

Shaping CIO's Competencies and Activities to improve Company Performance: an empirical study

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Abstract

The importance of and the fast changes in the CIO's role in organizations are widely recognized. So is the need for CIOs to acquire the appropriate set of knowledge and managerial skills to lead the organization's effort in effectively using Information Technology. This study is based on an extensive survey of the literature addressing the desirable features of modern CIOs and the Information system area main activities. This study aims at evaluate (1) the impact of such features on the management performance of the IS department main activities and (2) their consequent impact on overall company performance. To empirically test these two relationships, 111 CEOs of companies located in Northern Italy were interviewed. The analysis of collected data provides some insights on the desirable features for modern CIOs, which in turn can be useful for CIO recruiting and professional development, and highlight the importance to properly manage the IS subfunctions in order to improve overall company performance.

Keywords

Information System Subfunction, Company Performance, Chief Information Officer, Competencies

1. Introduction

The management of Information Technology as a strategic asset has been widely recognized. Commensurately, the Chief Information Officer (CIO) role has been dramatically changing, both in terms of its increasing importance as well as its mission and objectives. Certainly, the higher the hierarchical level, the greater the authority and power to affect and influence organizational actions so, the rank of the CIO in the organizational hierarchy could be an important factor affecting the success of IS and its use as a strategic, competitive weapon. The activities carried out in the Information System (IS) area are obviously affected by this evolution process and their success or failure should influence the overall company performance. As a matter of fact, given the new CIO role, he/she is in a position to contribute to the improvement of ISS performance and, through their correct management he/she could impact on overall company performance, as well.

Starting from a detailed analysis of the literature regarding the business activities involving the IS area, this work aims at analyzing two main relationships: the former between an aggregation of the most important and updated competencies required by a CIO and the Information Systems Subfunctions (ISS); the latter between the ISS and an index of overall company performance.

More precisely, the aim of this work is to validate the importance of CIO role and ISS in order to improve company performance, taking into account the possible influence on such relationship concerning the different organizational characteristics and the peculiarities of the competitive environment in which companies work.

2. Literature Review

The assessment of the impact competencies have on ISS performance and CP has largely been confined to the organisational aspects so far. In recent years, many studies were addressed to investigate the relationship between competencies and CP but no one of them refers to the term competencies as a set of identified skills of a company's organisational role, they usually refer to this term as a whole organisational feature (Acar, 1993; Scarbrough, 1998). In the same way, many researchers have been focused on the relationship between IT and CP overlooking the importance of the activities arranged to the management of such technologies (Strassmann, 1990; Brynjolfsson and Hitt, 1996; Shin, 2001).

The lack of studies on this specific field leads us to investigate these relationships by considering first each single variable and then trying to investigate the relationships between them. To investigate the CIO competencies, ISS and CP a deep literature analysis concerning each of these issues has been performed and results are presented in the following paragraphs.

2.1 Chief Information Officer's Competencies

In the recent years many meanings and new labels have evolved through common usage for the terms "competence" and "competency" (Strebler, Robinson and Heron, 1997). Usually, the term "competency" has been used to refer to the meaning expressed as behaviours that an individual needs to demonstrate, while the term "competences" has been used to refer to the meaning expressed as standards of performance (Hoffmann, 1999). These are two clearly

different approaches applied to the concept of competency. The former is a predominantly American approach such as portrayed by Boyatzis (Boyatzis, 1982), and the other one has been provided by the UK Government Employment Department (Ashworth and Saxton, 1990; Strebler et al., 1997).

Boyatzis' model investigates which characteristics of managers are related to effective performance and it can be considered an adaptation of the classical psychological model of behaviour (McClelland, 1971). These authors see "competency" as an "underlying characteristic causally related to superior job performance" (McClelland, 1971; Boyatzis, 1982). This approach is also known as the input approach to management competency (Tate, 1995; Hoffmann, 1999). That is, it was taken to define the inputs needed to demonstrate competent performance and to find out what makes managers competent and to design a programme where managers could learn these competencies.

The second approach identifies the outcome expected from a job when it is performed adequately. It suggests not only skills and knowledge but also the range of qualities of personal effectiveness required to get a job done (Ashworth and Saxton, 1990; Silver, 1991; Boam and Sparrow, 1992; Burgoyne, 1993).

