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2015 Third International Conference on Enterprise Systems

ES 2015

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ES 2015 Preface

The Third International Conference on Enterprise Systems (ES 2015) is hosted by the FHNW University of Applied Sciences and Arts Northwestern Switzerland, in Basel, October 14–15, 2015.

The conference brings together scholars and researchers addressing critical information issues in Enterprise Systems. ES 2015 pushes the boundaries of information systems studies, explores core concepts and ideas, and creates new technological and conceptual solutions to today's business challenges. Increased flexibility and agility, cooperation, continuous improvement, knowledge work, and the progress toward learning organisations are important challenges for enterprises. Enterprise Systems (ES)—also called Enterprise Information Systems (EIS)—are key assets to deal with these challenges. They enable industrial organizations and public administrations to effectively exploit information for sustaining the success of their enterprises. They provide the basis for effective decision making and allow for new business models.

The conference focuses on both the technical and application aspects of enterprise systems and the complex and cross-disciplinary problems of enterprise integration. Apart from that, the conference deals with methods and technologies for the development, adoption, and application of context-rich enterprise systems leading to smart machines or intelligent cloud services. Topics of interest at ES 2015 included *Enterprise Modeling, Models and Frameworks, Enterprise Architecture & Engineering and Service-Oriented Architecture*, *Enterprise Systems Operation*, *Enterprise Knowledge Engineering and Knowledge Management, Models and Frameworks for Enterprise Architecture & Engineering, Business-IT Alignment, Enterprise Systems for Case Management,* and *Organizational Theory and System Development.*

Forty-four contributions were submitted to the conference, of which 25 were accepted and collected in the proceedings. Each contribution was reviewed by well-known experts specializing in the conference topics. We are convinced that the accepted 12 full and 13 short papers provide interesting viewpoints and good starting points for discussion during the conference.

We would like to thank all of the helping hands who made the conference possible, especially the invited speakers at ES 2015: John A. Zachman (Chairman, Zachman International, Inc.) and Prof. Dr. Dimitris Karagiannis (University of Vienna). Furthermore, we warmly thank the members of the Program Committee and their subreviewers and the members of the Organizing Committee. Thanks also to the authors of submitted papers for their interest in the conference and to the IEEE Computer Society for publishing the proceedings.

Knut Hinkelmann
Barbara Thönssen
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Olten in August 2015

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Threats and Opportunities for Information Systems Outsourcing

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Abstract— **The outsourcing of information systems has grown as an accepted business trend, with several reasons being cited for considering IS outsourcing. However, there is evidence that IS outsourcing threats may impact negatively on the initial intent to outsource, as well as the success of an IS outsourcing arrangement. Managing successful IS outsourcing relationships is concerned with exploiting outsourcing opportunities and avoiding outsourcing threats. The aim of this paper is to share the findings of a systematic literature review on opportunities and threats pertinent to IS outsourcing. By considering and addressing IS outsourcing threats and opportunities, organisations may realise benefit across the whole IS outsourcing lifecycle in achieving their strategic intent to outsource.**

Keywords—IS outsourcing; threats; opportunities

I. INTRODUCTION

Information systems (IS) outsourcing is the process in which an organisation delegates a part or all of its tasks to an external service vendor (provider) for the supply of products or services required for effective internal operations in order to achieve its objectives [1]. IS outsourcing as a phenomenon has grown over a number of years to include multiple systems and significant transfer of assets, leases and staff to a supplier that assumes profit and loss responsibility [2, 3]. Furthermore, the technology and business demands originating from e-business are challenging traditional sourcing models and this requirement has complicated IS outsourcing further [4, 5].

Managing successful IS outsourcing relationships is concerned with exploiting outsourcing opportunities and avoiding outsourcing threats [6, 7]. IS outsourcing success is defined as "the satisfaction with the benefits derived from outsourcing that are gained by an organisation as a result of following an outsourcing strategy" [8 : 400]. For an organisation and outsource vendor in an outsourcing relationship to achieve success and deal with both threats and opportunities, the outsource vendor and organisation need a mutual understanding of the stage of their outsourcing relationship [6, 9].

Due to the increasing importance and popularity of IS outsourcing, it entices researchers and practitioners to support organisations to make informed and effective strategic IS outsourcing decisions and avoid the pitfalls of committing, in some cases strategic assets, to an outsource vendor [2, 6, 10-12]. Although there has been studies done supporting the organization with regard to outsourcing, information on the opportunities and threats on IS outsourcing are dispersed over a number of publications. The interested reader therefore needs to consult a diverse number of publications to understand the different opportunities and threats associated with IS outsourcing.

The goal of the research reported on in this paper was to address this lack of a coherent body of knowledge on IS outsourcing opportunities and threats. The problem was addressed by means of a comprehensive study to identify the activities related to threats and opportunities in IS outsourcing from different sources, in order to identify improvement prospects. In order to analyse and describe threats and opportunities relevant in an IS outsourcing arrangement, a systematic literature review was conducted. Section II of the paper provides the background, section III describes the method followed in conducting the research, section IV reflects on the threats and opportunities feedback obtained through the review, section V presents the threats and opportunities that organisations must be aware of in IS outsourcing arrangements and section VI concludes the paper.

