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77F. The Critical Success Factor Method: A review and practical example

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Abstract

Since the CSF method was first proposed by John Rockart in 1979, the method has been adopted for numerous research studies in Information Systems (IS). Like many research methods, the CSF method has both its supporters and critics. Almost thirty years on, this paper provides a comprehensive review of the original CSF method and of subsequent adaptations. The primary contributions and criticisms of the method are synthesized. The paper then discusses insights gained from the application of an adaptation of the CSF method in a large study involving six multi-national IT services organisations, thereby providing guidance to researchers who may consider using the method in future research.

Keywords

Critical Success Factors, Methodology.

1. Introduction

The concept of applying Critical Success Factors (CSFs) to business problems dates back to the work by Daniel (1961). It was Rockart (1979), however, who first developed a research method designed specifically to elicit CSFs. CSFs were defined by Rockart (1979, p.85) as “the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organisation”. Much research has been conducted in Information Systems (IS) with a view to understanding the key factors which enable organisational and more specifically, IS success (e.g. Delone & McLean, 1992). Indeed, much contemporary research and practice continues to adapt the CSF method (e.g. Peffers, Gengler & Tuunanen 2003).

This paper provides a comprehensive review of the CSF method and is structured as follows. First, the stages of Rockart’s (1979) CSF method and the main contributions and criticisms of the method are synthesized. Second, a discussion of adaptations to the original method is provided. Third, a discussion of the application of an adaptation of the CSF method in a recent study is provided, with a view to sharing valuable insights for researchers who may consider using the method in future research. Finally, closing remarks and recommendations are made.

2. Revisiting Rockart’s Three Phase CSF Method

What has become known as Rockart’s CSF method (herein referred to as the “original CSF method”), was originally employed as the first phase of a three-phase IS planning project, in a specific organisation. This first phase was used to elicit the information requirements for the senior managers within the organisation, in the form of CSFs. The purpose of the second phase was to evaluate the CSFs in order to develop system priorities and to gain

management's confidence that the system priorities would support key decisions (Rockart 1979). The third phase involved creating prototypes and implementing the actual systems. This paper focuses on the elicitation of the CSFs, which forms the first phase in Rockart's methodology, described next.

2.1 Rockart's Original CSF Method

While researchers have varied in the precise steps employed to elicit CSFs (e.g. Boynton & Zmud (1984) and Somers & Nelson (2001)), the original CSF method consisted of three steps: A CSF Introductory Workshop; CSF Interviews and a CSF Focusing Workshop (Rockart 1979).

The purpose of the CSF Introductory Workshop was to discuss the organisation's mission and strategy with key personnel within the organisation. The introductory workshop was used to generate a managerial perspective for systems development by determining the most important activities of the business and linking these to IS requirements. The workshop was also used to obtain active participation in the research project by key executive members and to provide a forum to explain the research methodology (Rockart 1979).

The CSF Interviews were designed to have each manager explicitly state those factors which are critical, both for themselves and the organisation (Rockart & Crescenzi 1984). Rockart (1979) encouraged participants to construct an initial list of CSFs prior to the actual CSF Interview and the interview was then used to further explore the factors. By articulating these CSFs, managers were able to sharpen their understanding of the business' priority areas. The findings from the CSF Interviews were used to determine the required functionality of the IS for the organisation and its managers.

At the CSF Focusing Workshop, the research team presented a synopsis of corporate missions, objectives, and the CSFs, constructed from an analysis of the first two steps. The synopsis provided a basis for extended discussion and was key to uncovering varying perceptions and disagreements among the management team (Rockart 1979). The workshop outcome was agreement on the company's missions and goals. This included a reduction in the original forty CSFs, to four. The CSFs were then used as input to phases two and three, which resulted in a prototype for the implementation of a management information system (MIS).

2.2 Contributions and Criticisms of the CSF Method

The CSF method has been credited with making a number of contributions to IS research. Primarily these surround the simplicity of the method and its ability to focus and actively engage management attention on the most important areas of a business (Rockart 1979; Boynton & Zmud 1987; Henderson, Rockart & Sifonis 1987). Table 1 provides a summary of the key contributions of the method identified in extant literature.