The main contraposition between the two meanings of the term "competency" is that one referring to the outputs, or result of the training – that is, competency performance; the other, refers to the inputs, or underlying attributes, required of a person to achieve competent performance, an approach which is more behaviourally based. According to Boyatzis' approach this study aims at determine the competencies that a CIO needs to possess in order to exploit better ISS performance.

Prior to develop competencies within any organisational systems, the competencies needed must be identified and determined (McGowan, Durkin, Allen, Dougan and Nixon, 2001). In order to comply this requirement, a part of this work is based on a previous study (Ravarini, Moro, Tagliavini and Guimaraes, 2001) in which the CIO profile is described through a set of competencies, in accordance with the widely accepted theoretical framework that defines the concept of competency through three main "dimensions" (Boyatzis, 1982; Carretta, 1993; Spencer and Spencer, 1993; Bresciani, 1997):

- **Know how to be:** mental, physics and basic sense attitudes, value system, factors linked to personal identity;
- **Know what:** knowledge of the work, tasks, methods, own role, the context, the company;
- **Know how:** knowledge of the practices and solutions (the technical knowledge and skills required to perform IS management activities).

Basing our work on an extensive literature review regarding CIO competencies and activities we identified several skills and grouped them into 12 classes, as follows:

- **Know how to be:** *Interpersonal skills* ((Lee, Trauth and Farwell 1995; Bidgoli, 1997; DeLisi, Danielson and Posner, 1998; Feeny and Wilcocks, 1998; Feeny and Wilcocks, Spring 1998), *Holistic vision* (Heene and Sanchez, 1997; DeLisi et al., 1998; McCartney, 1999), *Long term vision* (Brown and Weitzel, 1988; Bradley, Hausman and Nolan, 1993; Earl, 1993; Feeny and Wilcocks, 1998), *Effective leadership* (Synnott, 1987; Applegate and Elam, 1992; Feeny, Edwards and Simpson, 1992; King, 1997; DeLisi et al., 1998;

Feeny and Wilcocks, 1998; McCartney, 1999) and *Propensity to innovation* (Feeny et al., 1992);

- **Know what:** *Managerial Knowledge* (Benbasat, Dexter and Mantha, 1980; Wiseman, 1985; Synnott, 1987; Hochstrasser, 1990; Hochstrasser and Griffiths, 1991; Applegate and Elam, 1992; Lillrank, Leethovaara, Holopainen and S., 1995; DeLisi et al., 1998; Feeny and Wilcocks, 1998; McCartney, 1999), *Internal Business knowledge* (Benbasat et al., 1980; Feeny et al., 1992; Earl and Feeny, 1994; Lee et al., 1995; DeLisi et al., 1998; Feeny and Wilcocks, 1998), *External Business knowledge* (DeLisi et al., 1998) and *Theoretical Knowledge* (Benbasat et al., 1980; Synnott, 1987; Feeny et al., 1992; Earl and Feeny, 1994; Lee et al., 1995; King, 1997; Feeny and Wilcocks, 1998);
- **Know how:** *Technical Expertise* (Benbasat et al., 1980; Synnott, 1987; Feeny et al., 1992; Earl and Feeny, 1994; Lee et al., 1995; King, 1997; Feeny and Wilcocks, 1998), *Planning capabilities* (Synnott, 1987; Blanton and Watson, 1992; Feeny et al., 1992; King, 1997) and *Organizational impacts assessment capability* (Benbasat et al., 1980; Wiseman, 1985; Synnott, 1987; Hochstrasser, 1990; Hochstrasser and Griffiths, 1991; Applegate and Elam, 1992; Lillrank et al., 1995; DeLisi et al., 1998; Feeny and Wilcocks, 1998; McCartney, 1999).