II. BACKGROUND

Academic research in the IS outsourcing field has reached several conclusions with regards to IS outsourcing arrangement success, including [13-15]:

- Selective outsourcing decisions and total insourcing decisions achieve success more often than total outsourcing decisions.

- If senior business executives and IS managers make decisions about outsourcing together, they are more

likely to succeed than if one of these stakeholder groups acts alone.

- Organisations that invite both outsource vendors and the internal IS department to bid, achieve success more often than organisations that simply compare a few external bids with the current IS performance.

- Short-term contracts achieve success more often than long-term deals.

- Detailed contracts that are best suited to IS services that can be clearly defined, are more likely to be successful. Where technology is ill defined, immature or unstable, it is not feasible to specify services in detail and outsourcing is less likely to be successful.

The management of an in-house IS function and that of an outsourcing arrangement are different processes. IS outsourcing already implies a difference in strategic and operational mechanisms as, in addition to this change, managing outputs replaces managing inputs and negotiation replaces direct control [16-19]. The changes required in the core competencies of the IS organisation, as well as the ability to manage an IS outsourcing arrangement should therefore not be underestimated [13, 20].

According to research conducted by Cullen and Willcocks [16], organisational inexperience in IS outsourcing is the most significant problem reported by organisations. Thereafter, the majority of problems can be attributed to the outsource vendor. Cullen and Willcocks [16] conclude that organisations expect too much from their outsource vendor and emphasise that an organisation can under no circumstances abdicate its accountability for the services provided, as it remains responsible for the exploitation of the IS benefits – both internal and external. IS outsourcing is not similar to other outsourcing activities, as it is not a uniform function, but comprises a wide variety of IS activities [4, 21]. Economic efficiency, such as superior management practices, has more to do with IS practices rather than inherent economies of scale. IS capabilities continue to evolve at a daunting pace, therefore predicting IS needs beyond a three-year horizon is wrought with uncertainty [22, 23].

Organisations should not assume that acclaimed IS outsourcing benefits are inherent in the act of outsourcing and that what others have done before can easily be replicated [24, 25]. One organisation will never be aware of all the facts that made another organisation's outsourcing arrangement successful, may not be in the same position or market, may not have the same organisational and cost structure and may not even outsource the same mix of activities. The benefits sought by outsourcing are not inherent in the act of outsourcing; they must be articulated, agreed to and designed to occur [1, 16].

Goo et al. [26] categorise the organisational benefits gained from IS outsourcing into three categories: (1) functional, (2) strategic, and (3) technological benefits. Functional benefits refer to the improvement of IS as a corporate function and are closely aligned with user satisfaction. An example of a functional benefit is where end-user support for internal users is outsourced. Strategic benefits point to the ability of an organisation to utilise IS outsourcing to achieve its business goals and execute its strategy. The enhancement of innovation through IS outsourcing is an example of a strategic benefit. Technological benefits refer to an organisation's ability to acquire, secure and control IS capabilities and resources by means of outsourcing. An example of a technological benefit is when an organisation gains access to leading-edge IS through the process of outsourcing.

Several outsourcing lifecycle models exist, consisting of numerous steps, for example:

- Cullen and Willcocks [16] identified three distinct phases of IS outsourcing: (1) the architect phase, (2) the engage phase and (3) the govern phase. The first two phases deal specifically with the decision to outsource and the preparation for the outsourcing arrangement, and comprises of the activities required to make the arrangement work. The third phase, govern, comprises of the management of the outsource arrangement [16].

- Similar to the three phases defined by Cullen and Willcocks [16], Alborz et al. [27] defined 3 stages: (1) pre-contract stage (scoping and evaluation), (2) contract stage (negotiation) and (3) post-contract stage (transition, middle and mature). Outsourcing strategy and due diligence operationalise the pre-contract stage and contract development the contract stage. The post-contract stage is operationalised through governance, performance management, contract management, working relationship management and knowledge management.

A. Reasons for IS outsourcing failure

Many organisations end up frustrated as they learn that their attempts at outsourcing have failed. Some of these failures could have been easily avoided with knowledge of common pitfalls [28]. Some of the common reasons for failure include a lack of strategic vision for the arrangement, the vision was not understood or shared, communication failed, there was inadequate process and management, expectations were unrealistic and requirements constantly changed [29]. In some cases, it was the wrong choice to outsource, the incorrect vendor was chosen or the staff was not ready, was not prepared, did not assume ownership of the project or was not motivated [30].