Criticisms of the CSF method were first summarised by Davis (1979). These criticisms have been supported by other researchers more recently. For example, Walters (2006) highlights the difficulty in determining the correct number and type of CSFs, which is related to Davis' bounded rationality limitation. Additional limitations have also been identified, such as the need for frequent review of the CSFs as a result of changing organisational and environmental factors (Walters 2006). Table 2 provides a summary of the key criticisms of the method identified in extant literature.

Despite these criticisms, the CSF method has been adopted for a wide range of research studies. Researchers have also adapted the method in an attempt to mitigate some of the criticisms of the method, as discussed in the next section.

Strength	Example Literature
Focuses management attention on the critical areas of business.	Rockart (1979) Boynton & Zmud (1984)
Requires management to articulate CSFs, thereby sharpening their understanding of a business' priority areas.	Boynton & Zmud (1984)
The method is highly understandable, relevant and useful to managers, thereby increasing their commitment to, and active involvement in, CSF research.	Boynton & Zmud (1984) Henderson et al. (1987)
CSFs are derived directly from the goals of management and as such they are linked to the business strategy, facilitating alignment between IS and these objectives.	Henderson et al. (1987)
CSFs provide a method to establish guidelines for monitoring and controlling organisational activities.	Ferguson & Dickinson (1982)
Provides a linkage with other methods used to develop corporate strategy, whereby stakeholders establish priorities or focus on critical opportunities to achieve strategic advantage.	Munro & Wheeler (1980) Munro (1983)
Independent studies have yielded comparable results, indicating that potential interviewer/manager biases can be overcome.	Boynton & Zmud (1984)
Generates user acceptance at the senior level, as senior management intuitively understands the objectives of the method.	Boynton & Zmud (1984)
There are numerous adaptations of the method to suit the requirements of independent studies.	Peffer et al. (2003)

Table 1 Summary of CSF Method Contributions

Limitation	Example Literature
People have a limited capacity for information processing and can typically only retain five to nine "chunks" of information in short-term memory. Managers reduce the set of CSFs to a manageable number, yet there may be more than (the typically identified) four to eight CSFs.	Davis (1979) Walters (2006)
People have a limited capacity for rational thinking, which results in the need to construct simplified models of real situations, or bounded rationality. These models may not correctly reflect the real situations, being bounded by experience, training, prejudice, custom and attitude.	Davis (1979)
People are limited in their ability to act as intuitive statisticians and in their inability to evaluate probabilities of uncertain events and to identify correlation and causality.	Davis (1979)
Judgment of importance may be influenced by biasing factors, such as availability of data. Most recent events or those easily remembered assume greater importance than those less recent or which are not easily remembered. People tend to use data in the form presented rather than transforming it, or seeking new data.	Davis (1979)
CSFs require frequent review, for example, as a result of changing business objectives or environmental factors.	Walters (2006)
A focus on measurement can result in forgetting or undervaluing "soft" elements which are more difficult to measure.	Walters (2006)
It is difficult to establish the right number and type of CSFs.	Walters (2006)
The further participants are away from senior management, the more difficult it may be for them to develop CSFs.	Boynton & Zmud (1984) Peffer et al. (2003)
Validity of the method has been questioned because of threat of interviewer and manager bias during the interview process.	Boynton & Zmud (1984)
The technique needs a number of cycles and considerable organisational effort.	Boynton & Zmud (1984) Walters (2006)

Table 2 Summary of CSF Method Criticisms

2.3 The CSF Method: A History of Adaptation

Extensions and adaptations to the CSF method have included: extensions to the domain of application; adaptations of the techniques used to elicit CSFs; and extensions to the how the results of CSF studies are presented. A synthesis of these various adaptations and extensions is now provided.