2.2 Information System Subfunctions

In order to investigate the IS activities settled by the company to manage the technologies available, a detailed analysis of the literature about IS activities was performed and it led to the identification of a number of 44 activities which have been categorized through factor analysis¹ into six ISS as follows:

1. **IS human resource management:** the activity of hiring IS staff, training both IS personnel and end-users, promoting the integration of IT group activities and developing IS human resources.
2. **IS Strategic management:** the activity of integrating business problems and IS solutions and understanding the available strategic opportunities.
3. **Computer based information system (CBIS) management:** the activity concerning operations related to IS systems, such as: database administration, software and hardware acquisition, maintenance and development.
4. **IS relationship management:** developing effective relationships with corporate level, line management and end-users, consultants and academics and promoting the use of IT.
5. **IS management:** the activity of contributing to organizational development, process innovation and focus on the alignment between IS and the organizational functions and roles needed.

¹ Factor analysis is used to uncover the latent structure (dimensions) of a set of variables. It reduces attribute space from a larger number of variables to a smaller number of factors.

6. Others activities: some residuals and heterogeneous activities resulted from factor analysis.

Table in “Appendix A” shows the complete set of IS activities together with the related literature references.

2.3 Company Performance

Business performance has been measured in many different ways (Steers, 1977; Gupta and Govindarajan, 1984; Venkatraman and Ramanujam, 1986; Guimaraes and Armstrong, 1998). Many authors have used single items to measure it, such as company profitability (return on total assets) (Snow and Hrebiniak, 1980). Given the wide variety of ways in which ICT may contribute to business performance, and the importance of content validity for such a significant measure, in this paper it has been measured through the following 12 indicators, accepted as a measure of business performance (Gupta and Govindarajan, 1984; Guimaraes and Bond, 1996): Rate of sales growth, Market-share, Operational results, Return On Sales (ROS), Cash flow of the operative management, Return On Investments (ROI), Development of new products, Development of new markets, Research & Development, Program of cost reduction, Personnel development, Public/political relationships.

3. Conceptual Framework

A lot of research papers underline the central role and responsibilities of the CIO. Most of them point out that, as an executive, he/she should be operating primarily at the strategic level in a decisional versus an informational role (Mintzberg, 1973) and should support the definition of the company strategic direction (Bock and King, 1986; Brown and Weitzel, 1988), especially on long-term strategy and strategic planning activities for the IS (Dickson, 1984; Bock and King, 1986; Stivers and Beard, 1987; Brown and Weitzel, 1988).

Other studies emphasize the critical responsibilities for resource management (Applegate and Elam, 1992) and the importance of communication links with top management as a critical success factor for an IS manager (Watson, 1990) also considering his/her role among top management team.

The higher the hierarchical level, the greater the authority and power to affect and influence organizational actions so, the rank of the CIO in the organizational hierarchy could be an important factor affecting the success of IS and its use as a strategic, competitive weapon. This finding is not surprising because it involves the most prevalent theme we heard from IS managers and consultants - the top priority in the future is to align IS with business goals (Lee et al., 1995), to contribute to organizational development (Rockart and Earl, 1996; DeLisi et al., 1998) and to contribute to process innovation (Lee et al., 1995; Rockart and Earl, 1996).

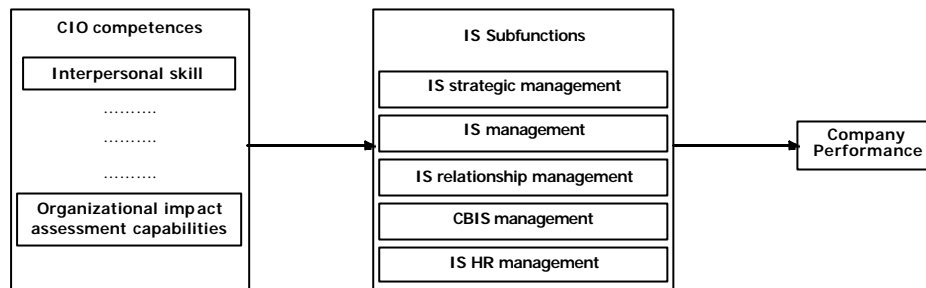
Therefore, given the new CIO role, he/she is in a position to contribute to the improvement of ISS performance and, through their correct management he/she could impact on company performance. The evaluation of the possible relationships between the CIO competencies, ISS and company performance requires to test two main hypotheses.

The most important and updated competencies required by a CIO in order to correctly manage the ISS:

RQ1: Which CIO competencies have the greater impact on ISS performance?

Moreover, the correct management of ISS could impact on overall company performance:

RQ2: Which ISS could positively influence the overall company performance?



