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Towards a theory of information systems outsourcing risk

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Abstract

Information systems outsourcing risks are a vital component in the decision and management process associated to the provision of information systems and technology services by a provider to a customer. Although there is a rich literature on information systems outsourcing risks, the accumulated knowledge on this area is fragmented. In view of this situation, an argument is put forward on the usefulness of having a theory that integrates the various constructs related to information systems outsourcing risks. This study aims to contribute towards the synthesis of that theory, by proposing a conceptual scheme for interpreting the literature and presenting a preliminary version of a catalog of information systems outsourcing risks. Proposals for subsequent work towards the generation of the theory of information systems outsourcing risk are suggested.

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Keywords: Information Systems Outsourcing; Risk; Theory

1. Introduction

The survivability and prosperity of any organization depends crucially on its capability to perform a set of activities that result in the delivery of a valuable product or service for the market. In order to enhance their value chain, organizations use various technological and managerial solutions to support their business processes. These solutions may be developed internally or procured externally to the organization, configuring the two main ways to obtain any type of resources – insourcing and outsourcing. Confronted with fierce competition in the context of global economic and financial crises, companies strive for greater efficiency and reduced costs, while at the same

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time try to increase their specialization in a limited number of key areas. This state of affairs may tip organizations to the outsourcing side of the sourcing binomial, transforming the outsourcing option in a critical strategic decision [1].

In the realm of information systems (IS), outsourcing involves making arrangements with an external party for the partial or total provision of the management and operation of an organization's information technology (IT) assets or activities [2]. These arrangements take the form of contracts that state the agreement between two entities: the customer of the outsourcing services and the provider (or providers) of those services.

The relevance of IS outsourcing is evidenced by Gartner's forecasts of a worldwide market reaching $288 billion in 2013 [3] and of a growth rate of 5.2% in 2014 [4]. It may also be appreciated by considering the accumulated knowledge produced on the area (cf. [5,6]).

Prior to embark upon an IS outsourcing project, an organization should ponder the expected costs and benefits of the outsourcing option. If the organization decides to proceed with the outsourcing, the consideration of the cost-benefit relationship should persist, in order to take into account the benefits really achieved and the costs incurred. Associated with benefits and costs of an outsourcing deal there is a set of risks. These risks need to be managed if the transaction between an outsourcing customer and one or more outsourcing providers is to be successful.

Various studies have been conducted on IS outsourcing risks, addressing issues such as sources of risks, profiling and prioritization of risks, and actions to reduce the impact of risks. To some extent, that collection of works forms a fragmented, although extremely valuable, set of contributions. This interpretation motivated us to seek an integrated view of IS outsourcing risks. In fact, some authors have already made efforts to that end, such as [7] who extended the risk assessment framework used in engineering to analyze IS outsourcing risks, suggesting the need to combine risk scenarios, risk factors, consequences and mitigation mechanisms. This paper builds upon that collection of studies and integrative efforts. Our goal is to contribute towards the synthesis of a theory of IS outsourcing risk. We believe this theory may prove particularly useful to practitioners analyzing the feasibility of an IS outsourcing project or steering ongoing IS outsourcing transactions and to researchers deepening our understanding of the IS outsourcing risk management process.

The paper is structured as follows. After this introduction, a conceptual scheme for interpreting the literature on IS outsourcing risks is proposed, followed by the description of the work. Next, a preliminary version of a catalog of IS outsourcing risks is presented and discussed. Finally, conclusions are drawn and future work is suggested.

2. Conceptual Scheme

The aim of this study is to make a contribution in the domain of IS outsourcing that may assist in the near future in the creation of a theory of IS outsourcing risk. As formulated, this ultimate objective builds on three main concepts: IS outsourcing, theory and risk. As a first step towards that research goal, we will briefly discuss each of these three concepts in order to develop a conceptual scheme on which to base the generation of such theory.

IS outsourcing is not a new phenomenon. Since its emergence in the 60s, it has undergone several changes: from an emphasis on time-sharing services, it evolved to the application service provision (ASP) model in the late 90s, and then to service-oriented computing (SOC) and on-demand/utility computing in the beginning of this century [8]. Also, from a geographical point of view, it has diversified from domestic provision of services by third parties to offshore outsourcing, where the responsibility for management and delivery of IT services is located in a different country from that of the customer [9].

Whether the purpose for outsourcing is the externalization of IT infrastructure, application development, or IS management responsibilities, just to name a few, it is possible to conceive IS outsourcing as a process composed of two main phases: the decision process and the implementation [5]. The decision process phase encompasses three stages, in which organizations weight up the advantages and disadvantages of IS outsourcing, address alternative outsourcing arrangements and finally make the decision after comparing the various outsourcing options. The implementation phase is organized by [5] in two stages: how and outcome. The 'how' stage includes the selection of the provider and the customer-provider relationship related activities, namely relationship structuring (contractual process), relationship building (strengthening the relationship between customer and provider) and relationship management (driving the relationship in the right direction). The 'outcome' stage reflects the consequences of the outsourcing choice that was made, the degree of success of the arrangement and lessons from the outsourcing.

The second fundamental concept we review is theory. A theory is a set of defined and interrelated constructs that presents a systematic view of phenomena [10]. In order to be considered a theory, a conceptual artifact must identify the constructs that compose it, specify the relationships among these constructs, and be so formulated that these relationships are able to be tested, i.e., are falsifiable [11].

