Critical Success Factors for Information Systems
Outsourcing Management: A Software Development Lifecycle View

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ABSTRACT
Information systems (IS) outsourcing is a serious commitment – a formal relationship underpinned by a contractual agreement, with long-term consequences among two or more organisations. Many organisations end up frustrated as they learn that their attempts at IS outsourcing have failed. However, some failures could be avoided with knowledge of common pitfalls and critical success factors of such IS outsourcing contracts. This paper investigates essential aspects of IS outsourcing management during the software development life cycle. The survey results are reported in conjunction with findings in the literature of similar studies in other markets, and unique contributors to IS outsourcing in this particular context in the South African corporate market, are identified.

Categories and Subject Descriptors
H.1.1 [Information Systems]: Models and Principles; Systems and Information Theory; Value of Information

General Terms
Management, Documentation.

Keywords
Information systems outsourcing, outsourcing critical success factors.

1. INTRODUCTION
Outsourcing as a business practice is flourishing in almost every domain. Organisations are outsourcing software development, innovation and even functional areas such as marketing, human resource administration, finance and accounting [42]. Outsourcing of knowledge intensive and white-collar work is also increasing and it takes place in organisational core competency areas such as research and development – an area that is potentially a key differentiator between an organisation and its competitors [6; 48]. The rationale behind outsourcing in knowledge intensive environments is to form alliances with, and take advantage of, the added value of mature practices of outsource partners [42; 56] and to benefit from the complimentary skill sets of outsource suppliers [6; 48].

As the information technology field matures and the outsourcing trend gain momentum, a variety of reasons for initiating outsourcing decisions transpire in an environment of hyper competition, acquisitions, stagnant economy and corporate debts [3; 5]. In an environment where survival depends on cost-cutting and downsizing, information systems (IS) becomes a probable target for outsourcing due to the fact that it is difficult to measure the direct organisational contribution of the IS function if performed in-house [9; 17]. For an organisation in which IS is not a core competence, outsourcing IS services or functions is a possible route to dealing with continuous, technological evolution and institutional pressures [2; 3].

However, there is evidence to suggest that organisations are not achieving the desired benefits from IS outsourcing as found by Lacity and Willcocks [31]. They conducted case study research in the IS outsourcing context in the United States, United Kingdom and Australia, using data from senior IS managers who were asked to rate their overall success with IS outsourcing. They established that 50% of the 192 respondents rated their overall satisfaction as a 5 or above out of 7, while 29% indicated that their organisations were dissatisfied with their IS outsourcing arrangements with a score of 3 or below. A survey conducted by PA Consulting Group [35] found that only 5% of organisations surveyed achieved high levels of benefits from IS outsourcing.

Irrespective of the outsourcing decision, the IS outsourcing lifecycle is made up of several processes and sub-processes [7;
One of the most widely used models of developing new IS systems is a project following a software development lifecycle (SDLC) with stages such as project definition, business and system analysis, system design, programming, implementation and post-implementation support. Exercising proper control over a project enables a project team to cope with organisational constraints in order to ensure successful completion of the project [56].

The objective of this paper is to analyse and describe critical success factors of IS outsourcing management with specific reference to the SDLC. These critical success factors were derived from a survey conducted at a blue chip company in South Africa and was based on experiences related to a major IS outsourcing arrangement. Section 2 provides the theoretical background to the paper. In section 3 the critical success factors based on the SDLC derived from survey findings are described. Section 4 comprises a summary of the application of the critical success factors and section 5 the conclusion.

2. BACKGROUND

Organisations constantly search for ways to grow and maintain their competitive edge and today’s business activities depend greatly on information technology (IT) enablement [3; 5]. This demands that IT maintenance is regarded as a critical process that needs to be performed with the highest possible quality. It requires organisation specific knowledge about internal business operations and explicit technical knowledge to achieve the desired IT quality. IT outsourcing is complex and a potential daunting task if the organisation is unsure about its implications, its required business performance, its essential IT support and knowledge management [5].