4. Methodology

The survey instrument, a questionnaire, was developed drawing on the literature analysis cited in the previous paragraph. The questionnaire was tested for readability, content relevancy and completeness through a pilot study conducted in 2001 on a sample of 54 Italian companies (Ravarini et al., 2001).

4.1 Development of Questionnaire and Construct Measurement

The first research step consisted in drawing up a questionnaire composed of four parts.

The *first part* aimed at gathering information about demographic profile of the sample by asking the respondents: industry, location, number of employees, turnover, main reference market, independent company or group and relationship between Chief Information Officer and Chief Executive Officer.

The *second part* consisted in collecting information about Information System Activities. It was represented by forty-four activities of the information system area, resulting from the literature analysis, each of them related to particular aspects of the work. It was assessed by asking the respondents to rate how the company is developing the described activities, using a five-point Likert-type scale (1 = Not at all, 5 = Very large extent).

The *third part* focused on business performance. One question aimed at assessing the extent to which the IS supports the improvement of overall company performance, using the same scale described above.

The *fourth part* investigated the CIO competencies. One question aimed at assessing the extent to which the CIO possesses the fourteen competencies listed.

Since the proposed questions require the knowledge of the main business objectives, as well as the features of the business activities performed in any area, the questionnaire was addressed to the Chief Executive Officers (CEO) of the surveyed companies.

4.2 Data Collection Method

The second research step was the collection of data through direct interviews to a set of 201 Italian companies of any size and industry, mainly located in the northern part of Italy. Collected data were filtered to resolve inconsistencies and correct anomalies, resulting in a final sample of 111 valid questionnaires.

4.3 Sample Description

The surveyed companies were classified by size (according to the current definition provided by the European Community (DG XII, 1996) and business industry. In both cases, the distribution reflects the peculiarities of the economic context of Northern Italy where SMEs as well as manufacturing industry are widespread; in fact the sample is concentrated into three main groups as shown below.

59% of surveyed companies have an IS department and 60% of them employ at least one person full time in this department, 32.7% employ 2/3 persons and 7.3% employ 4 persons. The use of external consultants is to some extent in 19.7%, to a large extent 22.6%, to a small extent 19.7% and to a great extent 16.6% and probably compensate the lack of IS internal people. So about 40% of the companies declared the use of IS consultants in a massive way. 90% of respondents declared a medium to high degree of dependence from ICT.



In order to test the hypotheses underlying our model we performed cross tabulations and T-tests.

A factor analysis allowed to substitute the large number of identified IS activities with a small number of factor constructs (the ISS) which can be more useful than the original ones.

5. Data Analysis

According to the theoretical framework, the research required the analysis of two main relationships that involve twenty-one variables:

- 14 CIO competencies;
- 6 IS subfunctions;
- the overall business performance.

In order to perform the cross-tabulation, it was necessary to compute the mean of the 14 competencies, the mean of the 6 IS subfunctions and the global mean of the company performance. These values were used to split the sample in "above average" (high) and

"below average" (low) for each of them. It resulted in 84 cross-tabulations that have been synthesized and organized into one table.

Table 1 shows the identified relationships between the CIO competencies, the ISS and the company performance: the symbol "X" in a cell means that those companies declaring a high value of a specific competency also have high values for both the corresponding ISS and the company performance. Likewise, those companies declaring a low value for that competency also have low values for the other two variables.

Competencies	IS Subfunction management					
	IS Strategic	IS	IS relationships	CBIS	IS human resource	Other activities
Interpersonal skills	X	X	X	X	X	X
Holistic vision	X	X	X	X	X	X
Long term vision						
Effective leadership						
Managerial Knowledge	X	X	X	X	X	X
Propensity to innovation	X			X	X	X
Organizational impacts assessment capability			X	X		X
Business knowledge Internal						
Business knowledge External	X	X		X	X	X
Theoretical Knowledge of ICT – Internet based	X				X	X
Theoretical Knowledge of ICT –traditional technologies	X	X	X	X	X	X
Technical Expertise of ICT – Internet based	X		X		X	X
Technical Expertise – traditional technologies	X	X	X	X	X	X
Planning capabilities	X	X	X	X	X	X

Table 1 Cross-tabs summary: relationships between CIO competencies, IS subfunctions and company performance

An important result is related to *interpersonal skills*, *holistic vision*, *managerial knowledge*, *theoretical knowledge of ICT (traditional technologies)*, *technical expertise (traditional technologies)* and *planning capabilities*. The values of these competencies turn out to be aligned with all the ISS and the company performance, showing a strong similarity in their values.