2.3.1 Extending the Domains and Industries of Application

Since its introduction, the CSF method has been adopted for numerous research projects, in a growing number of domains and industries. Sample domains include requirements analysis (Rockart 1979), IS planning (Bullen & Rockart 1981) and software development (Amberg & Wiener 2006). Industries where the method has been applied include IT, hospitality, education, electronics, aeronautics and manufacturing (Bergeron & Begin 1989). In applying the method to multiple industries, researchers have identified that sources of CSFs can be from external environmental issues, such as the economic or social climate, or be derived from issues specific to a given industry or organisation (Rockart 1979). The number and type of research projects where the method has been applied is indicative of its versatility and contribution to IS research.

2.3.2 Extending CSF Method Techniques

Some researchers have adapted and extended the techniques used within the CSF method, to suit the individual requirements of their research projects. Three representative adaptations include: Extending the techniques used to identify CSFs; extending the participants in the CSF method; and adopting a staged application of the CSF method.

First, there have been a number of adaptations to the techniques used to identify CSFs. These include: constructing a priori CSFs from literature and mailing questionnaires to participants to confirm these factors (Sabherwal & Kirs 1994); substituting and/or combining the CSF Interviews with written questionnaires (Martin 1982; Somers & Nelson 2001); and the use of techniques such as nominal groups to triangulate results (Bergeron & Begin 1989). It should be acknowledged, however, that if the motivation for adapting the CSF method is to accommodate the researcher's own limitations, as opposed to being for the benefit of a research project, the adaptability of the method may be viewed as a limitation.

Second, a significant adaptation to the CSF method was advanced by Bullen and Rockart (1981) to extend the participants interviewed in a CSF study to include participants from multiple levels of an organisation's hierarchy, as opposed to focusing on executive and senior management. Recently, Peffers et al. (2003) developed an approach called Critical Success Chains (CSCs), with a view to further extending the CSF method to enable widespread participation in IS Planning. CSCs are founded on personal construct theory and involve an interviewing technique designed to assist participants throughout an organisation, who may not understand the concept of CSFs sufficiently, express their ideas effectively.

Third, originally the CSF method was used to determine the CSFs for an organisation as a whole, and was used at the highest strategic level. It has since been used, however, to determine the CSFs within specific business processes and for specific projects and strategies. For example, Somers and Nelson (2001) describe the impact of twenty-two CSFs across the implementation process of Enterprise Resource Planning (ERP) systems. By breaking the implementation phase into five stages (initiation; adoption; adaptation; acceptance; and routinisation and infusion), they argue that CSFs can be viewed as situated exemplars that help extend the boundaries of process improvement, and whose effect is much richer if viewed within the context of their importance in each stage of the implementation process.

2.3.3 Presentation of the CSFs

The results of CSF studies typically include a list of four to eight CSFs (Rockart 1979). Studies have, however, reported substantially more CSFs (e.g. Somers & Nelson (2001)). As

a result, Boon, Corbitt and Peszynski (2004) criticise the method for producing long lists of CSFs. However, researchers have presented CSFs in a variety of formats to facilitate conceptualisation of their findings. For example, Zahedi (1987) proposed a CSF hierarchy, Somers and Nelson (2001) attempt to prioritise CSFs, while others have provided categorisation schemes (e.g. Alazmi & Zairi 2003).

3. An Example: The Application of the CSF Method in an IT Services Context

Having now reviewed the CSF method, this section provides a discussion of observations made during the application of an adaptation of the CSF method in a recent research project. First, the objectives of the research project are introduced and a description of how the CSF method was applied, is given. Key outcomes from the research project emerging as a result of the application of the adapted CSF method are then presented.

3.1 Overview of the Research Project Objectives and Methodology

The study used to illustrate the application of the CSF method in this paper investigated how IT support organisations can transfer after-sales IT support-oriented knowledge to enterprise customers successfully, when Web-based Self-services Systems (WSSs) are used. The study consisted of three stages: An in-depth literature review; a single case study incorporating the CSF method; and a cross-organisational focus group. All data was analysed using qualitative content analysis (Mayring 2000).