IT outsourcing is not a recent management trend and has been present in its different forms as early as the 1960s [2; 5; 14]. By outsourcing, organisations give way to a greater dependence on external service providers and the scope of IT outsourcing varies from data centres to application development, user and desktop support, operations and architecture [3; 31; 32]. Some organisations follow a smart-sourcing approach where strategic applications are retained, while services that suppliers can perform more efficiently, are outsourced [8; 30]. Others adopt a multi-sourcing approach where outsourcing contracts are awarded to multiple outsourcing vendors [20; 39]. However, irrespective of the scope of IT outsourcing, roles, responsibilities, governance and organisational relations, IT outsourcing problems have organisation specific characteristics and vary considerably from one organisation to the next. These characteristics must be understood as it impacts the perceived success of the IT outsourcing arrangement [2; 5].

While IT is a fundamental component of any modern information system [40], IT drives the development of new information systems [29; 33]. For the purpose of this paper, the term information systems is used to refer to computer-based information systems, i.e. formal organisational systems that rely on computer technology.

In section 2.1 we provide an overview of IS outsourcing, section 2.2 lists the key drivers that inform IS outsourcing and section 2.3 outlines the scope of IS outsourcing. Critical success factors that impacts the success or failure of IS outsourcing arrangements are described in section 2.4 and section 2.5 provides an overview of the SDLC in application software implementation projects. In section 2.6 we provide a summary of the case study environment and the process followed to extract the critical success factors.

2.1 IS Outsourcing as a Business Phenomenon

IS outsourcing is a well established and growing management practice and the trend towards IS outsourcing is perceived to reflect maturity in the information technology world [19; 53]. IS outsourcing is the practice of handing over the planning, management and operation of all or a part of its IS functions to an independent third party under the terms of a formalised service level agreement in order to achieve its objectives [2; 7]. It may be characterised by the transfer of assets from the customer to the outsource provider [32; 53]. This view of outsourcing also applies to subcontracting in the IS or IT field as it is envisaged as the purchase of goods or services that was previously provided internally [2]. In the 21st century, a rich and mature IS outsourcing market exists, offering a wide variety of services to meet different needs, and even further growth is predicted [53].

The infrastructure management business, consisting of remote and on-site support services, server management, WAN, LAN and help desk services, showed an average growth rate of 14% in 2006 for vendors not based in India. For India-based service providers, the growth rate was a spectacular 71% [45]. Gartner’s [22] forecast shows that worldwide core information technology outsourcing is expected to grow from $262 billion in 2008 to $332 billion in 2012, which represents a five year compound annual growth rate of 4.9%. Gartner expects a 4.6% compound annual growth rate for 2010, 5.6% for 2011 and 6% for 2012. These percentages are forecasted based on an analysis of a range of IS services and sourcing options related to infrastructure and application management that organisations purchase from outsourcers.

2.2 Key Drivers for IS Outsourcing

Sparrow [53] pointed out that the topic of IS outsourcing generates heated deliberation among IS professionals as there are arguments against and in favour of IS outsourcing. Some IS professionals perceive it as an enlightened approach to the management of routine information technology services and a mature development of partnerships with suppliers [53]. Adversaries argue that outsourcing involves major risks with loss of control, loss of qualified IS resources, loss of flexibility and loss of competitive advantage in information management [44]. Others see it as symptomatic of an organisation that has failed to grasp the strategic importance of such an arrangement and a lack of investment in the development of their IS staff – especially where the outsourcing arrangement transfer staff from the organisation to the service provider [53].

Currie and Pouloudi [16] provide a breakdown of five business drivers governing these outsourcing and insourcing decisions:
market, financial, organisational, managerial and technical factors. Several reasons are specified by organisations for adopting IS outsourcing, including the benefits and advantages that organisations anticipate to realise [53]. Outsourcing must give an organisation a strategic advantage and involves judgements about quantitative and qualitative factors [2]. If it fails to do so, then an outsourcing arrangement should not be considered [52]. A summary of outsourcing reasons, as well as arguments against IS outsourcing, are depicted in Table 1. Cost reduction is the single most important tactical reason for IS outsourcing and financial advantages of outsourcing include cost reduction, cost predictability and capital expenditure reduction. Organisations see IS outsourcing as an integral part of their overall business strategy as it allows the organisation to focus on what it does best and introduces technology in support of new business development. IS outsourcing can be used selectively to introduce new technology or applications assigned to specialist resources and by utilising a big team of outsourced developers, products can be delivered expeditiously and significantly reducing time to market.