Therefore, the lack of the symbol "X" in a cell shows a misalignment between the three variables: in particular, it is interesting to notice that *long term vision*, *effective leadership* and *internal business knowledge* do not seem to have any particular impact on all ISS and company performance as well.

The Chi-square statistics for the cross-tabulations are quite different between CIO competencies and ISS while are very strong (from 15 to 33) between ISS and company performance.

In order to confirm the results a T-test was performed twice. The first between company performance and the six ISS and the second between CIO competencies and ISS. The results are shown in Table 2.

	t-test for Equality of Means				
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
IS strategic management	5.744	109	.000	.9481	.16506
IS management	5.534	109	.000	.8961	.16191
IS relationship management	5.059	109	.000	.8283	.16371
CBIS management	4.402	109	.000	.8023	.18225
IS HR management	5.331	109	.000	.8159	.15306
Other activities	7.139	109	.000	1.0515	.14727

Table 2 T-test: company performance and ISS

The T-test results, for company performance and ISS, confirm the hypotheses. As shown, the values of this statistics are high: they range from 4 to 7 while their significance is very high (less than 0.001).

The T-test results for CIO competencies and ISS show high value for several of them but results are not as strong as the previous ones. Table 3 summarizes these results showing which relationships are strongly supported by considering a T-test cut point at 4.

Competencies	IS subfunction					
	IS strategic	IS	IS relationship	CBIS	IS HR	Other activities
Interpersonal skills						
Holistic vision					X	
Long term vision					X	
Effective leadership						X
Propensity to innovation						
Managerial knowledge						
Internal business knowledge					X	X
External business knowledge						
Theoretical knowledge of ICT – Internet based technology						
Theoretical knowledge of ICT – Traditional technologies			X			
Organizational impact assessment capabilities			X			X
Planning capabilities		X	X		X	X
Technical expertise of ICT - Internet based technology	X		X			
Technical expertise of ICT - Traditional technologies		X	X			

Table 3 T-test: ISS and CIO competencies

6. Results

To investigate the topics of the RQs two statistical tools were used: cross-tabulation and T-test. The following paragraphs present a synthetic description of the research findings.

RQ1: Which competencies have the greater impact on ISS performance?

The research outcomes allow us to assert that not all the CIO competencies have the same influence on ISS performance. In fact, we can divide the results up into three groups (Table 4): *competencies with high impact on all ISS*, *competencies with no impact on all ISS*, *competencies with high impact only on some ISS*.

	COMPETENCIES		
	with high impact on all ISS	with no impact on all ISS	with scarce impact on the following ISS:
Interpersonal skills	X		
Holistic vision	X		
Long term vision		X	
Effective leadership		X	
Propensity to innovation			IS Management IS Relationship management
Managerial knowledge	X		
Internal business knowledge		X	
External business knowledge			IS Relationship Management
Theoretical knowledge of ICT – Internet based technology			IS Management CBIS Management IS Relationship Management
Theoretical knowledge of ICT – Traditional technologies	X		
Organizational impact assessment capabilities			IS Strategic Management IS Management HR Management
Planning capabilities	X		
Technical experience of ICT - Internet based technology			IS Management CBIS Management
Technical experience of ICT - Traditional	X		

Table 4 CIO competencies impact on ISS: summary of results

These results provide evidence of the desirable features of the modern CIO. This organizational role has been traditionally characterized by technical tasks, mainly devoted to the IS development and maintenance: our results show that a modern CIO should possess a wider set of capabilities, belonging to all the three sets of competencies (Know how to be, Know how and Know what). Specifically, the resulting CIO's profile should include *managerial knowledge*, *interpersonal skills* and *holistic vision*: these results indicate that, in order to make the newly developed managerial competency truly effective, CIO's organizational position should raise its importance among the senior executives. Thus, the activities of CIO recruiting and professional development should be managed accordingly in order to positively affect the overall company performance.