The importance of theory may be appreciated by considering its primary goals: analysis and description (description of the phenomenon of interest and analysis of the relationships among constructs), explanation (how, why, and when things happen), prediction (what will happen if certain preconditions hold) and prescription (provision of a recipe to the construction of an artifact) [12]. In this study we are interested in the IS outsourcing phenomenon from the perspective of risk, our third fundamental concept to discuss.

Risk is a word with multiple meanings. Recognizing the incoherent use of the concept, [13] identified four main conceptions for risk: a dangerous activity ("Where is in the list the risk of flying by plane?"), a probability ("What is the annual risk of death at eighty?"), a consequence ("What is the risk of letting the parking meter expire? Answer: be fined!"), and a danger or threat associated to an activity or technology ("How big is the risk of smoking cigars?").

In the literature it is possible to find these different conceptions of risk. Aubert et al. argue that risk encompasses the meaning of negative outcome, such as shortfalls in systems performance, disruption of service to customer, and loss in innovative capacity, and the meaning of factors leading to negative outcomes, such as a continuing stream of requirement changes or personnel shortfalls, lack of upper management commitment, and business uncertainty [14]. Similarly, in ISO 31000 standard is observed that risk is often characterized by reference to potential events, consequences, or a combination of these, being often expressed in terms of a combination of the consequences of an event and the associated likelihood of occurrence [15]. Willcocks and Lacity view risk as a negative outcome that has a known or estimated probability of occurrence [16]. Bahli and Rivard perceive risk as a danger or hazard [7]. Lacity et al. define risk as the probability of an action adversely affecting an organization [6]. Despite the diversity of meanings of the term risk, Renn isolated a common element among all definitions, namely the distinction between reality and possibility [17]. Under this assumption, that author defined risk as the possibility that human actions or events lead to consequences that have an impact on what people value [17]. In a similar vein, the standard ISO 31000 defines risk as the effect (positive and/or negative) of uncertainty on objectives [15]. At this point a distinction between risk and uncertainty is needed. As soon as 1921, Knight contrasted between the concepts of uncertainty and risk, noting that the former is present when the likelihood of future events is indefinite or incalculable, while the latter is present when future events occur with measurable probability [18]. This distinction contributes to correctly place the role of likelihood (probability) in risk related constructs. A final important derivation from the conception of risk by [17] is that risks may be conceived as mental representations of threats capable of causing losses or as opportunities that can produce gains. This last alternative view of the concept of risk is in sharp contrast with the common view that associates risk to hazard. In this study we adopted the former view of risk, focusing our attention on the possibility of some unfavorable event or outcome occur in the realm of IS outsourcing. Nevertheless, we will address the usefulness of the alternative view of risk for the management of IS outsourcing in the conclusion section of this paper.

Given the aim of this study, the review of literature on the concepts of theory and risk prompted us to develop a conceptual scheme that could provide a basis for constructing a theory of IS outsourcing risk, by shaping and organizing our interpretation of the findings in IS outsourcing literature. To this end, we propose the conceptual scheme illustrated in Figure 1.

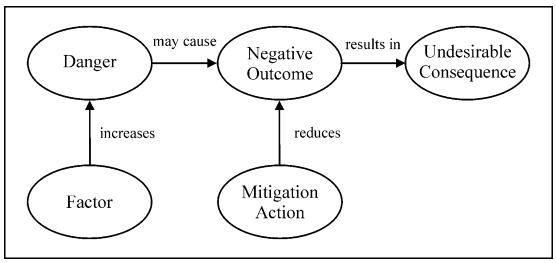

Fig. 1. Conceptual Scheme.

A danger is a potential cause of a negative outcome; it is not, by itself, a realized damage. A negative outcome is an adverse result from which derives an undesirable consequence. An undesirable consequence configures an explicit loss to the entity (in this case the organization), in terms of tangible or intangible assets or opportunities to reap future benefits. Both dangers and negative outcomes are possibilities that may culminate in undesirable consequences. A negative outcome and the originating danger are of interest to an organization due to the undesirable consequences that may entail for the organization. Associated with a danger and a negative outcome there is a likelihood of occurrence. Different dangers and negative outcomes may present distinct levels of severity. In contrast, a factor is an attribute of some entity or situation that increases the exposure of the organization to a danger. Contrary to dangers and negative outcomes, at a given time a factor has a well determined non-probabilistic value. Finally, a mitigation action consists in an act, usually performed by the entity that may suffer the undesirable consequence, expected to lessen the intensity of a negative outcome, eventually nullifying it.

3. Study Description

Having defined the conceptual scheme, we proceeded to review literature that explicitly addressed IS outsourcing risks. In order to pursue the goal of generating a theory of IS outsourcing risk, it is essential to take into account the wealth of studies conducted in the area. Our purpose was to interpret the findings in the literature in light of the proposed conceptual scheme. We began by conducting a literature search in the main scientific indexing platforms and repositories, such as ISI Web of Knowledge, SCOPUS, Google Scholar, b-on, and AIS Electronic Library. The search criteria involved looking for expressions “IS outsourcing”, “IT outsourcing” and “risk” in the title or abstract of papers. The results were screened for relevance, yielding a list of 33 papers. The next step was to characterize the IS outsourcing risks discussed in those studies. For that matter, we built a repository of IS outsourcing risk related elements. These elements were diverse in nature, including issues such as risk factors, risks, consequences, adverse events, risk mitigation mechanisms, risk management strategies, risk management practices, and risk profiles. From this recollection exercise we got 727 risk related elements (corresponding to an average of 22 risk elements per paper, with a minimum of 1 element and a maximum of 131 elements). To make sense of this set of issues we classified them according to the constructs found on our conceptual scheme. In addition, we also classified each issue according to the party involved, namely IS outsourcing customer or IS outsourcing provider. Given the preponderance of issues related to the customer side (693 risk related elements) to those regarding the provider side (34 risk related elements), for this study we concentrated our analysis on the former.