Organisations, including their IS departments, undergo major reorganisation, and outsourcing can be used to facilitate a smoother and quicker transition, or support mergers and acquisitions, by integrating or splitting off IS departments. Organisations outsourcing in anticipation that the outsource supplier will offer world class service and since they specialise in IS as their core business, they will be able to offer extensive investment in leading edge technology, methodologies and people. IS source providers can provide access to new skills, capabilities, world class resources and quicker implementation of technological changes. Knowledge and ideas that could stimulate in-house thinking are achieved by engaging an external entity, well trained and experienced in management.

Arguments against IS outsourcing include a negative impact on business strategy where an application or process gives an organisation strategic or competitive advantage, or where applications or processes directly interact on a personal level with customers. The perception that IS outsourcing is cheap may result in escalating costs, while a loss of flexibility and control may come about as service changes have to be negotiated and agreed with the outsource service provider and an organisation cannot guarantee that its needs and priorities will be recognised and adopted by the supplier.

A major concern for any organisation considering outsourcing is the impact on employees in the IS department and a poorly planned outsourcing arrangement may lead to loss of talent and expertise within the organisation. Such loss of technical expertise through outsourcing can leave organisations vulnerable to poor service and inflated prices. An outsourcing relationship allows supplier access to information and other assets that the organisation would normally regard as confidential. This may result in increased potential for misuse of confidential information and increased difficulty in protecting confidentiality.

Outsourcing arrangements are typically long term contracts and organisations will face major business change driven by technology developments, customer needs, political or legislative change during such a period. No outsourcing contract can foresee what these changes will be and the ability to modify aspects of the arrangement may lack flexibility.

In an instance where employees are not ready, not prepared or not motivated to work with the outsource vendor and do not make the cultural shift - switching from in-house work to working with outsourcing vendor, will not be achieved.

### 2.3 The Scope of IS Outsourcing

IS outsourcing has grown drastically in the past decade. Growth is particularly strongly linked to periods of economic downturn when IS outsourcing is seen as a way to contain costs as organisations attempt to lower IS spending and convert unpredictable costs into fixed costs [53]. The number of IS services being outsourced increases rapidly and essentials that may be outsourced are grouped as: (1) software development and services, (2) IS and support and (3) information technology enabled services [9; 11; 52]. The first category, *software development and services*, refers to the entire cycle of software development from system analysis and design to testing and maintenance. The second category *IS and support* relates to infrastructure services (networks, system support) and technical support and the third category, *information technology enabled services*, refers to services that use information technology as an enabler, including business process outsourcing [11; 52].

### 2.4 Success / Failure of IS Outsourcing

Managing successful IS outsourcing relationships is concerned with exploiting outsourcing opportunities and avoiding outsourcing threats. For an organisation and outsource vendor in an outsourcing relationship to handle both opportunities and threats, they need a mutual understanding of the stage of their relationship [26]. The management of an in-house IS function and an outsourcing arrangement are infinitely different processes.

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<table>
<thead>
<tr>
<th>Table 1: Arguments for and against IS outsourcing</th>
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<tbody>
<tr>
<td><strong>Reasons for IS outsourcing</strong></td>
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<tr>
<td>Enabling the organisation to focus on its core business [7; 13; 49; 52; 53]</td>
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<tr>
<td>New business development [53]</td>
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<tr>
<td>Reduced time to market [9; 21; 23]</td>
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<tr>
<td>Assisting major reorganisations [18; 53]</td>
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<tr>
<td>Quality and service improvements [7; 10; 49; 53]</td>
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<tr>
<td>Access to technical expertise [2; 8; 10; 49; 52; 53]</td>
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<tr>
<td>Quality improvement [2; 49; 52]</td>
</tr>
<tr>
<td>Financial advantages and cost reduction [2; 7; 52; 53]</td>
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<tr>
<td>Risk sharing [2; 52]</td>
</tr>
<tr>
<td>Flexibility and control [9; 23; 49; 52; 53]</td>
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<tr>
<td>Effective management [13; 52]</td>
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IS outsourcing already implies a significant difference in strategic and operational mechanisms as, in addition to this change, managing outputs replaces managing inputs and negotiation replaces direct control. The changes required in the core competencies of the IS organisation, as well as the ability to manage an IS outsourcing arrangement must therefore not be underestimated. According to research concluded by Cullen and Willcocks [15], organisational inexperience in IS outsourcing is the most significant problem reported by organisations.