RQ2: Which ISS could positively influence the overall company performance?

The second RQ assumes that the effective management of ISS can affect the overall company performance. The outcomes of the statistical analysis completely support this assumption. Cross-tabulations, Chi-squares as well as T-tests show high values for all IS subfunctions. In other words, companies with high values in ISS performance also have a high value for company performance and vice versa.

These results highlight that companies of any size should not underestimate the management of ISS, which appears to be an important leverage to improve the overall company performance. Specific competencies are required to effectively manage ISS, thus companies should continuously monitor their IS staff in order to promptly acknowledge possible lacks and possibly outsource the management of the lacking ISS. In fact, 40% of the companies declared the use of IS consultants in a massive way, probably to compensate the lack of internal competencies.

7. Conclusions

This study was set out to investigate one of the most researched IS management issues: the influence of CIO competencies and IS subfunction management on the overall company performance. In particular, this work is focused on two main aspects: the competencies a CIO should possess in order to correctly manage the IS subfunctions and their influence on the overall company performance. The analysis of collected data allowed to highlight some interesting results.

Firstly, the following CIO competencies seem to have a higher impact on the quality of ISS management: *interpersonal skills*, *holistic vision*, *managerial knowledge*, *theoretical knowledge of ICT (traditional technologies)*, *technical expertise of ICT (traditional technologies)* and *planning capabilities*. This seems that whenever the CIO possesses one of these competencies, the company declares an effective management of all the ISS and a high value of company performance. Conversely, the absence of one of these competencies corresponds to low values of both the ISS and company performances. This result empirically demonstrates the importance, for companies of any size, of having a CIO with a heterogeneous set of competencies, not only related to technical abilities but including managerial competencies. In particular, the high impact of *interpersonal skills* and *holistic vision* on ISS performance shows the need to consider the *organizational* point of view: as stated by most of the recent literature, the performance of the IS department are not only influenced by technical abilities of its staff but are strongly affected by organizational issues.

Secondly, the CIO technical abilities have been explored by considering *traditional technologies* and *Internet based technologies* separately. It is interesting to notice that the theoretical knowledge and the technical expertise concerning *traditional technologies* have a high impact on all ISS and on the company performance, while competencies regarding *Internet based technologies* have a meaningful impact only on IS management and CBIS management. This probably means that Internet based technologies are exploited mostly to support technical tasks, while their organizational and strategic potential is not fully exploited, most of all within small and medium enterprises.

Finally, the analysis shows a strong relationship between the correct management of IS subfunctions and the overall company performance. Thus, IS management shows to be a strategic weapon, able to make the company more competitive as long as companies are able to manage the CIO recruiting and professional development by investing in the enhancement of the identified competencies.

