizational centralized structure as a function of integration and dispersed management of IS resources.
2. Management of End User Computing
3. IS planning and its links with business strategy
4. Measures for efficiency of IS infrastructures
5. External Service management based on internal development of strategic IS

The study concludes that the ambiguity which surrounds dispersion themes and IS decentralization is important in terms of organizational structure. The methods for distribution of IS resources and output of IS investments in face of the resource allocation should be analyzed in more depth.
In 1992, a British study [13], was carried out by mailing the largest firms from TIMES 1000 and some non-profit organizations. 98 firms replied (10% response rate) although there was no response from non-profit entities. The questionnaire was tested within a small group of executives, and was later altered in order to incorporate their suggestions. The study concluded that the following issues were paramount in relation to the present (all respondents):

1. Improve IS strategic planning
2. Data as a resource for the firm
3. Re-engineering of organizational processes
4. Development of an information architecture
5. Quality of software development

This study also analyzed the differences of opinion between IS and non-IS managers, and their responses to the key questions in four blocks: IMPORTANT NOW; IMPORTANT IN FUTURE; PROBLEMATIC NOW; PROBLEMATIC IN FUTURE.

Among other items, this study suggested that the differences in perception of the issues between the IS and non-IS groups could be minimized by publication and diffusion of the study so that firms could obtain the increased benefits from the investment in IS/IT, by the integration of IS elements in the business issues. The study further suggests that structured interviews should be realized - as in the US [4] - in order to gain a better understanding of IS' key issues.

2. WORKING HYPOTHESIS

When analyzing the IS situation in the financial sector in Portugal, it becomes important to know what are the most critical issues now and in the future. Having as a basis:

a) the literature on the IS key issues published internationally and briefly reviewed here and

b) some empirical knowledge of IS in this sector obtained through consultancy work,

the following working hypotheses have been formulated:

1. There exist distinct perceptions for the sector's Administrators (with work experience in management) and the IS Directors (with experience in IT) as regards IS issues.

2. Because we are dealing with a sector composed of firms with different cultures (for example private vs state owned), there are significantly differing opinions in relation to some questions within the same group but especially the Administrators. This is due to the fact that IS Directors have a more uniform culture defined by the technology itself;

3. Since the state of maturity has little homogeneity within the sector, there should exist significant differences between Portugal and other countries, in accordance with the latest research evidence;

4. The issues with characteristics eminently technological will be referred to as the most important, despite the fact that there is a future tendency towards the predominance of management issues within the scope of IS.

These hypotheses will be validated and confirmed (or rejected) in the conclusions presented in the final part of this paper.

3. CHARACTERISTICS OF IS IN THE PORTUGUESE FINANCIAL SECTOR

In Portugal and abroad, the financial sector has confronted a set of changes that will gradually alter the status quo. The Portuguese financial sector can be characterized by four principal peri-


Given that Information Systems represent a fundamental component of the financial sector's business strategy [18] we will now describe briefly the IS situation in this sector in Portugal (Fig. 1).

During the period of stagnation, from 1974 to 1984, IS in the financial sector were designed with an emphasis on efficiency. In a sector where the external environment was controlled mainly by the state, competition was very low, intermediation margins were high, and the fundamental role of IS was to substitute the clerical routines executed by Human Resources.

The investments in IS were realized having as their base the concept of the product and, at each moment that it was necessary to conceive a new product, new applications were used with new redundancy in the data. Financial analyses were fundamentally undertaken having as a basis aggregated data about products in detriment of clients analyses by client characteristics.

The second period in the financial sector in IS occurred from 1985 to 1989. This period was marked by the sector's access to private initiative. With the licensing of the new banks, the information technologies acquired and the applications developed had as their basis the alignment of the objectives of business strategy with the client.

**Fig. 1: Characteristics of Information Systems in the Portuguese Financial Sector**

The generic definition of IS by Banco Comercial Português, one of the private banks operating at the time was as follows [25]:
- flexibility of applications and in real-time;
- client-based applications;
- applications independent of branch;
- BCP was a user and not a creator of technology.

This period was characterized by a high rate of innovation, particularly on the part of the new financial institutions that had just entered the sector. Cross-selling of products among different distribution channels was a very important innovation of this period. Also, the market began to feel the impact of the new entrants. Clients became more demanding because competitors provided faster service with better quality, and more catered to individual needs.