If an outsourcing arrangement is to be successful, it needs to be managed with care, attention to detail, vision about what might be achieved, close monitoring of financial issues and sensitivity to the needs of different stakeholders [2]. Both the organisation and the vendor need to invest time in gaining a deeper understanding of each other’s working culture, establishing lines of communication between the two organisations and making sure that all those working on the outsourcing initiative are well informed, confident and motivated [53].

A summary of critical success factors from the literature, which underpin effective management of IS outsourcing, is summarised in Table 2. Good contract management skills and cost management are critical success factors that apply to the organisation as well as the vendor and IS outsourcing arrangements are typically 5-10 year contracts and organisations will face major business change driven by technology developments, customer needs, political or legislative change. IS outsourcing services must be delivered not only to specifications and service level agreements, but it must also focus on continuous improvement where the organisation understands and reacts to its requirements. The supplier must have quality staff, good staff management practices and provide superior technical expertise. There must be ongoing and effective communication between the organisation and vendor. Both parties must have good contract management skills, processes and people.

<table>
<thead>
<tr>
<th>Critical Success Factor</th>
<th>Description</th>
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<tbody>
<tr>
<td>Delivery performance</td>
<td>Services must be delivered not only to expectations, specifications and quality, but improved continuously</td>
</tr>
<tr>
<td>Good contract management</td>
<td>Both parties must have good contract management skills, processes and people</td>
</tr>
<tr>
<td>Strong relationships</td>
<td>The relationship must be strong, with a team approach supported by a good understanding and trust between the parties</td>
</tr>
<tr>
<td>Staff management</td>
<td>The supplier must have quality staff and good staff management</td>
</tr>
<tr>
<td>Cost management</td>
<td>Both parties must have capable cost and financial management</td>
</tr>
<tr>
<td>Understand the customer</td>
<td>The supplier must understand and listen to the customer organisation and react to its needs</td>
</tr>
<tr>
<td>Use service level agreements</td>
<td>The vital use of service level agreements and principles service level agreements are designed to achieve</td>
</tr>
<tr>
<td>Maintain control</td>
<td>The organisation must control the arrangement, processes and data and ensure it stays competitive</td>
</tr>
<tr>
<td>Be flexible</td>
<td>Flexibility and the ability to modify any aspect of the arrangement, as required, must be incorporated</td>
</tr>
<tr>
<td>Communicate</td>
<td>There must be ongoing and effective communication between parties</td>
</tr>
<tr>
<td>Technical expertise</td>
<td>The supplier must provide quality technical expertise</td>
</tr>
<tr>
<td>Integrate the services</td>
<td>The management of integration across different suppliers, the amount of change control required and the need to define how the bridging role between services will be managed must be addressed</td>
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### 2.5 SDLC in Application Software Implementation Projects

Project management for planning and supervision of the defined tasks are key specialist skills required to ensure an effective outsourcing process [1]. Software development, as an IS service as described in section 2.3, is a good candidate for outsourcing [52]. Numerous models of the software development lifecycle exists [15; 24; 27]. One such software lifecycle model is the stage-wise model that suggests that software should be developed in successive stages consisting of concept, feasibility study, requirement definition, design, programming, testing, integration, system test and deployment. The waterfall model was refined from the stage-wise model as it was recognised that feedback loops are required to the previous stage of the model. The initial stages concept and feasibility study refer to the business idea and the business case for implementing it. The requirement definition phase includes completed and validated specifications of functional and non-functional requirements.

**Systems design** points to the completed and validated overall architecture for the system. Programming denotes the activity of developing or configuring software, while **unit testing** is the subsequent testing of the developed components. Integration takes place when all unit tested components are incorporated together and **system test** refers to the testing of these integrated components that constitutes the system. Deployment points to the roll out and implementation of the signed off system [54]. Although established software development methodologies exist today, the project team in this instance adopted their own methodology based on the waterfall model.

### 2.6 Method Followed to Determine the Critical Success Factors

The purpose of our research was to determine critical success factors for IS outsourcing management from an SDLC perspective. In order to do so, we collected feedback via a questionnaire from a multi-vendor, cross-functional project team that have concluded a multi-year IS outsourcing assignment. The feedback collected from the survey was clarified through interviews with project and stakeholder team members and was enriched with project lessons learnt reports compiled.

