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Andrew Laurence Norton

Durham Business School, andrewlnorton@yahoo.co.uk

Yvette May Coulson-Thomas

University of Lincoln

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ESTABLISHING A CRITICAL ERP II IMPLEMENTATION PATHWAY FOR CUSTOMER FACING ORGANISATIONS

Andrew Lawrence Norton

Durham Business School, Durham University, Mill Hill Lane, Durham DH1 3LB, UK.

Telephone: 0191 334 5233

Fax: 0191 334 5201

Email: a.l.norton@durham.ac.uk

Dr Yvette May Coulson-Thomas

University of Lincoln, Brayford Pool, Lincoln LN6 7TS, UK.

Prof. Colin Joseph Coulson-Thomas

University of Greenwich, Old Royal Naval College, London SE10 9LS, UK.

Dr Colin Ashurst

Durham Business School, Durham University, Mill Hill Lane, Durham DH1 3LB, UK.

Abstract

This paper presents a combination model which sets out a critical pathway for ERP II implementation for customer facing organisations (CFOs). The model incorporates a resource based view of implementation and the implementation lifecycle (from conception to completion), allowing identified critical success factors (CSFs) to be considered at each stage. A case study analysis was undertaken to identify potential CSFs. These were subsequently appraised by four senior management members within the project team two years post go-live and cross referenced for validation against the views of seven highly experienced consultants within supplier organisations. Analysis of the validated CSFs using the combination model identified that CFOs require specific CSFs at particular stages of the implementation lifecycle. This type of organisation should invest heavily in people-related CSFs, with a particular emphasis upon these in the exploitation phase.

Keywords: ERP II implementation; customer facing organisation; implementation lifecycle; critical success factors; critical pathway

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Abstract

This paper presents a combination model which sets out a critical pathway for ERP II implementation for customer facing organisations (CFOs). The model incorporates a resource based view of implementation and the implementation lifecycle (from conception to completion), allowing identified critical success factors (CSFs) to be considered at each stage. A case study analysis was undertaken to identify potential CSFs. These were subsequently appraised by four senior management members within the project team two years post go-live and cross referenced for validation against the views of seven highly experienced consultants within supplier organisations. Analysis of the validated CSFs using the combination model identified that CFOs require specific CSFs at particular stages of the implementation lifecycle. This type of organisation should invest heavily in people-related CSFs, with a particular emphasis upon these in the exploitation phase.

1.0 Introduction

Enterprise Resource Planning (ERP) is a software system that operates through a centralised relational database and, as such, is capable of integrating business processes within organisations (Ross & Vitale, 2000). AMR research estimated the global ERP market to be \$28b in 2006 (Jacobson et al., 2007). In addition, AMR research estimates the average cost of an ERP implementation for a fortune 500 company to be between \$40 million and \$240 million, whilst upgrades to ERP II have been reported by AMR and Gartner to cost on average 18% and 30%, respectively, of the initial ERP project cost (Beatty & Williams, 2006). A recent report by Forrester Research has shown that 25% of European and Asian organisations intend to invest in their existing ERP systems in 2011 (Hamerman et al., 2011).

Implementing an ERP system is not an easy task, indeed there have been many high profile accounts of bankruptcy occurring through failed ERP implementations (Davernport, 1998; Kim et al., 2005; Ragowsky & Somers, 2002). The high street retailer, Woolworths, was investing in a substantial ERP II implementation project upgrade to serve its 820 UK stores (Ferguson, 2008) just prior to filing for bankruptcy in 2008. In addition, a report by the Standish Group shows that, of all successfully implemented ERP systems, only about 30% deliver the full benefits initially outlined (Krumbholz et al., 2000). Empirical research has highlighted that even when the

technical implementation itself has been a success, there can be difficulties in establishing the most effective processes for achieving the desired benefits (Al-Mashari & Al-Mudimigh, 2003; Ward et al., 2005), which has been termed technical isomorphism (Batenburg et al., 2008). Implementation problems have resulted in only 35% of all ERP implementations being delivered on time and within budget (Dong et al., 2009).