After classifying the issues, we aggregated them, by condensing issues presenting similar formulations. Special care was placed in the naming of the condensed issue, in order to remain faithful to the ideas underlying the original formulations and to minimize phrasing ambiguity. Besides the classification of each risk element, we also characterized them. For that end, we located each of the condensed issues in the IS outsourcing process, by asking the following questions in accordance to the construct category under examination: “When is this undesirable consequence felt more strongly?”, “At what stages this negative outcome may result?”, “At what stages this danger can be experienced more severely?”, “At what stages this factor has its major impact?” and “When does this mitigation action take place?”. For the undesirable consequences we used the following scale: pre-contract (Pre), execution of the contract (Exec) and post-contract (Post). For the other four constructs we resorted to [5] stage framework, locating the risk elements in the following IS outsourcing stages: Decision (D), Provider Selection (PS), Relationship Structuring (RS), Relationship Building (RB), Relationship Management (RM) and Outcomes (O). The nature of the risk elements was also considered by identifying for each undesirable consequence the corresponding type of loss and for each negative outcome, danger, factor and mitigation action their respective foci, i.e., the target object of the element. For each negative outcome and factor we also determined their loci – for the negative outcomes according to the emphasis of the risk element, and for the factors if they concerned the customer (Cust), the provider (Prov) or the transaction (Tran) that takes place between those two parties.

From this classification and characterization process resulted an artifact in the form of a catalog of IS outsourcing risks from the customer point of view which is presented in the next section.

4. Catalog of Information Systems Outsourcing Risks

The undesirable consequences for the IS outsourcing customer condensed from literature are shown in Table 1. Of the 17 issues, the loss of critical skills and competences by the customer on the domain of the services outsourced is the most referenced (14 authors), followed by unexpected transition costs of IS services and loss of control over IS decisions. The type of loss most often cited is financial, usually expressing situations where the customer incurs additional costs not expected or not anticipated. The group of undesirable consequences concentrates on the execution phase of the contract and on the post-contract phase.

Table 1. Customer-Side Undesirable Consequences.

Phase			Type of Loss	Item	Authors
Pre	Exec	Post			
		×	Capability	Loss of capability to change	[19]
	×	×	Capability	Loss of in-house critical skills and competencies on the domain of the services outsourced	[6,14,16,19,20,21,22,23, 24,25,26,27,28,29]
		×	Capability	Loss of IS innovative capacity	[30]
	×		Financial	Additional financial costs	[21,22,23,31]
	×		Financial	Costs of services outsourced higher than planned	[14,32]
	×	×	Financial	Excessive switching costs	[21,22,23,27,33]
×	×		Financial	Excessive transaction costs	[6,19,22,32]
×			Financial	High costs of locating providers and communication infrastructure	[32]
	×	×	Financial	Loss in future revenue	[23]
		×	Financial	No overall cost savings	[6]
	×		Financial	Unexpected transition costs of IS services	[6,7,14,21,22,23,27,34]
		×	Financial	Unwinding equity to cancel outsourcing contract	[22]
	×	×	Image	Negative impact on image of organization	[19,21,35]
	×	×	Internal control	Loss of control over IS decisions	[6,19,20,21,22,23,26,32]
	×		Internal control	Loss of control over services outsourced data	[6,19,21,22,23,26,32]
×	×	×	Morale	Negative impact on employees' morale	[35,36]
		×	Strategic	Loss of strategic alignment between business and IT	[20]

Table 2 groups the issues classified as negative outcomes. The most reported negative outcome relates to the general nature of the previous discussed financial undesirable consequences, namely the failure by the customer team responsible for the governance of the transaction to consider all the costs associated with the provision of IS outsourcing services. Of all 44 issues, 59% were classified in the Service category, with the outcomes regarding non-delivery or delayed delivery of services, unsatisfactory quality of services and security breaches in services concentrating the largest number of references. The second most represented category is Organizational, which includes the second most cited negative outcome, namely Provider lock-in. As it might be expected, the outsourcing stage that by far brings together more aspects is Outcomes (38 in 44). The stages Decision and Relationship Building have no issues, suggesting the need for more research on the adverse results that an organization may face during the crucial periods of deciding on outsourcing and laying the foundations for a smooth relationship with the provider.

Table 2. Customer-Side Negative Outcomes.

Stage					Locus	Focus		Item	Authors
D	PS	RS	RB	RM	O				
		×			×	Contract	Changeability	Inflexible outsourcing contracts regarding changes	[37]
					×	Contract	Financial	Contractual amendments in favor of provider	[7,14,23,37]
					×	Contract	Financial	Uncontrollable outsourcing contract growth	[6,21,26]
	×					Organizational	Governance	Failure to assess all provider search costs	[27]
					×	Organizational	Governance	Failure to consider all outsourcing costs	[6,19,21,23,24, 25,26,28,30,35]
					×	Organizational	Learning	Lack of organizational learning about the capabilities of the services outsourced	[30]
					×	Organizational	Strategy	Excessive dependence on the provider	[19,22,24,25]