First, the subjective argumentative approach was used to conduct an in-depth literature review. A key outcome of this stage was a four-stage working model of inter-organisational knowledge transfer. This model was initially developed via reviewing a number of knowledge transfer models in conjunction with IT services literature. The four stages consisted of: initiation, implementation, ramp-up and integration. Full details of the knowledge transfer model are beyond the scope of this paper but are available in Cooper (2007).

Second, an in-depth single case study (Yin 2003) incorporating multiple methods of data collection and an adaptation of the CSF method (Henderson et al. 1987), was conducted. Rockart's original three step approach was used. First, a CSF Introductory Workshop was conducted with two senior executives to explain the methodology and objectives of the research. In addition, the importance of transferring after-sales IT support-oriented knowledge to enterprise customers when WSSs are used, to the organisation, was confirmed. The senior executives also assisted the researcher to identify suitable participants for the CSF Interviews.

All CSF Interview participants were provided with background documentation to ensure that they had an understanding of the context and objectives of the research. The study followed prior CSF research which used the method to elicit CSFs from participants at various levels of the organisation (Shank, Boynton & Zmud 1985; Peffers et al. 2003). Specifically, twelve participants were interviewed, comprising senior executives, middle management and operational staff, with a view to enabling a wide range of insights to emerge. This was considered appropriate because employees at all levels within an IT support organisation are impacted by the performance of the WSS strategy. For example, Support Agents interact directly with the WSS in the course of support work (Kapella 2003), while senior

management is concerned with the impact the WSS strategy on Customer Relationship Management (CRM) (Hewson 2001).

Following the approach that Somers and Nelson (2001) employed to (1) break down an ERP implementation process into well known stages, and (2) identify CSFs within each of these stages, this research applied the CSF method to the four stages within the working model of inter-organisational knowledge transfer. Specifically, this research attempted to identify the CSFs for the transfer of after-sales IT support-oriented knowledge to enterprise customers when a WSS is used, for each of the four knowledge transfer stages, as well as the knowledge transfer process overall. Prior to the interview, participants were encouraged to generate an initial set of CSFs and these were discussed in more detail during the actual interview.

Next, all CSF Interview participants were invited to attend the CSF Focusing Workshop and provided with documentation summarising the key interview findings. Notably, only five participants were available to attend. The remaining participants were provided a summation of the workshop findings and encouraged to provide feedback via email and telephone. During the workshop, participants deliberated on the CSFs identified during the CSF Interviews and discussed other key issues for knowledge transfer and enterprise customer support via WSSs.

In considering the most appropriate methods for this research project, it was determined that a single case could provide the benefits associated with in-depth insights but be limited by the fact that these insights would be provided from only one organisation (Yin 2003). Seeking greater generalisability, or in qualitative terms, an indication of transferability, a cross-organisational focus group was conducted to determine if the results of the single case were indicative of the experiences of similar organisations. The cross-organisational focus group consisted of six participants representing five comparable multi-national organisations. During the cross-organisational focus group participants deliberated the findings from the single case study. The majority of the focus group session was dedicated to discussing the CSFs and key management issues. Participants were also highly interested in how the findings of the study would be presented, to increase the accessibility of the findings.

3.2 Key Findings

The purpose of this section is to highlight the type of findings which may emerge from a CSF study, rather than to discuss the implications of the findings which emerged. Full details of the study can be found in Cooper (2007).

Applying the adapted CSF method described in the previous section resulted in:

- The identification, definition and discussion of twenty-seven CSFs for the transfer of after-sales IT support-oriented knowledge to enterprise customers when a WSS is used, for the knowledge transfer process overall, and for each of the four stages of knowledge transfer;
- Enhancement of the four-stage processual model of inter-organisational knowledge transfer, in the provision of after-sales enterprise IT support services using WSSs;
- Development and discussion of a framework for classification of the twenty-seven CSFs into six CSF categories;
- Development of a taxonomy to classify the twenty-seven CSFs as generic to IT projects/specific to WSS projects and a taxonomy to classify the CSFs as generic to WSSs/specific to knowledge transfer via WSSs;
- Development of a set of performance-based/role-based CSFs by identifying Key Performance Indicators (KPIs) to measure the support organisation's performance in

respect to each CSF and job roles responsible for the management of each CSF. These findings were then presented within a “CSF Performance Measurement Matrix”;

- Development of a CSF Hierarchy that organises CSFs to facilitate use of the factors by practitioners;
- Identification of the relevance of the CSFs to different B2B WSS stakeholders from the support organisation’s perspective; and
- Identification and discussion of key management issues.