The impact on employees of the IS outsourcing arrangement may be significant and organisations must be aware and manage the threats in this regard [31]. The cultural shift in switching from in-house work to working with a vendor must be achieved and knowledge transfer to and from global team members must be facilitated [30, 32]. The protection of proprietary information and intellectual capital may be a challenge if employees are not ready, not prepared, do not assume ownership or are not motivated to achieve the IS outsourcing objectives [3, 10, 33]. A loss of key staff, a lack of sufficient resources, a lack of vendor quality employees, poor employee management and a lack of top management support and involvement in outsourcing all constitute common challenges in IS outsourcing [10, 28, 34].

B. Critical success factors for IS outsourcing

The organisation and the chosen vendor should share responsibility for, and jointly be committed to, achieving shared goals. The IS outsourcing arrangement needs trust, confidence, clear objectives and regular performance monitoring in order to deliver value to the organisation [35-37]. Much has been written about the decision to outsource and considerable analysis is available on the rationale and contractual aspects of reaching an outsourcing agreement [11]. Relatively little attention, however, has been given to the task of actually making IS outsourcing work once the contract is signed, which is a vital component [13].

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 [1, 20]. Both the organisation and the vendor need to invest time in gaining 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 [13].

IS outsourcing, as such, does not succeed or fail. It is rather the actions of the client organisation and the outsource vendor that will cause the arrangement to thrive or to fall short. Pro-active management of these actions is required in order to deliver success [16].

III. IS OUTSOURCING THREATS AND OPPORTUNITY INVESTIGATION

The aim of the research study presented in this paper was to identify existing threats and opportunities for IS outsourcing. In order to achieve this outcome, a systematic literature review (SLR) was chosen as data collection method [38, 39]. SLR is aimed at gathering, evaluating, and synthesizing the existing body of completed and recorded work pertaining to a focused topic, produced by researchers, scholars, and practitioners [40]. A SLR is a rigorous, stand-alone literature review that must be systematic in following a methodological approach, explicit in explaining the procedures by which it was conducted, comprehensive in its scope of including all relevant material and therefore reproducible by others who would follow the same approach in reviewing the topic [41].

According to Rouhani et al. [38], an SLR process comprises of 3 consecutive stages: (1) planning, (2) execution and (3) result analysis. *Planning* involves defining the research objectives and the manner in which the review will be carried out. *Execution* points to the study selection and the data collection, while *result analysis* encompasses the data synthesis, results discussion and conclusion presented in Sections IV and V. These 3 SLR stages are discussed in more detail in the next sections.

A. Systematic Literature Review Planning

The pure success of outsourcing may depend upon both opportunities and threats [42]. The intention of the research presented in this paper is to identify the factors that may affect the success and effectiveness of IS outsourcing. Threat is an expression of intention to inflict damage [43] and refers to the aspects that may negatively impact the effectiveness of IS outsourcing, while opportunities points to the activities which have a significant impact on the success of IS outsourcing [20]. The research questions that guided our research were (1) *what are the threats for IS outsourcing* and (2) *what are the opportunities for IS outsourcing*. The impetus for research question (1) was to identify the activities that impact IS outsourcing negatively and for research question (2), to establish activities required for ensuring the success of IS outsourcing.

Technical reports, books and specific scientific databases were chosen for the SLR process [44]. The following sources have been considered as they hold the most important and highest impact full-text journals and conference proceedings in the IS outsourcing and IS management field:

- Google Scholar (www.scholar.google.com)

- Springer Link (www.springerlink.com)

- Elsevier (www.elsevier.com)

- ACM Digital Library (http://dl.acm.org)

- IEEE Xplore (http://ieeexplore.ieee.org/Xplore)

- Emerald (www.emeraldinsight.com)

The following keywords were used to find relevant studies: ('outsourcing' or 'information systems outsourcing' or 'information technology outsourcing' or 'IS outsourcing' or 'IT outsourcing') and ('success factors' or 'key success factors' or 'success' or 'opportunities' or 'barriers' or 'threats' or 'factors' or 'information systems' or 'IS').

B. Systematic Literature Research Execution

After the initial search, we verified through an additional reference scan that a representative set of studies were obtained. The search results were also verified against the IS outsourcing literature and practices to ensure confidence in the inclusiveness of the search outcomes. As the focus of this paper is IS outsourcing, we ensured that the papers extracted dealt with IS outsourcing and not the generic practice of outsourcing.

Once the research studies were obtained, specific criteria were applied to exclude papers such as studies not associated with the research questions, non-English studies and duplicate studies that formed part of the result set. Criteria for inclusion of sources consisted of peer-reviewed publications (journal papers, conference proceedings, book chapters) and technical reports, including all types of IS outsourcing (refer Section I and II), all countries and across multiple industries. Table I depicts the number of papers found per source, as well as the papers selected once the inclusion criteria were applied.

A total of 81 publications were selected, where 60% were journal papers, 14% conference proceedings, 12% technical reports and 14% books.