#### 2.6.1 Case Study Environment

The company where the case study was concluded operates in a competitive market in South Africa and in an advanced technology environment. Product and services are key
differentiators and technology enablement plays a significant and key role within this company.

A project was initiated to replace a legacy application with a new solution and a business case to outsource this work, was defined. The project was outsourced to multiple vendors and a SDLC as described in section 2.5 was used to plan and execute the project. The average project team size based in South Africa was 110 people, with 90 more resources located in 5 different countries around the world. It was a requirement that the final solution interfaces to 32 legacy applications and 22 million customer records, as well as 108 million product instances, were ultimately migrated. During the life of the project, 653 change requests were logged, 27 cycles of system integration and user acceptance testing were performed, 34 major software releases were promoted from development to testing environments, and more than 15 000 test cases were executed successfully in the final cycles. The project oversaw the training of almost 1000 geographically distributed people on 12 different courses and was concluded over a 35 month period.

### 2.6.2 Survey Design

The survey was designed to obtain both quantitative and qualitative feedback from project resources and business stakeholders. The survey consisted of 12 constructs with a total of 110 questions. The first seven question constructs were designed aligned to the project SDLC. The last five constructs refer to project activities that formed part of the overall project and were relevant for all SDLC components. The survey constructs, the SDLC components and the conceptual framework for the survey, is depicted in Figure 1. SDLC component 1, concept, and SDLC component 2, feasibility study, were not included in the survey as the project was initiated after the feasibility study was signed off and the focus of the survey specifically dealt with implementation of the approved concept. SDLC component 7, deployment, was split into three constructs in order to collect specific feedback about the different components of deployment namely data migration, cutover and transition and business integration.

- **Construct 1 (SDLC component 3) is requirement definition** and includes business and functional requirements, as well as operational processes and procedures and performance requirements.
- **Construct 2 (SDLC component 4) is design** and comprises of overall solution architecture, reporting solution design, IS operations process modelling and IS infrastructure and environments.

![Figure 1: Conceptual framework for survey design](image)

Each question used a 4-point rating scale, namely 0-not at all, 1-not very, 3-somewhat and 5-very well, as well as an opportunity to collect open-ended comments at individual question level.

The questionnaire was distributed to 78 people after the project was concluded. This target group consisted of project team
Table 3: Critical success factors for requirement definition

- Involvement, participation and availability of client organisation business users and subject matter experts are key
- Business requirements must be defined explicitly and not be implicit knowledge in employees' heads
- Business processes must be recent and must be maintained
- Clear definition of cross dependencies between departments must be available
- Control and change management of business requirement changes must be managed and communicated
- Physical sign off of business requirements and resultant accountability must be monitored and any resultant risk mitigated
- Strong focus should be given to the reporting solution when defining business requirements
- Functional documentation for legacy systems and interfaces must be made available
- Focus should be given to security and performance requirements based on metrics of existing systems in this SDLC component already
- Maintain one point of reference for test case and create an effective functionality traceability matrix
- Management of project resource motivation and experiences during this SDLC phase sets an important baseline for the rest of the project

Outcomes of the Survey Conducted

A response rate of 38% was achieved of which 66% was from outsourcing vendors and 34% from the client organisation. Quantitative feedback was calculated using simple averages. Unanswered questions were coded with a null value. Qualitative feedback was consolidated and coded to identify themes. Figure 2 provides a summary of overall feedback by construct.

Only 4 constructs were rated higher than 3, namely data migration, cutover and transition, business integration and project control and management. The three content areas that scored the lowest were requirement definition, design and programming and testing.

The qualitative comments to the open-ended questions were collated per construct and the content analysed by using open coding in order to establish themes [34; 36]. The themes identified were related to critical success factors for each of the survey constructs.

3. CRITICAL SUCCESS FACTORS FOR IS OUTSOURCING MANAGEMENT RELATED TO THE SDLC

Based on the quantitative and qualitative feedback gathered in the survey and four interviews with project team and IS stakeholders, critical success factors for each SDLC component and project components were collated. These critical success factors are summarised in the rest of section 3.