Extended ERP (ERP II) has been defined as a next generation ERP system and allows internal business systems to be connected with those of the external environment of customers, suppliers and business partners (Bond et al., 2000). ERP II systems can be used in both public and private sector organisations. Benefits that can be realised include: information sharing capability, considerable cost savings, process improvements, improved decision making ability, greater business efficiency, and better management of customer and supplier relationships (Beheshti, 2006). ERP II facilitates electronic customer relationship management (e-CRM), which supports customer service personnel and improves interaction with customers leading to better services and customer satisfaction (Adebanjo, 2003). Customer facing organisations (CFOs), which focus on developing customer facing activities (CFAs), can use this system to design business infrastructure around customers' needs.

Many public sector organisations have CFAs and have therefore been investing in ERP II systems with the hope of achieving improvements in the form of e-CRM. For the public sector, business benefits include e-governance which has been shown to add substantial value to these organisations (Daniel & Ward, 2006). One important example of ERP driven e-governance is the development of online enterprise portals which allow council staff, local residents and business partners instant access to their specific information requirements and associated transactional services.

Research has looked to successful implementations in order to find so-called critical success factors (CSFs) which organisations should incorporate to avoid implementation failures (Nah et al., 2001; Soja, 2006; Verville & Bernadas, 2005; Woo, 2007). The literature appears to relate to CRM CSFs rather than those specifically relating to CFOs implementing ERP II. The current research has identified a critical pathway that CFOs should follow to successfully implement ERP II.

2.0 Research design and methodology

The current research focused on revealing the CSFs for a CFO which delivered a successful ERP/II implementation. All methods applied adhered to the ethics and safety protocols of the Durham Business School Sub-Committee for Ethics.

This research undertook a positivist approach, relying upon empirical observation of a successful implementation to discover patterns existing within its social context (Denscombe, 2002). Careful attention was paid to the research design, data collection and data analysis in order to ensure rigorous analysis (Dube' & Pare', 2003). The research design involved a review of the extant literature on critical issues for ERP/ERP/II implementation, the identification of appropriate data collection points (Figure 1), the selection of an appropriate case study environment, the development of a combination model for understanding the identified issues, the preparation of interviews with senior management members within an ERP/II project team, and subsequently with experienced consultants within supplier organisations for validating prospective CSFs.

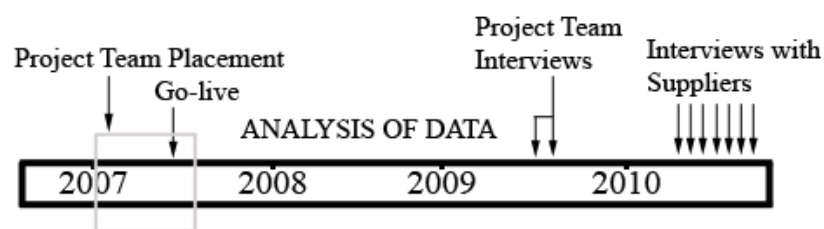


Figure 1. Data collection points (key research events)

2.1 Critical success factor analysis

Some of the earliest research in the field of information systems (IS) adopted a CSF methodology (Rockart, 1979; Rockart & Flannery, 1983), and it is now a standardised methodology for this type of research. Several studies have reviewed and ranked CSFs identified for ERP implementations (Finney & Corbett, 2007; Somers & Nelson, 2001). Although the CSFs described by these researchers are similar, there is no general consensus as to their prioritisation, with the exception of top management support, nor is there any allocation to particular stages of the implementation lifecycle. These studies have provided a useful theoretical background by which to evaluate the current research findings.

2.2 Case study analysis of a CFO

The issues associated with ERP/ERP II implementations are complex; they embrace change at many levels and different aspects are affected all of which need monitoring simultaneously. The current research adopted case study analysis at the outset to assist in the formulation of ideas (Benbasat et al., 1987). Case study analysis allowed these issues to be evaluated in their real life context (Yin, 1994). Sekaran (2003) suggests that due to the qualitative nature of case study analysis, it can be used to reveal the causative factors in successful IS implementations.

A single case study was undertaken as this allowed for a more detailed evaluation of prospective factors contributing towards the successful outcome. During this stage of the empirical research, the six sources of evidence listed by Yin (1994) were incorporated into the research methodology: (i) documentation, (ii) archival records, (iii) interviews, (iv) direct observations, (v) participant observations, and (vi) physical artefacts. To facilitate participant observation the researcher took on a role of employee within the project team, preceding and during the delivery phase of the ERP II implementation. This is an approach ideally suited for the collection of data in organisational and management research (Easterby-Smith et al., 1993). Information gathered from the participant observation was used to formulate the prospective CSFs evaluated during this research.