4. Reflection on Application of the Adapted CSF Method

It is worthwhile reflecting on the strengths and limitations of the adapted CSF method adopted in the example study presented in this paper. Such a reflection can highlight the value of the method and provide guidance to researchers who may consider adopting the method in the future. The primary focus of the discussion is on the adaptation of the method to elicit CSFs across the four stages of knowledge transfer, and on the subsequent cross-organisational focus group.

4.1 Strengths and Limitations of Staged Application of the CSF Method

There were two objectives of identifying CSFs across the four stages of knowledge transfer. The first was to assist participants identify a more complete set of CSFs. Arguably this objective was met as all participants identified additional factors when the knowledge transfer process was broken down into stages. On average, participants identified only five overarching CSFs (that is prior to the staged model being applied) and eleven CSFs across the four stages of knowledge transfer. Indeed, four of the CSFs were not revealed until the staged model was applied. Further, application of the staged model stimulated discussion during the interviews and resulted in more detailed descriptions of the CSFs. An additional contribution of the staged approach was that during the CSF Focusing Workshop, participants were able to reflect as a group on the distribution of the CSFs. This highlighted to management the stages where participants had not recognised the importance of some factors. This provided an opportunity for managers to take corrective action as necessary.

The second objective of using a staged approach was to identify the temporal nature of the CSFs, with a view to assisting management allocate time and resources to the CSFs when they are most relevant. However, in reviewing the distribution of the CSFs identified across the four stages of knowledge transfer, it was evident that participants held a range of views as to which stages a CSF was relevant. In only four instances did the number of participants identifying a CSF, equal the number of participants who identified it during a particular stage. Even within these factors, participants varied in their views for some of the stages relevant for the respective CSFs. Thus there was limited success in identifying the temporal nature of the CSFs using the staged approach. Nonetheless, the staged model led to the discovery that there were more factors nominated by participants for the early stages of the knowledge transfer model than the later stages. Several explanations were discussed. For example, it was queried whether interview participants were simply tired by the time the latter stages were explored. It was also discussed whether the earlier stages were more important and consequently more factors were identified during these stages. Participants did not have conclusive explanation, however, they believed that placing additional emphasis on the latter stages may provide an important opportunity to improve customer service.

A second limitation of identifying CSFs across the four stages of knowledge transfer surrounded the complexities inherent in the model. To ensure that participants had a sufficient understanding of the knowledge transfer process, it was essential that they were provided with explanatory documentation prior to, and during, the CSF Interviews. It was also important that participants were encouraged to contact the researcher prior to the interviews, if they had any concerns. While the researcher was rigorous in these administrative matters, due to the extremely busy work commitments of participants it was not always possible for them to review pre-interview documentation. To compensate, the interview time was extended, which enabled participants to ask for clarification on any issues they may have had. It is worth noting these complexities for the benefit of researchers who may adopt a similar approach in the future.

4.2 Strengths and Limitations of the Cross-organisational Focus Group

While not traditionally employed as part of the application of the CSF method, the use of the cross-organisational focus group in the study provided an important method of theory validation. Lichtenstein and Swatman (2003) highlight several important benefits of cross-organisational focus groups in E-business theory validation, such as the ability to include participants from a range of different backgrounds and organisations and the ability to evoke discussion between participants which may reveal issues that otherwise may not be revealed in an individual interview. The outcomes of cross-organisational focus groups can also be useful to enhance theory being validated at a focus group (Lichtenstein & Swatman 2003).