3.1 SDLC Constructs

3.1.1 Construct 1: Requirement definition

In terms of the requirements definition component (Table 3), business participation and involvement was highlighted as a key factor and one respondent suggested that the client organisation should dedicate business resources to such a project. Other major issues highlighted were the scope management of business requirements especially during the duration of such a lengthy project and during knowledge transfer to outsourcer vendors. These factors presented a major challenge in this project.

3.1.2 Construct 2: Design

Design (Table 4) requires, over and above your standard skills set for this component, a strong focus on a holistic, end-to-end view of both the legacy and to be implemented solution. One of the key learning points is that IS operational processes should be included in the process modelling together with business process modelling since key flows are embedded in architecture, analysis and design. Key factors identified were the difference in timing between the infrastructure planning and the actual infrastructure deployment, as well as the adequacy of the plan.

Table 4: Critical success factors for design

- Clearly differentiate between capability of business analysts and experience level – experienced analysts is a key requirement
- The level to which processes are modelled is key consideration, as well as the scope thereof i.e. business as well as IS operational processes should be included
- Ownership for the reporting stream must be identified in order to facilitate proper synchronisation of requirements and ensure that duplication does not take place
- Staffing (number of resources required) of the architecture team must not be underestimated
- Architecture skills required are one of an end-to-end view and holistic approach
- Do continuous architecture reviews facilitating continuous updates as functional and non-functional requirements are clarified
- Ensure strong architectural definition around the integration periphery
- Implement an integration layer overseen by a Chief Architect
- Clearly define key upstream systems and interfaces that will impact capacity to deliver data downstream
- Define a clear plan for when during the project life cycle environments must be deployed
- Service level requirements based on data feeds must be adequately managed
- The design of the reporting solution should be completed as early as possible in the project lifecycle
- The client organisation should provide formal technical leadership
Table 6: Critical success factors for integration and system test

- Ensure that key business users and stakeholders are available for this phase as close interaction with business representatives support analysts and testers
- Ensure that sufficient testing environments with sufficient capacity are available
- Investigate different approaches as data migration testing could have been concluded earlier in the project
- Properly define and plan the parallel run and required outputs of such an activity
- Ensure that there are no resource conflicts between the parallel run and ongoing project activities
- Do not underestimate the effort and complexity of running three different environments at this point in time
- Ensure that system integration testing does not "pass" defects on to user acceptance testing
- Plan for validation and approval of report tests by business users
- Do not underestimate the experience required from user acceptance testers
- Maintain a strong focus on defect management and drive resolution
- Plan for the involvement of business representative early in the project to minimise / prevent testing gaps
- Important to distinguish between defects and "missed functionality" and manage two streams appropriately

Respondents indicated that much time was lost on the project while waiting for the infrastructure to be deployed just to find it was not adequate.

3.1.3 Construct 3: Programming and testing

For the programming and testing cycle (Table 5) adequate, dedicated and correctly skilled resources were key differentiators. A notable factor was to dedicate potentially scarce resources to this phase, rather than to share resources.

Table 7: Critical success factors data migration

- Minimise manual data updates and reliance on manual intervention
- Ensure that proper requirements and business rules are defined for migration from legacy to the new solution
- Ensure adequate, timeous configuration and set up of environments required for this phase

Table 8: Critical success factors for cutover and transition

- Adequate resources must be allocated to cut over and transition in order to ensure that it does not result in an extended period of high pressure
- Ensure that help desk and resolver (root cause analysis) groups are properly trained prior to this phase
- Plan for proper planning or even a dry-run of this part of the plan
- Clearly identify key resources required for a smooth transition and identify roles and responsibilities for operational integration
- Ensure that helpdesk is adequately staffed for cut over period

with operations since the latter will take priority over the project. The streams that can run in parallel must be considered and clearly defined. A waterfall approach must be adopted rather than an iterative approach where rework is required and deadlines are less accurate and predictable.

3.1.4 Construct 4: Integration and system test

The fourth construct was integration and system test (Table 6) and several critical success factors were identified here. Some of the main issues identified to administer during this phase included the management of multiple environments, resource conflicts among several key project streams and business representative availability and involvement. It must be ensured that system integration testing does not "pass" defects on to user acceptance testing and end-to-end testing should take place during system integration testing already.

3.1.5 Construct 5: Data migration

Data migration (Table 7) was one of the constructs rated most positively by respondents. Critical success factors in this content area focused mostly on environment readiness and emphasized automation as much as possible. The positive result was achieved through a well resourced, well managed and expert team.