IS played a fundamental role in this new scenario. While the older banks made investments in maintaining their outdated systems and began to select which new technologies and applications to use in order to become more finally tuned to clients' new demands, the new institutions that had recently entered the market made large investments in IS that were more suited to the needs of clients and allowed more flexibility in serving the market.

The third period in the financial sector, from 1990 to 1994, can be characterized as a period where the main banks that were already established made huge investments to change their information architecture at software and hardware levels: the start of client/server systems (Banco Totta e Açores), conversion of applications of characters to graphic applications (Banco Espírito Santo) and the change in philosophy from product applications to client applications (Banca e Fidelidade). These conversions are difficult to execute because they require an additional effort of data "cleaning", not always attained with 100% success (Caixa Geral de Depósitos). In this period, cross-selling of products is initiated in the older banks.

The new banks improved their "scoring" applications, risk analysis, client database, and launched new services such as telephone banking and direct lines. Access to the markets is made possible to large businesses. This period was also marked by the beginning of the impacts on financial institutions of the privatizations and mergers that started at the end of the previous period. This sweep of privatizations, mergers and acquisitions caused, in parallel, IS to have to initiate substantial changes in order to accommodate the creation of financial groups and take advantage of the new synergies.

The final IS period in the Portuguese financial sector - post 1995 - will probably be characterized by attempts to:
- obtain even larger synergies resulting from the consolidation of Portuguese financial groups;
- further approach clients allowing the bank to offer products adequate to their needs through the analysis of their behavior;
- permit rapid accompaniment of the change of the financial scenario, namely, in relation to the single currency and the re-regulation introduced by the EU;
- improve and complete the IS technological conversion processes in which many of the sector's organizations are still involved.

4. THE RESEARCH WORK

4.1 Methodology

The methodology of structured personal interviews has been considered by many authors as the most adequate to achieve an in-depth understanding of IS' key issues [4], [12], [13]. Nevertheless, some alterations were made with the intent of guaranteeing a high degree of reliability and consistency in the results.

The methodology used was the following:
1. Undertaking of open exploratory interviews (in-depth interviews) to detect concepts, ideas and language to include in the questionnaire to four managers responsible for IS in the financial sector (two in Management and two in IS);
2. The creation of a structured questionnaire to be presented in the personal interviews;
3. Validation of the questionnaire with two respondents through pilot interviews, one from IS, the other from Management;
4. Undertaking of the structured interviews with the reading of the questionnaire and the clearing up of any doubts, always done by the same interviewer.

4.2 Selection of Institutions and Survey Sample

Taking into account the methodology to be utilized, the next step was to select the potential sample of Banks, Insurance Companies and other Financial Institutions that would be invited to participate in the investigative work.

The sample should be representative of the whole market albeit it could not be so diverse that it would run the risk of making the project too burdensome and time consuming. The selection criteria for the potential samples were the following:
- Banks with profits over fifteen thousand contos in 1993 operations (about 90% of the sector's profit);
- Insurers with profits greater than twenty thousand contos during 1993 operations (about 80% of the sector's profits);
- Other Financial institutions with profits over twenty thousand contos in 1993 operations (about 65% of the sector's profits);
- Firms with mainly Portuguese capital, a motive that was in line with the decision not to include foreign bank branches whenever possible;
- The parent-company for financial groups were selected when possible.

In this way, 22 organizations were considered, forming the sample selection base, representing 12 banks, 6 insurance companies, and 4 financial institutions. The firms were the following:

Fig. 2: The sample base of financial institutions selected

<table>
<thead>
<tr>
<th>BANKS</th>
<th>INSURANCE COMPANIES</th>
<th>OTHER FINANCIAL INSTITUTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caixa Geral de Depósitos</td>
<td>Império</td>
<td>Locapor</td>
</tr>
<tr>
<td>Banco Português do Atlântico</td>
<td>Fidelidade</td>
<td>Euroleasing</td>
</tr>
<tr>
<td>Banco Totta e Açores</td>
<td>Tranquilidade</td>
<td>Besclarleasing</td>
</tr>
<tr>
<td>Banco Espírito Santo</td>
<td>Mundial Confiança</td>
<td>UNICRE</td>
</tr>
<tr>
<td>Banco Comercial Português</td>
<td>Banca</td>
<td></td>
</tr>
<tr>
<td>Banco Português Investimento</td>
<td>Ocidental Seguros</td>
<td></td>
</tr>
<tr>
<td>Unipca Brasileira</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Banco de Comércio e Indústria</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Banco Internacional de Crédito</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Banco Finantia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Banco Mello</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSF - Banco de Investimentos</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.3 The survey

4.3.1 Assumptions

The drawing up of the structured questionnaire was the second step in formation of the survey, the first one being the open exploratory interviews mentioned above. The selection of issues to be involved in the survey was undertaken using the following assumptions:

- The number of questions to be asked to the managers should not exceed 25. Any number larger than this would make the interview too long, and might go into topics that were not critical to the purposes of the survey;
- All the issues should make sense in terms of the Portuguese IS management scene and in the light of the results obtained from the exploratory interviews.