Supporting these findings, the cross-organisational focus group in this study provided many valuable insights that were used to enhance the initial set of CSFs and related findings. These primarily surround the presentation and categorisation of the CSFs. Key management issues identified by the primary case study organisation were also confirmed as relevant to the organisations represented at the cross-organisational focus group. Three additional issues were also discussed. Indeed, participants welcomed the opportunity to discuss such issues with peers working in other organisations.

However, according to Lichtenstein and Swatman (2003), focus groups are subject to a number of criticisms. These include: their inadequacy for providing conclusive outcomes; the potential for the moderator to bias the outcome; the possibility of personalities to dominate the group; and their insufficiency when employed as the sole source of data collection. These issues were monitored during this research to ensure that they did not eventuate. A further risk, not noted by Lichtenstein and Swatman (2003), was the withholding of valuable insights for confidentiality reasons. Prior to the focus group, participants were informed that if they were concerned by this that they would not be pressed on specific issues. This issue of confidentiality was acknowledged and discussed by participants. While participants appeared comfortable with the issues being discussed during the focus group session, the researcher cannot be certain about how much information participants did not disclose, due to confidentiality reasons. Further, it is acknowledged that a cross-organisational focus group cannot provide the level of generalisability of, for example, a mass survey in a quantitative study. However, the findings in this qualitative study indicate that such a focus group can provide an indication of the transferability of the research.

Interestingly, the main limitation of the cross-organisational focus group surrounded the limited time available of participants – both prior to and during the focus group session. The cross-organisational focus group required substantial documentation to be provided to participants prior to the session and during the session itself. The researcher was diligent in

encouraging participants to ask for clarification as required. The moderator was also diligent in allowing participants to clarify issues during the focus group session. However again, due to the busy work commitments of the participants, while they were able to briefly review the documentation prior to the focus group session, not all participants were able to review this as thoroughly as hoped by the researcher. Further, participants made numerous suggestions during the session as to how the findings of this research should be presented. Due to limited time, it was necessary for the researcher to integrate these suggestions following the focus group session. Consequently, to validate these outcomes the researcher was required to request further feedback from participants via email and telephone. While this did not prove problematic in this research, it is certainly worth noting the potential for difficulties in obtaining participant commitment beyond the focus group session, for future studies.

5. Conclusion

This paper has provided a comprehensive review of the CSF method and its use over the past thirty years. In discussing a recent application of the method designed to elicit CSFs across a staged processual model of knowledge transfer, it has demonstrated how the method is able to elicit a more comprehensive set of CSFs from the interview process. It has shown how the findings from a CSF study are not limited to a list of CSFs. The paper has demonstrated how the use of a cross-organisational focus group can provide an effective method to determine the transferability of the findings resulting from the application of the CSF method in a single organisation, to similar organisations. Finally, the paper has provided useful insights for researchers who may consider using the method in future research.

References

- Alazmi, M., and Zairi, M., "Knowledge Management Critical Success Factors", *Total Quality Management*, 14(2): 199-204, 2003.
- Amberg, M., and Wiener, M., "Critical Success Factors of Offshore Software Development Projects", Available at: http://www.international-outsourcing.de/CSF-Tool/csf_identification/research_design.html, 2006.
- Bergeron, F., and Begin, C., "The Use of Critical Success Factors in Evaluation of Information Systems: A Case Study", *Journal of Management Information Systems*, 5(4): 111-124, 1989.
- Boon, O., Corbitt, B., and Peszynski, K., "Reassessing Critical Success Factors for ERP Adoption – A Case Study", *Proceedings of the 8th Pacific Asia Conference on Information Systems*, Association of Information Systems, China, 2184-2190, 2004.
- Boynton, A.C., and Zmud, R.W., "An Assessment of Critical Success Factors", *Sloan Management Review*, 17(27): 84-98, Summer 1984.
- Bullen, C.B., and Rockart, J.F., "A Primer on Critical Success Factors", *CISR Working Paper 69*, Sloan School of Management, Massachusetts Institute of Technology, Cambridge, Massachusetts, 383-423, 1981.
- Cooper, V.A., "Knowledge Transfer in Enterprise IT Support Provision using Web-based Self-service", Unpublished PhD Thesis, Available Deakin University Library, Melbourne, 2007.
- Daniel, R., "Management Information Crisis", *Harvard Business Review*, 39(5): 111-21, 1961.