3.1.6 Construct 6: Cutover and transition

Cutover and transition (Table 8) was rated quite positively. The value of having a good plan was indicated as a positive factor, and a first attempt at go live a valuable exercise. The execution of the actual go live after the initial delay was carried out well. Key focus areas are resource planning and clear role and responsibility definition. The role of the helpdesk in terms of adequate resourcing and sufficient training was highlighted.

3.1.7 Construct 7: Business integration

Respondents indicated that change management resources were

Table 9: Critical success factors for business integration

- Strong focus on change management from the beginning of the project and not only during the later stages
- Adequate plan for change management resources for extended duration of project
- Do not underestimate the value of informal stakeholder management
- Communication plan should address all levels
- Manage and/or minimise changes to training requirements
- Plan and manage knowledge transfer to the operational team
downsized too early during the business integration phase (Table 9) and some of them were not available or onsite during this stage. The impact of training and transferring knowledge to operational and business teams must not be underestimated.

### 3.2 Overall Project Activities

3.2.1 Construct 8: Project control and management

Project control and management (Table 10) critical success factors point to the unique skills and experience required from project office resources and the importance of having resource continuity, as well as on boarding of new resources.

3.2.2 Construct 9: Governance and sponsorship

One of the main issues highlighted in governance and sponsorship (Table 11) is empowerment of the correct stakeholders and project resources in order to facilitate quick and proper decision cycles. Client organisation sponsorship and support goes without saying and a key requirement is to not over-complicate structures among internal client organisation streams and multiple outsource vendors.

3.2.3 Construct 10: Commercial management

With regards to commercial management (Table 12) standard commercial administration and principles apply. Respondents indicated that there was no general visibility to project members of commercials, but warned that the link between achieving project milestones and payment milestones must not be divorced from the project manager role as this impact project delivery.

3.2.4 Construct 11: Audit and risk

Auditing and risk (Table 13) is another component where standard practices and principles apply. However, respondents highlighted clear and regular communication from the risk and auditing team to the project team, as well as a clearly defined risk mitigation authority and mandate, as key factors.

### 3.2.5 Construct 12: Relationships

The feedback regarding the last dimension relationships (Table 14) pointed to all issues around integration of such a diverse team, managing project members across geographic centres and fostering the value of “one team one spirit”.

### 4. CRITICAL SUCCESS FACTORS

#### INFORM DECISIONMAKING

IS outsourcing risk is principally a matter of choice and at a very early stage of the organisation’s outsourced application development project in order to address as much vagueness as possible, risks must be understood, best / worst-case scenarios built and mitigation actions for all risk items agreed [35]. A proper risk analysis assists with anticipating problems and taking appropriate action for the activities considered for outsourcing [4; 9; 19].

Miscommunication on requirements and expectations, as well as challenges posed by multiple relationships and diverse vendor expectations, was identified as the top causes of failure among organisation and outsourcing vendor relationships. In order to achieve effective, successful IS outsourcing, requirements and expectations must be explicitly defined, based on common terminology, with defined interfaces and agreed roles and responsibilities [39].

Potential problems are best raised initially as issues, critical success factors or statements about concerns. These potential problems should be prioritised and assigned to a specific person for resolution and regular review. The goal of this issue management is to resolve problems timeously and without escalation [53].

We have utilised these critical success factors from three perspectives: (1) as input to the design of a new outsourcing arrangement, (2) to inform specific project activities and (3) to identify and mitigate project risk. In terms of project control and management (section 3.2.1, Table 10), the project structure was designed with clear roles, responsibilities and specialist skills required to manage such a project. Project team members were recruited against these defined roles and long term contracts were negotiated to ensure continuity of key project roles for the duration of the project. Commercial management (section 3.2.3, Table 12) was included in the mandate of the project director to ensure that project milestones and commercial milestones (payments) are managed in a related manner. With regards to governance and sponsorship (Section 3.2.2, Table 11), we