The City of Bradford Metropolitan District Council, a UK local authority which serves a population of 477,770 with a staffing capacity of 6,000, was selected for this case study. The council invested £170m in 2005 in a project called Bradford-i and the main aim was to improve efficiency and customer service through ERP II (Marshall, 2008). The system went live in 2007. IBM and Serco worked in partnership to deliver a SAP based ERP II system. Benefits were described as: “Web-enabled secure access to core applications decreases the need for paper forms and manual data entry – reducing administrative workload and improving data quality. Integration of finance and procurement processes boosts efficiency and aids auditability and compliance. Employees can now interact directly with HR systems to perform administrative tasks. Simplified IT architecture improves flexibility and makes it easier to add new services.” (IBM, 2010).

2.3 Interview analysis of the prospective CSFs

Structured interviews were undertaken in order to understand which of the resource allocations contributed towards the realisation of benefits initially outlined. Compared with other research methods, face-to-face interviews offer little chance of misinterpretation (Hodgson, 1987) and this two-way dialogue offered the best way to reveal valuable personal opinions from interviewees. To ensure reliability, the seven stages of interview design described by Kvale (1996) were incorporated into the preparation of all of the interviews held. Interviewees were presented with a copy of the questionnaire a week before the interview and transcriptions of their statements were presented back to them for self-review purposes one week after each interview.

Initially, follow-up interviews were scheduled with key Bradford-i project team members two years post go-live. The questionnaire prepared was structured around specific issues identified in the case study (36 prospective CSFs). These were validated using a funnel approach (Bickart, 1993), whereby a general open (non leading) question regarding each specific issue was followed by a leading question, which contained the identified CSF. Special attention was paid to the terminology (Couper, 1996; Edmondson, 1996; O'Brien, 1984) to avoid ambiguity (Abramson & Ostrom, 1994; Bollinger, 2001; Stout, 1994) in decoding the responses. To ensure that each prospective CSF was evaluated by an appropriate person, the head of training answered the people-related questions, whilst the accountancy manager, programme change manager and technical manager answered the process and technology-related questions.

Consultant interviews were held four months after the completion of the project team interviews. Within the field of ERP/ERP II research, interviewing consultant practitioners has proved to be a successful way to provide a taxonomy of CSFs (Parr & Shanks, 2000; Taylor, 2005). The views of the client organisation were presented to seven experienced consultants within selected organisations to further validate the findings. The consultants involved included: two founding directors, one sales director, one general manager, one head of sales and marketing, one project team manager and one team leader of global IS solutions. These views assisted in gaining a greater understanding of opportunities presented during ERP II implementations.

2.4 Data analysis

The six steps of analysis described by Kvale (1996) were adhered to during the analysis of the information obtained in the current research. The information was presented using a combination model that was developed by the author. In total, there were considered to be eight responses, or organisational views; the Bradford-i project management team and seven different ERP/ERP II suppliers. The factors were then classified as being strongly supported (7 or 8 respondents agreeing it was critical), marginally supported (4 to 6), weakly supported (1 to 3) and unsupported (0). Heat mapping was used to visually display all factors within the combination model. All strongly supported CSFs were then analysed by a process of discourse dissection. Meredith (1998) outlines that there is little benefit in adopting statistical analysis to single case study research, noting that richness of data is key for qualitative analysis.

2.5 Model application to identify the CSFs relating to benefit realisation

The combination model was based upon the work of Melville, Kraemer et al. (2004) and Ashurst, Doherty et al. (2008) and was developed to map CSFs to the different stages of the implementation lifecycle. The IT Business Value model of Melville, Kraemer et al. (2004) was used to classify identified CSFs into the three resource categories (people-related, process-related and technology-related) and subsequently the Benefits Realisation Capability model of Ashurst, Doherty et al. (2008) was used to locate them at appropriate stages of the implementation lifecycle (benefits planning, benefits delivery, benefits review, and benefits exploitation).

3.0 Findings

A total of 19 CSFs were classified as being strongly supported from the interview feedback and considered to be critical for successful ERP II implementations for CFOs. By using the combination model developed by the author, these CSFs were allocated to the different stages of the implementation. This generated critical pathway steps from a resource based perspective, which lead to a successful ERP II implementation (Figure 2).