TABLE I.   NUMBER OF PAPERS PER SOURCE

Source	Selected
ACM Digital Library	12
Elsevier	4
Emerald	22
Google Scholar	33
IEEE Xplore	6
Springer Link	4

According to Dibbern et al. [45], IS outsourcing started when Kodak signed its outsourcing deal in 1989, implying that the era of IS outsourcing is more than 25 years old. Since then organisations have been signing major outsourcing deals across the globe, yet, academics have been relatively slow to research this phenomenon [9, 42]. Although awareness has been driven primarily by the practitioner community in the early stages, academic research is increasing steadily [6, 45, 46].

Fig. 1 shows the number of selected studies by year of publication. The highest number, 15% of the selected studies, were published in 2005, 44% prior to 2005 and 49% after 2005. As IS outsourcing is deemed to be more than 25 years old, no date cut-offs were applied to the selected papers.
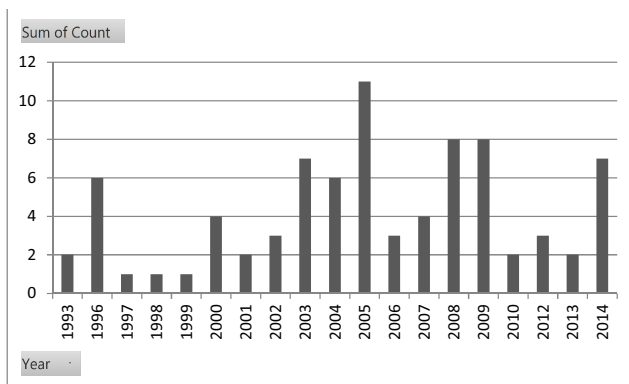
Fig. 1.   Selected studies by year of publication

IV. FINDINGS AND DISCUSSION

Data was extracted from the selected studies based on the research questions and two lists of activities and processes were captured into MS Excel, one relevant to threats of IS outsourcing and one to opportunities of IS outsourcing. The activities were identified by studying the selected papers and by extracting specific references to reasons for failure of IS outsourcing, factors that an organisation must be aware of in order to achieve success with IS outsourcing and driving forces behind the end-to-process of IS outsourcing.

The list of threats and opportunities obtained were significant and common themes were classified through a two-step process: (1) use of descriptive codes to attribute a theme to a segment of text [47], and (2) open coding in order to establish themes from the activity and process data [48, 49].

A. Threats for IS outsourcing

Emerging themes for IS outsourcing are concerned with the objectives to outsource, the selection of the outsource vendor, the contract governing the relationship between the client organisation and the outsource vendor, the outsource requirements definition, the outsourcing process and the management of the outsourcing arrangement, the impact of IS outsourcing on the organisation, the communication to all stakeholders and the people impacted by the outsourcing arrangement. A summary of the common threats for IS outsourcing grouped by the emerging themes, is depicted in Table II. For each theme, the threat and references are included. The intention is not to provide an exhaustive list, but merely to provide an overview of the common threats for IS outsourcing based on the papers selected.

TABLE II.   THREATS FOR IS OUTSOURCING

Theme: Objectives to outsource	
Threat	Reference
Wrong business choice to outsource	[21, 30, 50-52]
Unrealistic expectations	[13, 30, 36]
No long-term strategic vision	[13, 30, 53, 54]
Outsourcing vision not understood or shared	[13, 30, 55]
Inadequate forecasting of total cost, hidden costs	[1, 50, 56-59]
Lack of consequence definition if cost-saving objective is not achieved	[17, 29]
Unrealistic expectations of cost savings	[18, 60, 61]
Minimal knowledge of outsourcing methodologies	[17, 28]
Believing outsourcing is the visioned future state, not the transition path to the visioned future state	[16, 24, 62]
Lack of due-diligence arising from offshore "bandwagon" mind-set – following other organisations' perceived IS outsourcing success	[60, 63, 64]
Business uncertainty e.g. turbulence due to geopolitical environment	[46, 60, 62, 65]
Lack of balancing cost-oriented goals and strategic-oriented goals when making IS outsourcing decisions	[11, 66]
Theme: Vendor selection	
Threat	Reference
Uninformed outsourcing purchaser and manager	[16]
Lack of proper planning for time required for bidding and proposal process	[30]
Incorrect choice of vendor	[1, 21, 30, 50]
Vendor does not listen to and understand organisation and do not react to their needs	[16, 53, 54, 67]
Poor definition of vendor selection criteria	[30, 32, 61]
Vendor role and how it fits into bigger picture not clear or understood	[30, 61]
Unawareness of market conditions with heavy investment in inadequate tender process	[16, 50, 64]
Insufficient information about offshore vendors or over-investment in offshore delivery could impede future capability to innovate operations	[60, 68, 69]
Lack of real proof-points on outsource vendor culture, performance, and capability, lack of prior outsource experience	[57, 68]
Outdated vendor technology skills	[25, 62]
Theme: Contracting the outsource vendor	