	×	Organizational	Strategy	Irreversibility of the outsourcing decision	[21,24,25,26]
	×	Organizational	Strategy	IT becomes undifferentiated commodity	[37]
	×	Organizational	Strategy	Provider lock-in	[6,7,14,22,23,26,28]
	×	Personnel	Conflicts	Conflicts between users of the services outsourced	[38]
	×	Personnel	Impact	Large number of users affected by outsourcing	[22,38]
×		Relational	Accountability	Unaccountability of actions performed in the realm of the services outsourced	[37]
×		Relational	Dispute resolution	Involvement in the resolution of issues between the prime provider and its subcontractors	[22]
	×	Relational	Infringement	Infringement of Intellectual Property Rights	[6,20,32,36,37,39]
×		Relational	Litigation	Disputes and litigation over the services outsourced	[7,14,21,23,32]
×		Relational	Ownership	Undefined ownership of outsourced data	[37]
×		Relational	Withdrawal	Disengagement turmoil	[22]
	×	Service	Adaptability	Inability to adapt services outsourced to new IT	[20,24,27]
	×	Service	Changeability	Inflexible services outsourced regarding business change	[20,37]
	×	Service	Changeability	Inflexible services outsourced regarding technological change	[37]
	×	Service	Compatibility	Incompatible systems, software and procedures	[37]
	×	Service	Functionality	Non-delivery or delayed delivery by provider of services outsourced	[23,26,32,36,37,38]
	×	Service	Functionality	Services outsourced do not perfectly fit customer's needs	[37]
	×	Service	Functionality	Services outsourced wrongly developed	[38]
	×	Service	Integration	Lack of integration of customer's processes and outcomes	[22]
	×	Service	Integration	Lack of services outsourced integration between different units of customer	[22]
	×	Service	Integration	Lack of services outsourced integration between regional units of customer	[22]
	×	Service	Maintenance	Poor maintenance of services outsourced	[32,37]
	×	Service	Performance	Slow response time of services outsourced	[34,37]
	×	Service	Performance	Underperformance of services outsourced	[36,37,38]
	×	Service	Price	Unique needs of customer not met cost-effectively	[22]
	×	Service	Privacy	Privacy breach on the services outsourced	[6]
	×	Service	Quality	Debasement of services outsourced	[19,37,39]
	×	Service	Quality	Unsatisfactory quality of services outsourced	[19,22,23,32,36,37]
	×	Service	Reliability	Lack of reliability of services outsourced	[23,37]
	×	Service	Scalability	Limited scalability of services outsourced	[37]
	×	Service	Security	Disclosure of data handled by services outsourced	[19,37,39]
	×	Service	Security	Lack of awareness regarding location where services outsourced data is held	[37]
	×	Service	Security	Security breach on the services outsourced	[6,23,24,34,35,37]
	×	Service	Security	Unauthorized access to services outsourced	[37]
	×	Service	Security	Unavailability of services outsourced	[23,34,37]
	×	Service	Security	Violation of integrity of data handled by services outsourced	[37]
	×	Service	Workload	Workload below contracted base	[22]

The construct with the second largest number of issues is Danger, with a total of 104, as depicted in Table 3. Although the range of issues is very broad, three foci stand out: Governance (26 issues), Provider behavior (19 issues) and Contract (13 issues). This stresses the challenges customers face in terms of directing and managing the

transaction, the potential hazardous relationship with a third party and the central role of the outsourcing contract as the fundamental instrument that structures and ultimately arbitrates the transaction. Concerning the stages of the outsourcing process we find a more balanced distribution, although jointly the relational categories gather the largest number of references, indicating that part of the negative outcomes may be traced to relational issues.

Table 3. Customer-Side Dangers.

Stage						Focus	Item	Authors
D	PS	RS	RB	RM	O			
	×					Capability	Difficulty in attracting providers	[22]
	×					Capability	Difficulty in attracting providers to perform small slices of IS services	[22]
					×	Capability	Inability to respond to changes	[19,36]
				×	×	Capability	Insufficient knowledge transfer between customer and provider	[40]
			×	×		Communication	Communication difficulties between customer and provider	[6,32,38]
			×	×		Communication	Ineffective liaison elements between customer's managers and provider's IT specialists	[30]
			×	×		Communication	Insufficient interactions across outsourcing team members	[35]
				×		Communication	Logistical complications between customer and provider	[38]
	×	×		×	×	Communication	Miscommunication of services requirements	[35]
					×	Contract	Breach of contract by the provider	[6,24,25,26,37]
			×	×	×	Contract	Contract in favor of provider	[38]
				×		Contract	Difficulty in adapting outsourcing contracts in the face of business or technical change	[16,29]
		×		×		Contract	Difficulty in changing outsourcing panel of providers	[22]
				×		Contract	Difficulty in reducing costs when lesser volumes of outsourced services are required	[22]
					×	Contract	Exceeding budget in unit pricing outsourcing contracts	[22]
			×	×	×	Contract	Incomplete outsourcing contract	[16,29,34,37]
			×	×	×	Contract	Inflexible outsourcing contract	[6,34]
					×	Contract	Lack of competition on outsourcing contract rollovers	[22]
					×	Contract	No reflection of technical costs deflation in outsourcing contract	[19]
				×	×	Contract	Obstacles to the use of alternative providers	[22]
		×			×	Contract	Portion of outsourcing contract price devoted to accommodate the volatility of provider's cost to supply	[22]
					×	Contract	Inflexible outsourcing contract terms	[27]
			×	×		Culture	Poor cultural fit between customer and provider	[6]
×					×	Environment	Business uncertainty	[23,30]
					×	Environment	Currency fluctuations	[35,41]
					×	Environment	Environmental disaster	[20,39]
			×	×	×	Environment	Geopolitical instability	[35,40,41]
×					×	Environment	Legal environment uncertainty	[38,42]
					×	Governance	Awareness of the outsourcing costs incurred only allows to correct future behavior, precluding the recoup of past losses	[22]
				×		Governance	Differences in methodologies/processes used by distinct members of outsourcing provider team	[35]
			×	×		Governance	Difficulty in managing remote teams	[6]
					×	Governance	Failure to specify appropriate measures for service	[38]
				×		Governance	High number of small outsourcing contracts to manage	[22]
				×	×	Governance	Inability to know state of the outsourcing service	[38]
×	×	×			×	Governance	Inadequate requirements or strategy for outsourcing	[21,38]
	×					Governance	Inappropriate provider selected	[36]
	×				×	Governance	Incorrect outsourcing project planning	[32]
			×	×		Governance	Ineffective coordination between customer and provider	[42]
×						Governance	Lack of consideration of the merits of internal IT team to deliver services in-house	[27]