Thus, 24 issues (one extra question was included to assess the maturity stage in the McFarlen grid) chosen to be part of the survey were the following:

- Question/Issue 1: IS strategic planning
- Question/Issue 2: IS as a competitive advantage
- Question/Issue 3: Information Architecture
- Question/Issue 4: IS department's Human Resources
- Question/Issue 5: Organizational learning
- Question/Issue 6: End User Computing Management
- Question/Issue 7: Use of information as a resource
- Question/Issue 8: IS alignment with the organization
- Question/Issue 9: Telecommunications
- Question/Issue 10: Open Systems/OO O
- Question/Issue 11: Integration of IS applications
- Question/Issue 12: Software development*
- Question/Issue 14: Selection of Software packages
- Question/Issue 15: IS functions and its contribution to the organization
- Question/Issue 16: IS measures for effectiveness
- Question/Issue 17: Investment level in IS
- Question/Issue 18: Security and control
- Question/Issue 19: Reliability and Redundancy of Data
- Question/Issue 20: Expert Systems and Artificial Intelligence
- Question/Issue 21: Decision Support Systems
- Question/Issue 22: Marketing Information Systems
- Question/Issue 23: Graphic Interfaces
- Question/Issue 24: Process Re-engineering
- Question/Issue 25: Change Management

* Question 13 is used to assess the maturity stage of the financial sector in terms of the McFarlen grid, it cannot be compared with other issues and it will be analysed separately.

4.3.2 Designing the Questionnaire

The type of questionnaire designed had two main parts:
- The first part contained some general information about the respondent such as position/function, age and formal qualifications/training;
- The second part contained the key Information Systems (IS) issues and is the most important part of the questionnaire. For this part of the questionnaire it was necessary to:
  - choose a format or standard for presentation of the key issues;
  - choose the time frame for each question and answer;
  - choose the scale and graphical representation for each question and answer;
  - choose the positioning of each question within the questionnaire.

When selecting a format or standard way to present the key issues to the respondents, we used an identical format as defined by Galliers [4]:

- Important Issue – subject, theme or issue considered important to the functioning of the entire organization in an effective and efficient way in light of its business objectives;
- Problematic Issue – subject, theme or issue where the firm shows weaknesses when trying to achieve its business objectives, and where the firm feels it should invest in order to find solutions.

Furthermore, for issues listed there was a brief explanatory note, so as to achieve a uniform understanding of the issues.

The time frame for the answers between the present and future was three years. In this way, apart from the identification of what is presently happening in each question, we have also asked for an indication of perception about the future. It was thought that a three frame of five years between now and the future, such as it was used by Galliers [4], would be unrealistic, given the rate of change of IS management issues in Portugal.

The scale and graphic representation used was Likert's six point scale. Graphically, we used the following representation (for each question):

<table>
<thead>
<tr>
<th>Now</th>
<th>Future (3 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Important</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>Problematic</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td></td>
<td>---+</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The questions were distributed at random way in the questionnaire.

5. THE INTERVIEWS

The interviews were carried in the period between November 1994 and March 1995 with each interview lasting on average 45 minutes.

6. RESULTS

Due to the limitations of space, the detailed results will not be presented in this work. However, any requests for more information will gladly be provided by the authors. Thus, only a general summary of the most representative results will be presented, here.

The following six tables were constructed from the consolidated data:
### Tab. 1: The top five issues in terms of IMPORTANT NOW (in decreasing order).