Threat	Reference
Lack of contract alignment between organisational and vendor expectations and incentives	[13, 29, 64]
Failing to plan an exit strategy. Early exit provisions should be implemented as an insurance from "value disappointment."	[50, 68]
Inefficient contract design not aligned to portfolio of activities to be outsourced	[17, 21, 50, 51]
Uncertainty that are hard to predict and thereby hard to write into the contract in specific terms.	[9, 59, 70]
Incomplete, ambiguous or inconsistent requirements ("what") definition	[17, 29, 30, 64]
Poor or no requirements management	[17, 29, 30, 36]

Theme: Contract management	
Threat	Reference
Inadequate or weak contract management, fuzzy focus	[16, 30, 50, 58, 62, 64]
Inadequate process ("how") e.g. inadequate planning	[16, 17, 30, 36, 57]
Poor management of contractors and lack of governance	[16, 17, 30, 46, 61, 64, 71]
Poor leading of vendor and decision making	[16, 30, 57, 61, 64]
Clear procedures for all interactions with vendor not defined and lack of explicit relationship management roles	[29, 30, 72]
Lack of continuous improvement of IS outsourced processes	[16, 66]
Lack of transition plan	[28, 30]
Inadequate cost and financial management, hidden costs	[16, 62, 64, 71, 73]
Lack of flexibility, loss of control and ability to modify any aspect of the arrangement	[12, 16, 52, 57, 61, 74, 75]
Failure to recognise risk and how to mitigate it	[28, 54, 61]
Lack of contingency plan	[30]
Poor or no requirements management	[29, 30, 36]
Vendor opportunism, e.g. giving other clients higher priority, imposing excessive fees on anything not stated explicitly in the contract	[60, 61, 76]

Theme: Arrangement governance	
Threat	Reference
Lack of quick decision cycles	[15]
Lack of empowerment the right people in the programme to support the arrangement	[15]
Insufficient risk management	[59]
Quality threats	[65, 66]
Security breach on services outsourced	[66, 75]
Subcontracting by the outsource vendor difficult to control	[75]
Absence of proper management and resolution of commercial conflicts	[15, 66]

Theme: Organisation and operating model	
Threat	Reference
Inappropriate organisation to manage outsource vendor	[17, 30]
Resistance from organisation and lack of buy-in	[57]
Organisational politics and mismatch in organisational cultures, values, and norms	[60, 77]
Negative impact on organisation's brand	[52, 66]
Disruption of work practices for end users	[60, 74]

Clear roles and responsibilities of each individual in the organisation not documented and understood	[13, 16, 30]

Theme: Contract performance management	
Threat	Reference
Lack of well-defined and understood service level agreement (SLA)	[13, 16, 29]
Nonexistence of metrics and objective assessment of progress	[10, 13, 25, 30]
Lack of exit strategy (clean exit on completion or bail out and exit)	[10, 30]

Theme: Protection of intellectual property	
Threat	Reference
Lack of organisational learning	[58, 62]
Loss of core competencies of the organisation.	[12, 25]
Loss of innovative capacity and capability	[2, 57, 58, 62]
Absence of protection of proprietary information and intellectual capital	[3, 10, 33, 55, 57, 60]
Loss of intellectual property and proprietary knowledge	[32, 66]

Theme: Communication	
Threat	Reference
Communication failed due to geographic separation	[30, 32, 69, 78]
Lines of communication and approval unclear	[13, 30]
Lack of outsourcing communications plan	[28, 65]
Multiple time zones among global locations	[60, 69]
Ineffective communication between parties resulting in lack of openness and clarity	[16, 31, 32, 54, 79]
Lack of clear conflict escalation paths	[10, 30]

Theme: People	
Threat	Reference
Employees not ready, not prepared, not assuming ownership, inexperienced or not motivated	[30, 50, 62]
Cultural shift in switching from in-house work to working with vendor not achieved	[30-32]
Knowledge transfer difficulties to and from global team members	[60, 69]
Negative impact on staff morale	[25, 66]
Loss of key staff, lack of sufficient resources and not dedicating best internal resources	[28, 30, 54, 60]
Inexperienced vendor staff, lack of vendor employee management	[16, 31, 52, 58, 64, 69]
Lack of leveraging lessons learnt of IS outsourcing arrangements – own or others	[53]
Lack of top management support and involvement in outsourcing	[3, 26, 28]
Cross-cultural issues in particular with offshoring e.g. language differences, lack of culture alignment	[23, 28, 31, 32, 36, 67, 69, 75]
Lack of activity-based co-location of client and global vendor team members	[60]
Lack of incentive and reward system for employees if they manage to work with the vendor and produce suitable results	[13, 30, 67]
Competition for labour in the IS industry, resource challenges related to availability of locally skilled individuals and loss of key IS employees	[57, 76, 79]

Threats for the *objectives to outsource* are concerned with ensuring that a long-term strategic vision for outsourcing is defined and that the vision is understood and shared. Cost of IS

outsourcing threats to be aware of include inadequate forecasting of total cost, lack of consequence definition if cost-saving objective is not achieved and unrealistic expectations on cost savings. Minimal knowledge of outsourcing methodologies and a lack of due-diligence arising from the offshore "bandwagon" mind-set may contribute to the wrong choice in terms of outsourcing.