				×	×	×	Governance	Lack of establishment of risk/reward sharing of potential initiatives between customer and provider	[22]
					×		Governance	Loss of track of individual cost drivers	[22]
				×	×		Governance	Low visibility of outsourcing project processes	[35]
					×		Governance	Misinterpretation over outsourcing scope	[22]
						×	Governance	Outsourcing costs in the control of the provider	[22]
					×	×	Governance	Overlook of post-outsourcing	[27]
				×	×	×	Governance	Poor audit, quality assurance and control of outsourced services by customer	[38]
					×		Governance	Poor location of outsourcing contract management responsibility	[22]
						×	Governance	Poor management of change	[35,38]
					×	×	Governance	Poor management of users' expectations	[35,38]
					×	×	Governance	Poor project management by provider	[38]
					×		Governance	Poor relationship management by provider	[16,29]
				×	×		Governance	Poor relationship management of multiple providers	[22]
×	×					×	Governance	Unclear outsourcing cost-benefit relationship	[24]
						×	Governance	Unrealistic estimation of schedule and required resources	[38]
				×	×	×	Parties behavior	Complacency in customer and/or provider	[22]
				×	×		Parties behavior	Conflict between customer and provider	[19,38]
				×	×		Parties behavior	Lack of cooperation between customer and provider	[32]
				×	×	×	Personnel behavior	Lack of cooperation by customer IT team	[38]
×				×	×	×	Personnel behavior	Opposition from internal IT staff	[6,25]
					×		Power	Power asymmetries developing in favor of the provider	[6,16,29,34]
						×	Privacy	Insufficient privacy of data handle by IS services outsourced	[37,40]
				×	×		Provider behavior	Adversarial relationship between multiple contracted providers	[19,22]
	×	×					Provider behavior	Biased portrayal by providers	[6,26,34,38]
						×	Provider behavior	Delivery of outsourced services restricted to core contract discarding value-added component	[22]
					×		Provider behavior	Encroachment of areas of activity among providers	[22]
					×		Provider behavior	Exploitation of customer's expertise by provider	[34]
						×	Provider behavior	Lack of motivation of provider to reduce costs	[22]
				×	×		Provider behavior	Lack of trust on provider	[6,23,26]
						×	Provider behavior	Misplacement of focus on outsourcing service provided (how vs. what)	[30]
					×	×	Provider behavior	Monopolistic provider's behaviors	[22]
					×		Provider behavior	Non-compliance with specified methodologies for developing or providing services	[38]
					×	×	Provider behavior	Opportunistic bargaining by provider	[19,23,41]
						×	Provider behavior	Poaching	[41]
					×		Provider behavior	Provider limits its accountability to specification meeting	[22]
						×	Provider behavior	Provider with superior experience takes advantage of inexperienced customer	[22]
						×	Provider behavior	Shirking (deliberate underperformance by provider while claiming full payment)	[23,41]
	×						Provider behavior	Too low outsourcing bidding to make a profit	[22]
				×	×	×	Provider behavior	Unethical behavior of provider	[38]
					×		Provider behavior	Unexpected subcontracting of IS services outsourced by provider	[19,22,34]
					×		Provider behavior	Use of hidden subcontractors by provider	[37]
						×	Provider capability	Difficulty in incorporating existing data into outsourcing services to provide	[37]
		×	×	×	×	×	Provider capability	Lack of experience of provider	[6,30]
		×	×	×	×	×	Provider capability	Lack of expertise of provider	[6,22,25,30,35,38]
						×	Provider capability	Loss of provider's key employees	[38]
					×		Provider capability	Reduced provider's teamwork effectiveness	[32]
		×					Provider capability	Underestimation of the resources required to run the customer's systems by provider	[31]
						×	Provider capability	Unsuitability of technical methodologies applied by provider	[32]

						×	Provider infrastructure	Instability of provider's infrastructure	[40]
						×	Provider infrastructure	Technological platform of services outsourced restricted to vanilla solutions	[22]
						×	Provider infrastructure	Technical problems with telecommunications or infrastructure	[22,35]
				×	×	×	Provider personnel	High turnover/burnout of provider's staff	[6,35,40]
				×	×	×	Provider personnel	Unreliability of provider	[42]
						×	Provider service	Insufficient support or maintenance by provider	[22,35,37]
						×	Provider service	Poor provider service	[6]
						×	Provider viability	Poor provider's financial stability	[6,19,28]
						×	Provider viability	Provider goes out of business	[6,34]
						×	Regulatory	Non-compliance with regulations	[36,37]
					×	×	Requirements	Conflicting requirements	[38]
					×		Requirements	Difficulty in negotiating requirements changes	[22]
×	×	×				×	Requirements	Inconsistent, missing, or incorrect IS requirements for services to outsource	[32]
					×	×	Requirements	Requirements instability	[38,42]
				×	×		Security	Accommodation of services outsourced infrastructure and granting access to provider's staff	[22]
						×	Security	IS security issues	[25,37,39,40]
×						×	Uncertainty	Endemic uncertainty	[30,43]