- Davis, G.B., "Comments on the Critical Success Factors Method for Obtaining Management Information Requirements in article by John F. Rockart", *MIS Quarterly*, 3(3): 57-58, September 1979.
- Delone, W.H., and McLean, E.R., "Information Systems Success: The Quest for the Dependent Variable", *Information Systems Research*, 3(1): 60-95, 1992.
- Ferguson, C.R., and Dickinson, R., "Critical Success Factors for Directors in the Eighties", *Business Horizons*, 25(3): 14-18, May/June 1982.
- Henderson, J.C., Rockart, J.F., and Sifonis, J.G., "Integrating Management Support Systems into Strategic Information Systems Planning", *Journal of Information Systems*, 4(1): 5-24, 1987.
- Hewson W., "Making a Compelling Business Case for CRM", Available at: http://www.hewson.co.uk/sistrum/crm_management_insights/stream4/0001compelling_crm.pdf, 2001.
- Kapella, V.A., "Framework for Incident and Problem Management, White Paper", International Network Services, Available at: http://www.ins.com/downloads/whitepapers/ins_white_paper_incident_management_0403.pdf, 2003.
- Lichtenstein, S., and Swatman, P., "The Potentialities of Focus Groups in e-Business Research: Theory Validation", in *Seeking Success in E-business: A Multi-disciplinary Approach*, Kluwer Academic Publishers, Massachusetts, USA, 207-226, 2003.
- Martin, E.W., "Critical Success Factors of Chief MIS/DP Executives – An Addendum", *MIS Quarterly*, 6(2): 1-9, December 1982.
- Mayring, P., "Qualitative Content Analysis", *Forum Quality Social Research*, 1(2), June 2000
- Munro, M.C., "Comments on Critical Success Factors Work", *MIS Quarterly*, 7(3): 67-68 September, 1983.
- Munro, M.C., and Wheeler, B.R., "Planning Critical Success Factors and Management's Information Requirements", *MIS Quarterly*, 4(4): 27-38, December 1980.
- Peppers, K., Gengler, C.E., and Tuunanen, T., "Extending Critical Success Factors Methodology to Facilitate Broadly Participative Information Systems Planning", *Journal of Management Information Systems*, 20(1): 51-85, 2003.
- Rockart, J., "Chief Executives Define their own Data Needs", *Harvard Business Review*, 52(2): 81-93, 1979.
- Rockart, J.F., and Crescenzi, A.D., "Engaging Top Management in Information Technology", *Sloan Management Review*, 24(4): 3-16, Summer 1984.
- Sabherwal, R., and Kirs, P., "The Alignment between Organisational Critical Success Factors and Information Technology Capability in Academic Institutions", *Decision Sciences*, 25(2): 301-330, 1994.
- Shank, M.E., Boynton, A.C., and Zmud, R.W., "Critical Success Factor Analysis as a Methodology for MIS Planning", *MIS Quarterly*, 11(1): 121-139, June 1985.
- Somers, T.M., and Nelson, K., "The Impact of Critical Success Factors across the Stages of Enterprise Resource Planning Implementations", *Proceedings of the 34th Hawaii International Conference on System Sciences (HICSS'01)*, IEEE Society Press, 2001.
- Walters, E., "CSFs and KPIs Defining and Measuring Business Objectives", *12 Manage Rigour and Relevance*, Available at: http://www.12manage.com/methods_rockart_csfs_kpis.htm, 2006.
- Yin, R.K., *Case Study Research, Design and Methods*, Fourth Edition, Sage Publications, Newbury Park, 2003.
- Zahedi, F., "Reliability of Information Systems Based on the Critical Success Factors – Formulation", *MIS Quarterly*, 11(2): 197-203, June 1987.