Vendor selection is one of the key decisions in an IS outsourcing arrangement and several drawbacks are related to this decision, such as an uninformed outsourcing purchaser, poor definition of vendor selection criteria, unawareness of market conditions with a heavy investment in an inadequate tender process and insufficient information about offshore vendors. As vendor selection is a formal procurement process, lack of proper planning for the time required for bidding and for proposal process may impact negatively on the execution of the vendor selection process. Another key requirement for IS outsourcing is the scope of work. Incomplete and ambiguous definitions and inconsistent requirements are a threat to proper requirements management.

Incomplete, ambiguous or inconsistent requirements definition of the scope of the outsource arrangement result in poor contract design. Inefficient contract design and contract parameters not aligned to the portfolio of services to be outsourced, are pitfalls for *contracting the outsource vendor*.

Arrangement governance threats point to the poor management of the outsource contract. Poor management includes slow decision-making cycles, lack of proper programme management and disempowered outsource programme team members.

Threats in the outsourcing process and the *management of the outsourcing contract* may result in poor management of contractors, a lack of governance, poor leading of the vendor and poor decision making, all contributing to inadequate contract management. Another drawback is unclear procedures for all interactions with the outsource vendor and a lack of explicit relationship management roles. Failure to recognise risk in order to mitigate it may be attributed to the lack of transition plans, the lack of an exit strategy, the lack of a contingency plan and the inability to modify any aspect of the IS outsourcing arrangement.

From an *organisational and operating model* perspective, common challenges are an inappropriate organisational design with clear roles and responsibilities of each individual in the organisation not being documented and understood, and a lack of well-defined and understood service level agreements (SLAs). Mismatch in national and organisational cultures, values and norms also contribute to organisational pitfalls. Common challenges with regard to communication include unclear lines of communication and approval, an unclear conflict escalation path, lack of an outsourcing communications plan and ineffective communication between parties. These threats may be amplified by multiple time zones among global locations and geographic separation between the client organisation and the outsource vendor.

For proper *contract performance management* well-defined service level agreements, metrics and measures defined in the business case for successful IS outsourcing, must be tracked. In addition, an organisation must have a clear exit strategy based on the outcome of the contract performance measures.

Loss of core competency of the organisation and lack of organisational learning are threats from a *protection of intellectual property* perspective. If an organisation does not protect its intellectual property in an IS outsourcing arrangement, it may moreover lose innovative capacity and capability.

Communication presents a threat if there is ineffective interaction between the organisation and outsource vendor. This threat may be amplified where joint team members are in different time zones and subscribe to different team values, norms and culture.

The impact on *employees* of the IS outsourcing arrangement may be significant and organisations must be aware and manage the threats in this regard. The cultural shift in switching from in-house work to working with a vendor must be achieved and knowledge transfer to and from global team members must be facilitated. The protection of proprietary information and intellectual capital may be a challenge if employees are not ready, not prepared, do not assume ownership or are not motivated to achieve the IS outsourcing objectives. A loss of key staff, a lack of sufficient resources, a lack of vendor quality employees, poor employee management and a lack of top management support and involvement in outsourcing all constitute common challenges in IS outsourcing.

B. Opportunities for IS outsourcing

Opportunities in IS outsourcing points to what to do to be successful [20]. Each opportunity alludes to recommendations for actions that will contribute to managing successful IS outsourcing arrangements. A summary of the opportunities that underpin effective visualisation of the outsource vision, selection and management of the outsourced service, performance monitoring and people related prospects are presented in Table III. For each opportunity a description and references are given.

TABLE III.   OPPORTUNITIES FOR IS OUTSOURCING

Opportunity	Description	References
Outsource vision and scope definition	Successful outsourcing arrangements are more likely when an organisation has strategically, through appropriate evaluation processes, determined that outsourcing is an effective tool. This may be enhanced when an outsource vendor has a vision for industry-specific solutions, especially where an established and traditional organisation cannot think about radically different business paradigms. Successful projects have a detailed process for project definition and specification development. The detailed process ensures the unambiguous definition of the project methodology, scope, schedule, deliverables, systematic and conclusive empirical evidence, and a clear understanding by both parties.	[4, 6, 8, 11, 18, 24, 34, 56, 63, 68, 80-83]