<table>
<thead>
<tr>
<th>ADMINISTRATORS</th>
<th>IS MANAGERS</th>
<th>ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank</td>
<td>Issue</td>
<td>Rank</td>
</tr>
<tr>
<td>1</td>
<td>13: Information Architecture</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>18: IS alignment with the organisation</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>118: Security and Control</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>19: Telecommunications</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>111: Integration of IS applications</td>
<td>5</td>
</tr>
</tbody>
</table>

### Tab. 2: The top five issues in terms of IMPORTANT in FUTURE (in decreasing order).

<table>
<thead>
<tr>
<th>ADMINISTRATORS</th>
<th>IS MANAGERS</th>
<th>ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank</td>
<td>Issue</td>
<td>Rank</td>
</tr>
<tr>
<td>1</td>
<td>13: Information Architecture</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>19: Telecommunications</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>118: Security and Control</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>11: IS strategic planning</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>17: Use of information as a resource</td>
<td>5</td>
</tr>
</tbody>
</table>

### Tab. 3: The top five issues in terms of degree of change between IMPORTANT NOW and in FUTURE (in decreasing order—the change reflects increase in Importance because, in average, the issues increased their importance).

<table>
<thead>
<tr>
<th>ADMINISTRATORS</th>
<th>IS MANAGERS</th>
<th>ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank</td>
<td>Issue</td>
<td>Rank</td>
</tr>
<tr>
<td>1</td>
<td>110: Open Systems</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>121: Decision Support Systems</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>120: Expert Systems and Artificial Intelligence</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>116: IS measures for effectiveness</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>11,12,14: IS Strategic Planning, Marketing IS, Process Reengineering</td>
<td>5</td>
</tr>
</tbody>
</table>

### Tab. 4: The top five issues in terms of PROBLEMATIC NOW (in decreasing order).

<table>
<thead>
<tr>
<th>ADMINISTRATORS</th>
<th>IS MANAGERS</th>
<th>ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank</td>
<td>Issue</td>
<td>Rank</td>
</tr>
<tr>
<td>1</td>
<td>116: IS measures for effectiveness</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>125: Change Management</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>16: End User Computing Management</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>124: Process Reengineering</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>14: IS department's Human Resources</td>
<td>5</td>
</tr>
</tbody>
</table>

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924  
925
### Discussion and Conclusions

Regarding the major issues (top five issues) for IS and for Top Managers, the results can be seen in Tables 1, 2, 4, 5 and 6 and they are self-explanatory. More interesting, perhaps, are the changes between what is important and problematic now and in future.

- Looking at the main changes in the NOW/FUTURE important issues we conclude that:
  - Decision Support Systems and Marketing Information Systems will be overall more important in the future than now;
  - Expert Systems and Open Systems are seen as more important in the future than now, only by Administrators;
  - Information Architecture and Software Development are seen as more important in the future than now by IS Directors;
  - The average future importance of all the issues increases (maximum increase 0.8).

If we now turn to the main changes in the NOW/FUTURE problematic issues we will see that:

- Reliability and Redundancy of Data, EUC management, and IS measures for Effectiveness decrease their degree of problem influenced mainly by the Administration;
- Information architecture decreases the problematic degree influenced by the IS Directors;
- About the Marketing Information Systems and the Software Development the perceptions are contradictory about increasing or decreasing the problematic degree;
- Security and Control and Selection of Software Packages increase slightly their future problematic degree;
- The average problematic degree of all issues decreases (maximum decrease 0.3).

We can further summarize the conclusions in the following way:

- The question of working forwards IS for competitive advantage is presently the critical question for the whole sector;
- IS Strategic Planning will be the most critical management future issue;
- Security and Control is clearly the most important factor for the sector in the future;
- Information Architecture is a critical factor overall but is not perceived as too important by the Administrators. However, it will become increasingly crucial in the future to this group;
- EUC Management will stop being a critical question in the future, and will be replaced by IS Strategic Planning.

With respect to the working hypotheses, the following conclusions can be advanced:

1. In this sector, Administrators (with experience in Management) have clearly distinct perceptions, from IS Directors (with experience in IT) regarding IS issues.

It can be said that this hypothesis is confirmed. The question of working forwards IS for competitive advantage is the only common factor for the two groups. The questions of End User Computing Management, and Integration of applications are critical to the Administrators. Process Re-engineering and Change Management are presently only critical to the Administrators.

In relation to the future there exists also a different perception of the issues. Although both groups agree that the theme of Security and Control is a crucial one, the Administrators consider Information Architecture to be paramount. IS Directors consider IS Strategic Planning, IS as competitive advantage, and human resources in IS/IT departments to be the most important topics.
2. Since this is a sector with organizations with very different corporate cultures, differences of opinion will exist with respect to key issues within the same group.

This difference cannot be confirmed. Only the degree of problems concerning future issues do not have much agreement within the same group. For all the remaining issues there seems to be a high degree of consensus within each group, across the sector.

3. Since the state of maturity has little homogeneity within the sector, there should be significant differences between Portugal and other countries, in accordance with the latest research evidence.