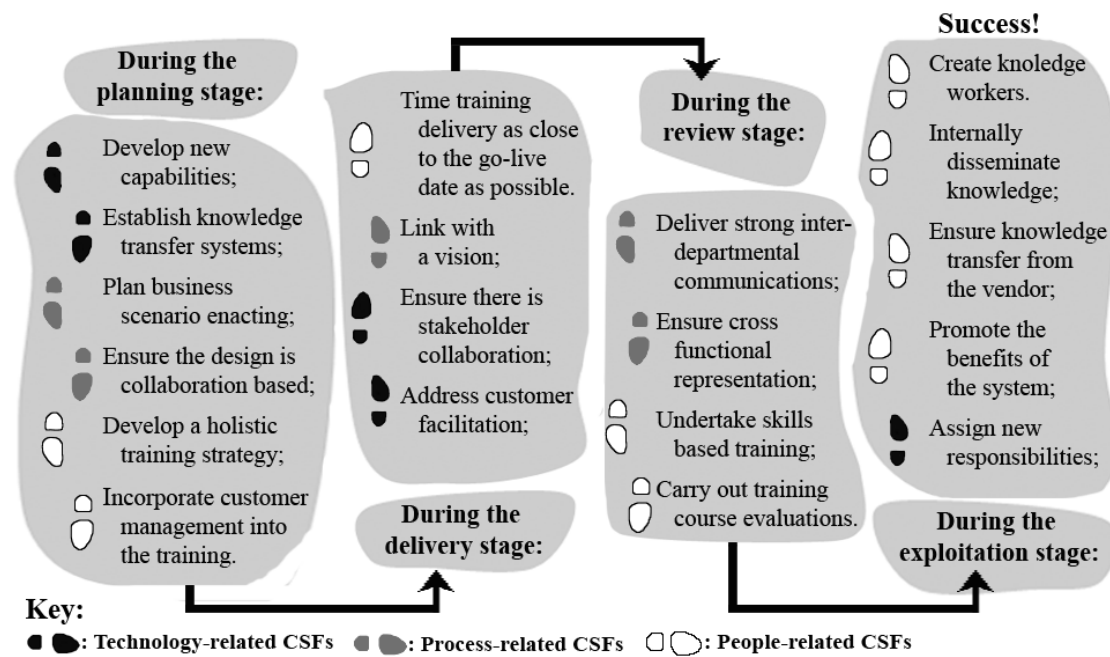


Figure 2. Critical pathway steps for CFOs implementing ERP II

3.1 Analysis of identified CSFs for CFOs

From a resource based perspective, people related factors account for nearly 50% of the CSFs identified in this research, whilst process and technology account equally for the remaining CSFs (Figure 3). This immediately highlights that whilst critical issues reside across the resource base of the CFO, particular attention must be paid towards people (training) related issues.

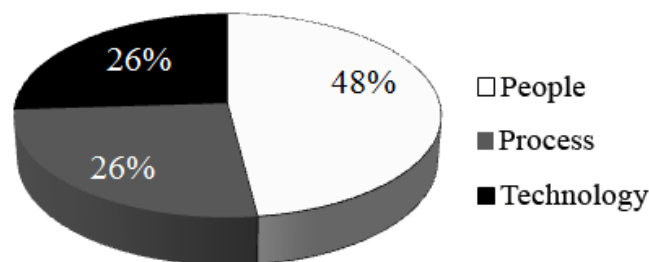


Figure 3. CSFs by resource base

From a benefit realisation perspective, our findings show that although opportunities present themselves throughout the implementation lifecycle, people-related benefits can be maximised by allocating resources primarily in the exploitation phase, whilst process-related resources should be allocated mainly into the planning and reviewing stages and technology-related resources largely allocated into both the planning and delivery stages (Table 1).

	PLANNING	DELIVERY	REVIEW	EXPLOITATION	
PEOPLE	25%	12%	25%	38%	100%
PROCESS	40%	20%	40%	0%	100%
TECHNOLOGY	40%	40%	0%	20%	100%

Table 1. CSFs by implementation lifecycle.