The fifty five factors that have resulted from the interpretation of the reviewed literature on IS outsourcing risks are presented in Table 4. This is the construct category where the issues have distributed more evenly over the six outsourcing process stages. Two factors – experience and expertise with IS outsourcing – are present throughout the lifecycle of outsourcing, with customer's expertise being the most cited factor. The majority of the factors (30) have locus on the customer, followed by 20 factors related to the transaction and five factors being attributes of the provider. Concerning the issues with customer locus, the two major focus categories are Governance (14 factors), comprising a set of issues that shapes the perspective customers hold on outsourcing, followed by Capability (11 factors), as measures of the customer's skills and competences on IS outsourcing.

Table 4. Customer-Side Factors.

Stage					Locus	Focus		Item	Authors
D	**PS**	**RS**	**RB**	**RM**	**O**				
×	×					Cust	Capability	Capability to attract providers	[22]
				×		Cust	Capability	Capability to manage outsourcing contract scope changes	[40]
				×		Cust	Capability	Capability to measure services outsourced	[21,27,43]
			×	×		Cust	Capability	Capability to trace accountability in outsourcing services outsourced	[22,44]
					×	Cust	Capability	Change management capability	[3,8]
×	×	×	×	×	×	Cust	Capability	Experience with IS outsourcing	[16,29,34]
×	×	×	×	×	×	Cust	Capability	Expertise with IS outsourcing	[6,21,22,27,30,34 35,38,42,43,44]
		×				Cust	Capability	Familiarity with international and foreign contract law	[35]
			×	×		Cust	Capability	Reliability of mechanisms to audit and control outsourcing service	[21,27]
	×	×				Cust	Capability	Sourcing and contracting capability	[16,29]
		×	×	×	×	Cust	Capability	Variation of available technical expertise	[27]
			×	×	×	Cust	Environment	Stability of business and organizational environment	[38]
×						Cust	Financial	Availability of funds	[38]
		×				Cust	Governance	Acceptance of standard outsourcing contract arranged by provider	[27]
			×	×	×	Cust	Governance	Commitment to outsourcing by customer	[38]

				×		Cust	Governance	Complexity of integrating multiple providers	[22]
	×	×	×	×	×	Cust	Governance	Governance capability of outsourcing project	[38]
×	×					Cust	Governance	Information on outsourcing market	[21]
		×				Cust	Governance	Information security policy	[27]
×	×	×				Cust	Governance	IT considered an undifferentiated commodity to be outsourced	[6,16,29,34]
		×				Cust	Governance	Outsourcing scope (total vs. selective)	[27]
×						Cust	Governance	Patriotic perception of offshore outsourcing	[6]
×	×	×				Cust	Governance	Purpose of outsourcing	[16,29]
×	×	×				Cust	Governance	Realism of expectations for outsourcing	[16,29,34,38]
×	×					Cust	Governance	Requirement for different subcontractors	[22]
×						Cust	Governance	Soundness of outsourcing cost-benefit relationship	[25]
×		×	×	×		Cust	Governance	Top management commitment	[27,35]
×			×	×	×	Cust	Personnel	Level of internal resistance to outsourcing	[19,24,38]
			×	×	×	Cust	Personnel	User involvement	[35]
×					×	Cust	Strategy	Alignment between business strategy and IT	[38]
×	×					Prov	Availability	Number of available providers	[43]
			×	×	×	Prov	Capability	Consistency of capabilities between different regional providers	[22]
		×	×			Prov	Capability	Existence of certification and quality model by provider	[21]
	×		×	×	×	Prov	Capability	Qualification of provider's staff	[24,25,38,40]
	×					Prov	Viability	Provider viability	[35]
			×	×		Tran	Accessibility	Physical access to provider's site	[22]
			×	×		Tran	Communication	Language and communications between customer and provider	[35,40]
			×	×		Tran	Communication	Quality of communications and transmission systems between customer and provider	[41]
					×	Tran	Complexity	Complexity of operations	[41]
			×	×	×	Tran	Complexity	Interdependence between tasks, business units and functions	[30,42,43]
			×	×		Tran	Complexity	Interdependence of services and contracts among providers	[22]
×	×	×			×	Tran	Complexity	Technical complexity of services to outsource	[38,42]
		×	×	×		Tran	Contract	Contract penalties for non-performance	[27]
		×				Tran	Contract	Extension of provider's rights in outsourcing contract	[22]
		×				Tran	Contract	Inclusion of service level agreements in outsourcing contract	[27]
		×		×	×	Tran	Contract	Outsourcing contract length	[22,27,40]
					×	Tran	Contract	Pricing framework of outsourcing contract	[38]
			×	×		Tran	Culture	Cultural differences between customer and provider	[6,19,35,36,40, 41,42]
		×	×	×		Tran	Governance	Agendas of customer and provider	[22]
		×	×	×		Tran	Governance	Degree of shared accountability between customer and provider	[22]
			×	×		Tran	Location	Different time zones between customer and provider	[35,40]
			×	×		Tran	Location	Geographic separation between customer and provider	[38,41]
		×			×	Tran	Regulatory	Laws and regulations in provider's country	[27]
×	×	×	×	×		Tran	Size	Size of the outsourced service	[38,40]
		×		×		Tran	Specificity	Specificity of assets used by provider to supply outsourced services	[43]

The analysis of the collected works resulted in the consolidation of 127 mitigation actions which are listed in Table 5. This is the construct with the largest pool of instances, although no single issue clearly stands out over the rest. Yet, the analysis by focus shows a strong incidence of the mitigation actions in governance related practices (Transaction Control and Project Management), followed by the Relationship and Capability categories. As it might

be expected, the stage Outcomes does not contain any issue, highlighting the reasoning that mitigation actions must be timely implemented. A note of caution regarding this list is that some of the actions advanced in literature are actually goals, instead of specific means that may diminish the severity of negative outcomes.