Appendix A

Factors	Activities	References
IS human resource management	Train end-users	Jain et al., 1998; Li Eldon, 1997; Lapointe & Parker-Matz, 1998
	Delegate line activities to subsidiary	Stephens et al., 1992; Benjamin et al., 1985
	Integrate IT groups activities	Blanton & Watson, 1992
	Hire staff	DeLisi & Danielson, 1998
	Competition between CBIS and non-CBIS units	Stephens et al., 1992; Li Eldon, 1997
IS Strategic management	IS strategic management (general references)	Mintzberg, 1973; Bock et al., 1986; Brown et al., 1988; Dickson et al., 1984; Stivers & Beard, 1987; Rockart et al., 1982; Donovan, 1989; Synnott, 1987; Baxter, 1997; Grover & Jeong, 1993; Laudon & Laudon, 1998; Gottschalk, 2000; Gottschalk & Solli-Saether, 2001
	Continuous focus on business imperatives	Rockart & Earl, 1996; McCartney, 1999; Earl & Feeny, 1994
	Manage strategic applications	Lee & Trauth, 1995
	Manage corporate IS strategies	Lee & Trauth, 1995
	Integrate IT with business planning	Feeny et al., 1992; Brancheau & Wetherbe, 1987; Dickson, 1984; Hartog & Herbert, 1986
	Analyze business problems and IS solutions	Feeny & Willcocks, 1998; Lee & Trauth, 1995
	Understand and interpret technology trends	Rockart & Earl, 1996
	Understand the strategic opportunities available	King 1997
	Understand the business as well as the company's markets	McCartney, 1999; DeLisi & Danielson, 1998
	Innovative needs	King 1997
	Business needs	King 1997
IS management	Interpretation of external IT success stories	Earl & Feeny, 1994
	Data processing efficiency and effectiveness	Blanton & Watson, 1992
	DataBase administration	Jain et al., 1998
	IS infrastructure planning	Jain et al., 1998; Benbasat, 1980; Lee & Trauth, 1995
	IS projects managing	Li Eldon, 1997
	Access control	Lee & Trauth, 1995
	Information quality	Li Eldon, 1997; Rainer, 1995; Wang, 1996; Jain et al., 1998
	Extension and depth of information delivery within the organization	Rainer, 1995; Benjamin et al., 1985
	Align IS to the needs of organizational functions	Benbasat, 1980; Watson, 1990; Raghunathan, 1989
Align IS to the needs of organizational roles	Benbasat, 1980; Rainer, 1995	
IS relationship management	IS relationships management (general references)	Watson, 1990; Synnott & Gruber, 1981; Kanter, 1986; Anandhi & Bharadwaj, 1999; Lee & Trauth, 1995; Stephens, 1993; Gottschalk, 2000; Grover et al., 1993; Gottschalk, 1999; Agarwal, 1999
	Develop effective relationship with corporate level	Stephens et al., 1992; Benjamin et al., 1985; Feeny et al., 1992; Applegate & Elam, 1992; Feeny & Willcocks, 1998; Rockart & Earl, 1996; DeLisi & Danielson, 1998; Li Eldon, 1997; Benbasat, 1980; King, 1997; Raghunathan, 1989; Rainer, 1995
	Develop effective relationship with line management	Stephens et al., 1992; Benjamin et al., 1985; Feeny et al., 1992; Applegate & Elam, 1992; Feeny & Willcocks, 1998; Rockart & Earl, 1996; Feeny et al., 1992; King 1997; Rainer, 1995
	Develop effective relationship with end users	Stephens et al., 1992; Benjamin et al., 1985; Feeny et al., 1992; Earl & Feeny, 1994; Applegate & Elam, 1992; McCartney, 1999; Feeny & Willcocks, 1998; Rockart & Earl, 1996; DeLisi & Danielson, 1998; Benbasat, 1980; Rainer, 1995; Lapointe & Parker-Matz, 1998; Blanton & Hugh, 1992
	Report results	DeLisi & Danielson, 1998; Feeny et al., 1992; Earl & Feeny, 1994
	Enhance interpersonal skills	Feeny & Willcocks, 1998; DeLisi & Danielson, 1998; Rockart, 1982; Stephens et al., 1992; Li Eldon, 1997; Benbasat, 1980
	Promote a shared vision of IT role	Feeny et al., 1992; Earl & Feeny, 1994; King, 1997; DeLisi & Danielson, 1998
	Develop networks with IS executives, consultants, academics	Applegate & Elam, 1992
Use IT in your personal work environment	Stephens et al., 1992	
CBIS management	Software development	Lee & Trauth, 1995; Applegate & Elam, 1992; Watson, 1990; Benbasat, 1980; Rockart & Earl, 1996; Blanton & Watson, 1992
	Acquisition of software applications	Rockart & Earl, 1996; McCartney, 1999
	Software maintenance	Lee & Trauth, 1995; Feeny & Willcocks, 1998; Rockart & Earl, 1996; Li Eldon, 1997; Jain et al., 1998; Blanton & Watson, 1992
	Hardware development and maintenance	Lee & Trauth, 1995; Rockart & Earl, 1996; Li Eldon, 1997; Jain et al., 1998
Other activities	Train IS personnel	Lee & Trauth, 1995; DeLisi & Danielson, 1998; Jain et al., 1998 Rockart & Earl, 1996
	Manage vendor partnerships	Feeny, Willcocks, 1998; Rockart, Earl, 1996; Li Eldon, 1997
	Contribute to organizational development	Rockart & Earl, 1996; DeLisi & Danielson, 1998
	Contribute to process innovation	Lee & Trauth, 1995; Rockart & Earl, 1996

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