3.2 The technology-related CSFs identified for CFOs

Within the area of technology (Figure 2), our findings show that during the planning stage it is critical to develop new capabilities by clearly explaining desired outcomes of the system to the supplier(s). Consultants of software suppliers and application service providers can usually “see where an area of an application would be of benefit to users ... then drive that forward” (Simon Hulse, Team Leader of Global IS Solutions, Torex). During the planning stage, inputs and activities must be clearly outlined for each stakeholder. It is critical to establish knowledge transfer systems from the supplier to the client and, as part of this the client must set up an internal network to foster this. For example, office space should be allocated to accommodate members of the supplier staff, so that they feel more integrated with the team.

During the delivery stage, CFOs must strive to improve customer facilitation through portal integration, providing a fully operational and integrated interface. In the case of the City of Bradford Metropolitan District Council, this was the one stop shop which was developed and maximised to improve transactional opportunities for the residents of Bradford. It is also critical to ensure strong stakeholder collaborations, possible through a contract. “The object of a contract is to facilitate an ongoing client supplier relationship” (Dominic Rea, Sales Director, K3 Business Technology Group), “but the contract mustn’t be so inflexible that you will just push the technology in and you don’t look at the benefits” (Hamid Aghassi, Founding Director, 1 Team Energy).

In order to exploit the benefits of the implementation it is critical to assign new responsibilities. Job roles and staff skills must be thoroughly mapped in order to help the managers to assign individual responsibilities: “If you get your role outright and you get your process mapping right then people understand what their responsibilities are” (Wes Simmons, General Manager, The Sage Group plc).

3.3 The process-related CSFs identified for CFOs

Within the area of process (Figure 2), business scenario enacting should be planned and carried out by acting out representations of real accounts, considering “the go-live should be a non-event and if you have done this bit correctly then it will be” (Dominic Rea). In addition, a collaboration based design should be developed whereby the suppliers “have expertise, the client has an understanding of the existing way of working” (Hamid Aghassi). This is to avoid technical isomorphism occurring.

Delivery of the implementation should be linked with the wider corporate vision so “that vision is translated into reality” (Hamid Aghassi). This is about “cascading the goals down ... because it is much harder for someone who is pushing the buttons to get the big picture, but they need to understand their part in the picture” (Stephanie Snaith, Founding Director, Gradient Consulting).

During the review stage, it is critical to ensure strong interdepartmental communications, and “the clients themselves have to do this” (Dominic Rea). This can be achieved through establishing a transition champion network; the transition champions communicate the benefits to the end-users and relay the problems back to the project team. In addition, cross-functional representation is critical, whereby internal members are seconded from key departments to form part of the project team. A full representation allows all departments and services to be considered during the implementation. This is particularly important at this stage so that departments can relay the problems that have arisen to a like-minded person within the project team who understands the implications. These problems can then be successfully relayed to the supplier, or internal IT, for action. “It is suicidal to do otherwise.” (Dominic Rea).

3.4 The people-related CSFs identified for CFOs

Within the area of people (Figure 2), during the planning stage it is critical to develop a holistic training strategy which integrates aspects of customer management within functional training, so as to address any customer facing transactional aspects of this new system. By taking the views of many stakeholders including those of the supplier who knows the software and those of the client who knows the organisation, a holistic training strategy will encapture all essential training requirements so that it is bespoke

for each department and adapted towards the customer facing services they offer. Integrating an element of customer management into the training material ensures the end-users learn how to use the system in performing their roles.

During the delivery stage of an implementation, the timing of training delivery is critical: “It is absolutely critical that you time the training before the go-live date” (Hamid Aghassi); “it needs to be close enough to the go-live for them to remember what they were shown” (Dominic Rea), “but enough time for them to practise” (Staphanie Snaith).

During the review stage, it is critical to undertake skills based training by segregating staff into managers and employees, and also separating core users from standard users so that the core training is targeted and “more detailed for the core users” (Ian Farrar, Head of Sales and Marketing, Datawright Computer Services Limited) once the system is live. It is also critical to evaluate the mainstream training courses at this stage, which is sometimes seen as “more analysis of the consultant to see if there is any feedback that indicates the consultants themselves need more training.” (Neil Rushby, Project Team Manager, Access Supply Chain).