This hypothesis seems to be confirmed. In Galliers's work [4] the top IS key issue was "Improving IS Strategic Planning". In this survey this issue is not considered crucial by any of the groups, as regard the situation NOW.

On the other hand, when considering the future, IS Strategic Planning, IS as Competitive Advantage, and human resources in IS/IT departments are critical to ALL RESPONDENTS and IS Directors.

This situation seems to show that we are heading towards a higher and more homogeneous level of maturity in the financial sector institutions where the key IS issues will be closer to the qualitative and non-technological areas.

4. Issues with eminently technological characteristics will be referred to as important although the future tendency will be for the predominance of Management themes.

This hypothesis is not confirmed. We can conclude that, presently, the MANAGEMENT component is paramount over the TECHNOLOGICAL. The question of Integration of IS Applications is the only technological issue that stands out as being important and problematic.

In relation to the future, the MANAGEMENT components will continue to dominate but it is interesting to notice that IS managers have come to realize that Management issues are becoming more critical for the future. What we had predicted for the future is already happening now.

Finally, as regards the impact of IS on the Portuguese Financial Sector as a whole in its present stage of development - Consolidation/Stability (1995-...) - the following conclusions can be drawn:

- IS compatibility with mergers as a means to obtain synergies within financial groups is supported by the increase of importance of Open Systems and Information Architecture issues. The increased rating of the problematic issue Security and Control also indicates concern with this trend in the sector;
- IS based relation with clients and their behavior is supported by an increase in the Marketing Information Systems, Decision Support Systems and Expert Systems issues;
- IS as a facilitator to the adoption of the new EC regulations and the new single European currency is based in the increase of importance of Software Development and the increased rating of the problematic issue in Software Packages;
- The decreased rating of the Problematic Issue Information Architecture but especially the issues Reliability and Redundancy of Data, EUC Management and IS measures of effectiveness indicate that the conversion process of the IS in many financial institutions is about to be complete.

These conclusions lead us to consider as fundamental and to recommend the further study of the management components of IS such the use of IS in the Portuguese financial sector, as competitive advantage, Information Architecture and IS Strategic Planning without discarding the technological aspects of Security and Control.

The results of the present survey lead us also to conclude that the IS in the financial sector have started a new phase in 1995 where IT and IS will become important enablers of the mergers and acquisitions to come, thus allowing new synergies within the financial groups firmly based on the needs of the clients. Furthermore, IS will play an important role as facilitator in the adoption of EC regulations and the single currency.

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REFERENCES


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**ECONOMIC EVALUATION OF INFORMATION SYSTEMS: A PORTUGUESE CASE STUDY**

Ana Sofia COSTA

Faculdade de Economia
Universidade Nova de Lisboa
Travessa Estevão Pinto
1070 LISBOA
PORTUGAL

E-Mail: asc@fe.unl.pt

**ABSTRACT**

Information systems are increasingly recognized as relevant decision facilitators while containing a great share of the firm’s resources. They permit to adapt and expand the strategic goals of the companies, therefore they should be carefully analyzed.

This paper examines the desirable characteristics of the economic evaluation of information systems and compares such characteristics with the findings of a research on how Portuguese firms think that analysis.

The research methodology consists of case studies that cover manufacturing and service companies. This allows to identify behaviour patterns in terms of the depth and the detail of the evaluations done.

**INTRODUCTION**

In this paper we discuss the economic evaluation of information systems, using case studies of Portuguese companies. We define an information system as a computer-based information processing system designed to support operations, managers and their decision making process. This definition is in agreement with Davis [7] and Ahituv and Neumann [1].

Information systems not only can do the same job in less time, but mainly they can create value in an innovative way for the firm. This creation of value is very widely achieved through the effective use of information systems [9, 21, 30]. There are an increasing number of examples of information systems being used as strategic weapons that allow the firm to redefine its relations with suppliers as well as with consumers: better service, new products or services, increased loyalty towards the firm, reduced development period of a product and increased productivity and effectiveness [5, 27, 28]. In a dynamic competitive environment, choosing the most appropriate system is of crucial importance to the firm [2].

All this enlarged importance of information systems implies, in accordance with the principles of good management, that the selection of which system to adopt be carefully and thoroughly planned and conducted. But these analyses are expensive and too often considered a waste of time, men and money. Due to the assumption that the information system’s value is granted or that the time involved aren’t large enough, the systems are superficially studied [23, 34]. At the same time,