Table 5. Customer-Side Mitigation Actions.

Stage					Focus	Item		Authors
D	PS	RS	RB	RM	O			
×	×	×	×	×		Capability	Develop IS outsourcing expertise	[16,22]
			×	×		Capability	Develop outsourcing project management capability	[29]
			×	×		Capability	Ensure customer user-provider liaison capability	[34]
×	×	×	×	×		Capability	Resort to external consultant advice	[22,29,32]
				×		Capability	Retain key IS business skills	[16,22,29]
				×		Capability	Retain key IS technical skills	[22,29]
			×			Change management	Establish change management	[32]
×						Commitment	Get buy-in from business unit management	[22]
×						Commitment	Get buy-in from regions	[22]
×						Commitment	Make senior management sign business case for outsourcing	[16]
				×		Commitment	Provide management focus and time	[22]
			×	×		Communication	Ensure fit between outsourcing task and communication medium	[32]
				×		Communication	Monitor communications network link with provider	[22]
			×	×		Communication	Undertake video conferencing and face-to-face work with provider	[32]
		×				Contract	Negotiate detailed and complete contract	[16,34]
		×				Contract chunkification	Distribute outsourcing services among providers (horizontal chunkification)	[7,29,41]
		×				Contract chunkification	Divide outsourcing work into sequential non-overlapping activities (vertical chunkification)	[7,16,29,41]
			×			Contract dissemination	Disseminate contract highlights to entire user community	[34]
		×				Contract interdependence	Design interdependent contracts between independent providers	[22]
		×				Contract length	Negotiate short-term contracts	[24,34]
		×				Contract length	Preview additional extension option in contract	[29]
		×				Contract termination	Establish rules and options for contract termination	[16,22,34]
				×		Contract termination	Prepare for end of contract	[22]
			×	×		Contracts portfolio	Manage the overall small-scale deals as a portfolio	[22]
				×		Control	Retain control over IS strategy	[29]
				×		Cost drivers	Understand outsourcing transaction cost drivers and corresponding market prices	[22]
				×		Cost overruns	Minimize costs overruns	[22]
				×		Cost savings	Project cost savings over contract length	[29]
		×	×			Culture	Establish and ensure shared values when provider wants profit and the customer wants to control costs	[22]
			×			Data repository	Share outsourcing project data repository	[32]
				×		Disputes resolution	Resort to mediation and arbitration to resolve disputes	[7]
		×				Documentation	Establish standards for service documentation	[32]
×						Feasibility	Balance performance requirements for services to outsource with capabilities of technology	[34]
		×				Financing options	Negotiate with provider financing options for the outsourcing contract	[23]
		×				Flexibility	Ensure sourcing alternatives in contract	[22]
		×				Flexibility	Include in contract flexibility rights	[7,22]
				×		Flexibility	Retain switching possibilities	[29]
		×				Flexibility	Use performance-based contracting where possible	[34]
		×				Incentives	Include in contract efficiency incentives	[30]

			×				Infrastructure	Ensure asset refreshment at market standards and prices	[22]
					×		Intellectual property rights	Retain intellectual property rights	[29]
×							Justification	Analyze outsourcing need before contracting	[29]
×							Justification	Assess outsourcing 'soft' factors, not just price/cost	[29]
×							Justification	Determine what IT gives business advantage	[16]
×							Justification	Distinguish between core/non-core business and IT assets and activities	[29] [16]
×							Knowledge	Ensure full understanding of the nature of the work to be outsourced	[24]
×							Knowledge	Ensure understanding of systems and products	[16]
					×		Knowledge	Retain business understanding of services outsourced	[29]
	×						Knowledge	Understand if and how provider earns a profit	[34]
					×		Maintenance	Retain standards maintenance	[29]
				×			Measurement	Establish detailed performance metrics that aggregate to overall service metrics	[22]
			×				Measurement	Establish performance measures and service-level agreements	[16,29,30,34]
			×				Measurement	Introduce in contract provision to business contribution measurement	[29]
				×			Methodology	Avoid non-appropriate development methods	[32]
			×				Non-competition	Include non-compete clause in contract	[34]
					×		Ownership	Retain ownership of IS assets	[16,29]
			×				Parties expectations	Delineate in contract expectations from both customer and provider perspectives	[16,34]
			×				Personnel	Define personnel policies at the signing of outsourcing contract	[30]
				×	×		Power balance	Ensure power balance between parties	[22]
			×				Pricing	Avoid time and material contracts	[32]
			×				Pricing	Contract on a market-competitive price and service basis	[16]
			×				Pricing	Forecast against fixed-price limitations such as volume constraints	[22]
			×				Pricing	Negotiate adequate pricing framework with provider	[16,22,29]
			×				Pricing	Stipulate in contract update of resource usage charging after customer's systems become running at the provider's operating environment	[31]
			×				Pricing	Unbundle lumped prices to assess cost drivers or benchmark	[22]
				×	×		Project management	Direct provider's efficiency	[22]
				×	×		Project management	Ensure delivery of accountabilities plus planning and executing initiatives	[22]
				×			Project management	Establish clear and comprehensive outsourcing management structure	[29,32]
				×			Project management	Establish project management	[32]
					×		Project management	Perform complete project management of outsourcing transaction	[22,23,32,34]
				×	×		Project management	Perform daily contract management	[16,29]
	×						Provider capability	Demand from providers customer references that illustrate turnaround cases	[34]
	×						Provider capability	Evaluate provider capabilities	[32]
				×	×		Provider competition	Maintain ongoing rank of providers panel members based on performance	[22]
	×						Provider competition	Promote competitive bidding mechanism between providers	[22,29]
				×	×		Provider direction	Provide clear directions to the provider	[22]
	×						Provider quality	Select supplier with sound financial position, stable customers, proven track reports, and stable strategic partners	[34]
				×	×		Relationship	Communicate with provider	[19]
			×				Relationship	Contract a good foundation for relationship between	[29]