In order to fully exploit the benefits, it is critical to promote the benefits of the system which is a role of the transition champions, these “have to be internal staff”(Hamid Aghassi) so that internal values are upheld. In order to fully exploit the benefits, it is also critical to have ensured knowledge transfer from the vendor which can be achieved by having them train the trainers. The client has “to take ownership of the system, lock, stock and barrel and train the trainer is essential to that” (Dominic Rea), ensuring they can initiate their own future training requirements. To internally disseminate knowledge, a network of super users needs to be appointed and “you have got to make sure the super users see it as a long term job” (Wes Simmons). It is also critical to create knowledge workers who will be trained post go-live to deliver future benefits from the new ERP system. This is critical to avoid “system atrophies” (Wes Simmons).

4.0 Discussion

ERP II offers end-users the ability to use information to analyse and provide the information required for both pro-active and re-active interaction with the customer (Pan & Lee, 2003). Within the public sector, ERP II can be used to facilitate eCitizen relationship, which is particularly beneficial within local government (Wong et al., 2007). However, there is little research for CFOs, particularly public sector organisations implementing ERP II, looking to improve CFAs. Identifying CSFs at different stages for reengineering and introducing new ways of working is a methodology used in the EU COBRA project on corporate understanding (Coulson-Thomas, 1995). The current research has used this approach to identify critical pathway steps for successful ERP II implementations for CFOs. Implementation teams need to understand which CSFs to concentrate upon at each stage and that resource allocation may also need to be applied differently at each stage.

Organisations have found it difficult to establish the most effective processes for achieving the desired benefits in ERP II implementations (Al-Mashari & Al-Mudimigh, 2003; Ward et al., 2005). To overcome technical isomorphism, it is essential to develop a good working relationship with the supplier. Failed ERP II implementations have occurred on account of organisations not achieving this (Sharif & Irani, 2005). In the current research, one consultant commented that: “We have a motto which says ‘One team one plan’. One team one plan is all about this collaboration” (Hamid Aghassi), and this ensures that the technical capabilities and process requirements are aligned.

Indoctrinating staff to the new ways of an ERP system, and training them to a level at which they feel comfortable in utilising the system is key to benefit realisation from ERP (Gardiner et al., 2002). It is important that the new ways of working are strongly communicated to the worker (Boersma & Kingma, 2005). Our findings, regarding ERP II, corroborate this observation; we observed that opportunities for benefit realisation reside within the users of the system and, as such, particular attention should be paid to people-related issues such as training. Organisations should invest in training, just as they do in technology, to deliver continual post-implementation training.

4.2 Previously advocated CSF for ERP and CRM implementations

Top management support has been identified as the single most important CSF in both ERP and CRM implementations (Finney & Corbett, 2007; King & Burgess, 2008; Somers & Nelson, 2001). The current research provides understanding of the extent of top management support and clarification as to the involvement of the CEO.

Top management support is critical for initialising the implementation project and keeping it on track. However, the nature of the support should not extend to CEO involvement in the details, which could be counterproductive, and there is no need for them to play an operational role overly interfering in the critical pathway steps of the implementation. Two consultants felt that CEO involvement could misdirect the project; Wes Simmons commented that “Some CEOs have a very strange view of how their business works, I would say wrong”, elaborating that “CEOs aren’t involved in the day-to-day enough and what happens is they ... start to cut a really big corner off and the people involved are going: “no, no the devil is in the detail!” ”. This view was reinforced by Ian Farrar who commented that “CEOs tend to be non-detailed guys; they want to know the top level information, they don’t want to get involved with the detail, and they leave that to the other board members or management team”. In summary, in the words of Wes Simmons: “So senior management support, senior management encouragement, yes, actually having a CEO in the design team, No.”.

5.0 Conclusions

The current research identifies critical pathway steps for CFOs ensuring pertinent CSFs are used to deliver a successful ERP II implementation. The newly developed combination model reveals the importance of devoting attention and resources to people-related activities, such as pre- and post-implementation training. The people-related CSFs are weighted towards the exploitation phase of the implementation, the process-related CSFs towards the planning and review stages and the technology-related CSFs towards the planning and delivery stages. It has been suggested that ERP II upgrades need to be treated as a new project and organisations should not underestimate the time and resources required (Beatty & Williams, 2006). We therefore recommend that the critical pathway steps identified in the current research for an ERP II implementation should also be considered for upgrade initiatives.

This research recognises that top management support is critical, however, it identifies that CFOs should pre-define the role of the CEO involvement, so as to maximise their political influence and their role in creating a supportive environment but avoid derailment due to detailed operational involvement in project implementation.

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