Outsource vendor selection	Organisation must be an informed buyer across a number of decision criteria e.g. vendor track record, financial stability and ability to meet organisation specific criteria. An organisation beginning a process of outsourcing should start a benchmarking procedure to evaluate the best practice for its specific case.	[8, 34, 46, 62, 73, 82, 84, 85]
Contract negotiation	Negotiation is not an easy task and requires a great deal of insight into current and future IS and business activities. The contract is the materialisation of the outsourcing relationship and it is important to formalise the kind of relationship, its time development, the expected targets, the criteria of evaluation to be utilised, and the way to address any controversy. The contract should prevent opportunistic behaviour in an efficient collaborative environment with balance of power between client and outsource vendor.	[2, 4, 8, 10, 20, 46, 64, 73, 84]
Delivery performance and operational analytics	Services must not only be delivered to expectations, specifications and quality, but also improved continuously. In addition, external vendors may offer additional value-added services e.g. more flexible and responsive design and implementation of infrastructures and systems. Detailed thorough reviews of all deliverables are required in order to ensure high quality and to institutionalise best practices.	[16, 23, 25, 31, 36, 63, 68, 77, 80, 85-87]
Top management commitment	Clear engagement of the top management of both partners in the outsourcing partnership is required. The client organisation should assign dedicated management with a strategic understanding of outsourcing partnership goals, as well as with the capability to conclude sophisticated negotiation.	[4, 8, 34, 80, 82, 88, 89]
Contract management	Both parties must have good project management skills, contract management skills, processes and people. The organisation must protect its brand through accountability for the vendor's actions and by transference of the vendor's reputation. Furthermore, an organisation must have the capability to manage multiple outsource vendors and multiple relationships.	[1, 9, 15, 16, 25, 34, 45, 46, 56, 62, 71, 73, 82, 85, 86, 90, 91]
Strong relationships	Less focus on the deal, more on trust and the relationship. The relationship must be strong, with a team approach supported by a good understanding and trust between the parties. A safe team culture where proactive involvement is encouraged and expected, must be fostered. Project managers responsible for outsourcing projects are oriented towards external roles as the project manager must have both the organisation's and outsource vendor's interest a heart.	[7, 14, 16, 20, 31, 37, 42, 68, 71, 80, 82, 87, 88, 90, 92]
Staff management and talent	The organisation has to implement a strict and rigid demarcation of workforce between the outsource vendor and itself. Outsourcing enables the acquisition of resources that may be necessary to develop new capabilities in order to fill gaps of organisational resources. The outsource vendor must have the capability of delivery talent to add value beyond standard operations.	[14, 16, 20, 23, 42, 63, 68, 74]
Cost management	Both parties must have capable cost and financial management. Outsource vendors can only deliver what their clients demand of them—and pay for. Focus should be given to	[16, 20, 23, 52, 56, 61, 63, 68,

	minimise transaction cost by reducing complexity and uncertainty in IS tasks, improve performance measurements, and reduce dependence on other transactions.	84]
Inter-dependence between client and vendor organisation	The degree of dependency of the activities of client organisation from the operations of the vendor organisation presents a clear bidirectional nature – business and mutual understanding. The supplier must understand the customer organisation and recognise the impact of IS in all business functions, as well as the inseparability of information from production technology.	[2, 3, 8, 16, 26, 55, 62, 80, 83, 85, 88, 89, 91]
Bi-directional knowledge transfer	Strong focus should be placed on the way in which the client organisation "learn" from their outsource vendor(s) as this seems to be one of the means for the development of key competences. The knowledge could have three forms: implicit (informal), tacit and explicit (formal). Tacit knowledge in IS is built over a period of time from an intimate understanding of the organisation's production processes, information requirements, and distinctive developments. It must also be considered that this kind of knowledge does not reside in one place but permeates the entire organisation.	[2, 9, 17, 31, 34, 55, 80, 85, 88, 93]
Service level agreements (SLAs)	The vital use of SLAs and principles of SLAs are designed to achieve. Quality and productivity must be measured evidently, and clearly defined performance targets using selected key metrics must be instated. In addition, both outcome-based and behaviour-based incentives can be used to reduce and prevent opportunistic vendor behaviour.	[10, 16, 20, 26, 31, 46, 51, 56, 73, 82, 86]
Maintain process control	The organisation must control the arrangement, processes and data and ensure it stays competitive. An organisation cannot control what it does not understand. Hence, the organisation must also understand which retained skills are included - not only technical (operational) know-how and contract/ service management capability, but also strategy and leadership skills.	[2, 16, 33, 45, 46, 63, 64, 76]
Flexibility and change management	Flexibility and the ability to modify any aspect of the arrangement, as required, must be incorporated. Continuity must be enabled by designing relationships that anticipate change. Outsource vendors to provide flexible pricing models.	[8, 16, 63, 68, 88]
Effective communication and stakeholder management	There must be ongoing, effective and efficient communication between parties. Both parties must agree to communicate effectively in order to ensure that all stakeholders achieve their goals and make the outsourcing deal successful for everybody. Frequent communication not only helps avoid misunderstandings but also improves cultural understanding, which is considered an equally important factor in maintaining trust.	[8, 16, 20, 31, 36, 55, 72, 80, 85, 87, 88]
Technical expertise	The organisation gain access to strategic talent through IS outsourcing which implies that the outsource vendor must provide quality technical expertise. The organisation should integrate and exploit strategic IS resources from the outsource vendor together with its own resources to produce competitive goods and services.	[1, 16, 20, 36, 61, 64, 68, 77]
Service integration	Core competence management and the management of integration across different	[4, 20, 68, 71,

	suppliers, the amount of change control required and the need to define how the bridging role between services will be managed must be addressed. Both clients and outsource vendors need to invest in the skills and tools they need.	88]

Opportunities for IS outsourcing present itself across the end-to-end IS outsourcing process. While considering the decision to outsource, organisations must focus on the strategic intent, desired outcomes and clear scope definition of or business case for the IS outsourcing plan. Once the decision has been taken to proceed with the IS outsourcing arrangement, the selection of the most appropriate outsource vendor becomes an opportunity. Once an outsource vendor has been identified, much attention must be given to the negotiation of the outsource contact as such a contract forms the basis of engagement, performance monitoring, cost management and the achievement of strategic objectives moving forward.