						customer and provider	
			×		Relationship	Develop a preferred provider relationship to deal with unanticipated work over the contract length	[29]
			×		Relationship	Expedite outsourcing relationship by using a strategic partner, establishing a joint venture or involving a subsidiary	[32]
			×		Relationship	Make provider participate in the formulation of design specifications	[23]
			×	×	Relationship	Manage relationship	[22]
			×		Relationship	Retain relationship building	[16]
			×		Relationship	Set processes in place to let relationship develop	[29]
		×			Requirements	Balance unique needs and standardization needs in contract	[22]
			×		Requirements	Perform face-to-face requirements analysis	[32]
			×	×	Risk management	Ensure risk management is performed in low value contracts	[22]
		×			Risk sharing	Make the provider share the risks	[26]
×					Scope	Consider opting for selective outsourcing or outsourcing with multiple providers	[24]
×					Scope	Consider passing complete outsourcing of projects, except design specifications, to provider	[23]
×					Scope	Consider restricting outsourcing to technology implementation	[29]
×					Scope	Define outsourcing scope	[22]
				×	Security	Consider using virtual private networks for highly sensitive data	[34]
				×	Security	Encrypt data	[34]
	×				Security	Ensure security and disaster recovery at provider	[22,29]
				×	Security	Retain access control in-house	[34]
	×				Selection quality	Establish multi-disciplinary group for provider selection	[29]
	×				Selection quality	Undertake thorough provider selection process	[29]
×					Strategy	Consider multiple objectives for outsourcing (economic, technical, strategic)	[29,34]
×					Strategy	Design outsourcing project by partitioning work in tranches	[29]
			×	×	Strategy	Opt for incremental or parallel implementation	[34]
×					Strategy	Perform IS capacity planning	[22]
×					Strategy	Provide strategy and direction for outsourcing decision	[22]
×					Strategy	Source incrementally	[34]
	×				Strategy	Source to multiple suppliers	[7,34]
×					Strategy	Stabilize IT applications before outsourcing	[16]
		×			Subcontracting	Establish in contract various rights over the subcontracting (access, selection, veto, etc.)	[22]
		×			Subcontracting	Require full disclosure and customer approval of all subcontractors	[34]
				×	Total cost of ownership	Manage total cost of ownership	[22]
			×	×	Transaction	Manage the contract as well as the entity or equity investment	[22]
				×	Tran benchmarking	Benchmark transaction	[22,30]
			×	×	Tran control	Apply control mechanisms to the outsourcing transaction	[7,22,24,29]
				×	Tran control	Audit compliance	[22]
				×	Tran control	Audit costs and efficiency	[22]
				×	Tran control	Audit internal controls at provider	[22]
				×	Tran control	Audit provider timesheets	[22]
			×		Tran control	Establish monitor and coordination mechanisms	[23]
				×	Tran control	Monitor all providers are operating as an efficient and united front	[22]
				×	Tran control	Monitor transaction	[22,34,41]
				×	Tran control	Perform regular reviews of transaction	[16,29,30]
				×	Tran control	Perform updates of price/service/requirement	[29]
			×	×	Tran control	Undertake regular provider-business management reviews	[16,29]
×					Tran trade-offs	Ensure cost-service trade-offs are focused and clear	[29]
			×		Transition	Plan and test transition	[34]

×	×	Work organization	Stage work hours with offshore provider	[32]
	×	Workload	Monitor and manage customer's outsourced workload	[22]

5. Conclusion

The search for a theory of IS outsourcing risk is a long and difficult endeavor. In this paper we attempted to begin attacking that challenge by proposing a conceptual scheme comprising the main constructs of the theory and by elaborating a catalog of IS outsourcing risks based on literature. The move towards the generation of that theory admits (and requests) many future works. At the conclusion of this study we advance five avenues for research. One is to compose a catalog of IS outsourcing risks from the provider's point of view. This would deal with the other party of the outsourcing dyad and allow relating the risk perspectives of the two stakeholders. A second suggestion is to complement the constructs danger and negative outcome with a risk profile. Recognizing the operational difficulty of adopting an approach that could take into account the contingencies of a specific customer or provider, an alternative way to assist in risk profiling might be to assess the possibility of dangers and negative outcomes by indexing it to the factors. A third proposal for future research is to conduct a field study in order to assess the comprehensiveness of the catalog. This could consist on a retrospective study of a series of IS outsourcing cases in the risk sphere. The fourth proposition involves equalizing the granularity of the issues that instantiate each of the constructs that make up the catalog. A final suggestion derives from the complementary view of risk as opportunity that can produce gains. Adopting this view, where IS outsourcing benefits are conceived as (eventually positive) risks, one could extend the theory to encompass the interplay between IS outsourcing dangers and opportunities.

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