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<th>Table 10: Critical success factors for project control and management</th>
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<tr>
<td>• Ensure continuity of key project roles for the duration of the project</td>
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<tr>
<td>• Focus on not re-inventing the wheel when new resources come on board</td>
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<tr>
<td>• Ensure clear communication to the project teams and work streams</td>
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<tr>
<td>• Do not underestimate the expertise required from the project management resources for such a complex project as “generic” project management skills are not sufficient</td>
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<tr>
<td>• Communication and leadership skills are key requirements for project control and management</td>
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<th>Table 11: Critical success factors for governance and sponsorship</th>
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<tr>
<td>• Focus on proper management and resolution of commercial conflicts</td>
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<tr>
<td>• Draw from the global experience and knowledge of outsource partners</td>
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<tr>
<td>• Management and service integration of multiple outsource partners requires strong focus so do not overcomplicate structures</td>
</tr>
<tr>
<td>• Sponsorship is required from all role players in order to deliver a successful project</td>
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<tr>
<td>• Strong focus on facilitating quick decision cycles; empower the right people in the project to support this</td>
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<th>Table 12: Critical success factors for commercial management</th>
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<tr>
<td>• Do not divorce commercial management and project responsibility</td>
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<tr>
<td>• Bear in mind that achievement of milestones impact commercial milestones (payments) as well</td>
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<th>Table 13: Critical success factors for auditing and risk</th>
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<tr>
<td>• Also utilise project team members to provide risk profiling and risk assessment in addition to external parties</td>
</tr>
<tr>
<td>• Facilitate clear and regular communication from risk and auditing team</td>
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<tr>
<td>• Clearly define risk mitigation authority and mandate</td>
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<th>Table 14: Critical success factors for relationships</th>
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<tr>
<td>• Foster and encourage a value of one team rather than an “us and them” mentality</td>
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<tr>
<td>• Create an environment where work streams do not work in silos</td>
</tr>
<tr>
<td>• Facilitate proactive and continuous business engagement with the project team</td>
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</table>
defined and agreed a specific process for the escalation and resolution of commercial conflicts. An uncomplicated governance structure was put in place to facilitate quick decision cycles through empowering the right people in the project. This process and governance structure were agreed with and supported by the project sponsor that signed off the decision-making mandate of project team members. With regards to audit and risk (section 3.2.4, Table 13), a risk workshop was conducted with project team members and key business representatives. Mitigation action was discussed, agreed and monitored and a monthly health check by external specialist consultants was instituted. In terms of relationships (section 3.2.5, Table 14), the project was kicked off with organisational and outsource vendor team members sharing a project office to ensure collaboration and enabling a single team focus. Communication and change management activities were defined at the initiation of the project to address stakeholder management, as well as business buy-in and participation in the project. Subject matter experts from the business were identified and inducted in terms of their roles on the project, over and above emphasising and continuously re-enforcing what the single objective of the joint project team was. An engagement schedule was negotiated and defined with all business users in order to ensure their involvement, participation and availability for the requirement (section 3.1.1, Table 3) component of the SDLC. A task team consisting of business analysts and subject matter experts were established to conclude an as-is process analysis, including system processes and functional documentation for legacy systems and interfaces. The artefacts created by this team were handed over to the outsource partner as an input to the to-be solution design. A design authority (section 3.1.2, Table 4) was established as part of the project governance structure consisting of sufficient resources in order to provide comprehensive and formal technical leadership.

The project is currently in the requirement definition and initial stages of the design SDLC phases. Critical success factors defined for the other phases will be applied as the project progresses through its SDLC.

5. CONCLUSION

There is a significant business risk associated with poorly designed, implemented and managed IS outsourcing contracts. Organisations must consider the consequences of their actions in order to achieve short-term gains and longer-term corporate objectives from IS outsourcing [39].

The purpose of this paper was to express critical success factors for the management of an IS outsourcing project with specific reference to the SDLC. These critical success factors were utilised as input to the design of a new outsourcing arrangement, to pro-actively inform specific project activities and to identify and mitigate project risk timeously. These factors were derived through a survey of the experiences of a large outsourcing arrangement from project team members and business stakeholders. Both the client organisation and multiple outsource vendors participated in the survey and provided comment and feedback. These critical success factors were defined based on the SDLC of the project and must be seen in conjunction with factors impacting IS outsourcing arrangements in general, as highlighted in this paper.

These factors are also dependant on the IS outsourcing model and delivery method chosen – in this case a multi-sourcing, hybrid on- and off-site arrangement [39].

REFERENCES