Once an IS outsourcing arrangement is in full swing, the performance management of the outsource vendor through SLAs, operational analytics and contract management provides a prospect. In addition, strong relationships are highlighted as opportunities during the IS outsource arrangement stage such as staff, talent and expertise management, as well as stakeholder management. As cost savings and optimisation is one of the key drivers of IS outsourcing, an organisation must enable the detailed monitoring and management of the financials and financial assumptions made in the outsource business case.

Furthermore, inter-dependence between client and vendor organisation, bi-directional knowledge transfer and service integration presents opportunities to an organisation for successful IS outsourcing. Inter-dependence points to the degree of dependency of the activities of the client organisation from the operations of the vendor organisation as IS impacts the whole business of the client organisation. Knowledge transfer and organisational learning and the management of new knowledge created during the IS outsource arrangement, must be considered. Service integration and the investment required from both the client organisation and outsource vendor in bridging services, present a prospect to the client organisation.

Throughout this whole IS outsourcing process and management, top management support and visibility is a one of the critical success factors. The organisation must control the arrangement, processes and data and ensure it stays competitive.

V. ORGANISATIONAL BENEFIT GUIDANCE FOR IS OUTSOURCING

Identifying the opportunities and threats related to IS outsourcing is not of much value if it cannot be directly linked to the IS outsourcing activities it relates to. Two IS outsourcing life cycle models were presented in Section II, namely that of Cullen and Willcocks [16] and Alborz et al. [27]. We combined the phases of the two lifecycle models and mapped the phases to the key considerations, i.e. threat and opportunities, applicable to each phase. The main objective for

connecting the IS outsourcing phases to organisational benefits is to ensure a proper fit between the organisation's aspirations and the services provided by the outsource vendor [4, 13, 16]. Collating the IS outsourcing phases with the threats and opportunities from the systematic literature review, as presented in Table IV, organisations may be informed of key considerations for and benefit alignment of successful IS outsourcing.

TABLE IV. ORGANISATIONAL BENEFIT GUIDANCE FOR IS OUTSOURCING

IS out-sourcing phases [16]	Operationali-sation of phases [27]	Key considerations for organisations to achieve IS outsourcing success	
		Threats	Opportunities
Architect	Outsourcing strategy	Objectives to outsource	Outsource vision & scope definition
			Top management commitment
	Due diligence	Vendor selection	Outsource vendor selection
Engage	Contract development	Contracting the outsource vendor	Contract negotiation
Govern	Governance	Arrangement governance	Maintain process control
	Performance management	Contract performance management	Delivery performance and operational analytics
			Service level agreements (SLAs)
	Contract management	Contract management	Contract management
			Cost management
			Flexibility and change management
	Working relationships management	Communication People Organisation and operating model	Effective communication and stakeholder management
			Inter-dependence between client and vendor organisation
			Strong relationships
			Staff management and talent
	Knowledge management	Protection of intellectual property	Technical expertise
			Bi-directional knowledge transfer

For each IS outsourcing phase and operationalisation of that phase, the themes for the threats and opportunities are reflected in Table IV. The detail for each theme, may be referenced in Tables II and III respectively. By referencing threats and opportunities for each organisational objective of IS outsourcing, organisations may pre-empt failing points and manage risk to the benefit of the organisation and its IS outsourcing aspirations.

VI. Conclusion

Managing successful IS outsourcing relationships is concerned with exploiting outsourcing opportunities and avoiding outsourcing threats. An organisation must actively manage the IS outsourcing arrangement as the benefits sought are not inherent in the act of outsourcing. The benefits of IS outsourcing must be articulated, agreed and designed to happen. There is significant business risk associated with poorly designed, implemented and managed IS outsourcing arrangements and some of the failures of IS outsourcing could be avoided with knowledge of common threat and opportunities involved.

As outcome of a systematic literature review, a list of threats and opportunities for IS outsourcing were identified. These threats and opportunities were mapped to IS outsourcing phases, as well as the IS outsourcing operationalisation phases. By referencing and pro-actively managing these, organisations can carefully consider the consequences of their actions in the context of IS outsourcing in order to achieve short-term gains, longer-term corporate objectives and ultimate successful IS outsourcing arrangements. This paper contributed by highlighting IS outsourcing threats and opportunities throughout the end-to-end IS outsourcing process.

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