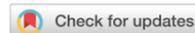




## ISM approach to model financial risks in Indian KPO organization

Naveen J<sup>1\*</sup>, Himanshu Payal<sup>1</sup> and Prashant Chauhan<sup>2</sup>



<sup>1</sup>Department of Mechanical Engineering, Sharda University, Greater Noida, Uttar Pradesh, India; <sup>2</sup>Department of Mechanical Engineering, JSS Academy of Technical Education, Noida, Uttar Pradesh, India

E-mail/Orcid Id:

NJ,  [naveen.j.murthy@gmail.com](mailto:naveen.j.murthy@gmail.com),  <https://orcid.org/0000-0002-0046-1080>; HP,  [himanshu.payal@sharda.ac.in](mailto:himanshu.payal@sharda.ac.in);  
PC,  [prashantchauhan@jssaten.ac.in](mailto:prashantchauhan@jssaten.ac.in),  <https://orcid.org/0000-0003-0769-8504>

### Article History:

Received: 1<sup>st</sup> Apr., 2023

Accepted: 14<sup>th</sup> Jun., 2023

Published: 30<sup>th</sup> Aug., 2023

### Keywords:

Interpretive Structural Modeling, financial risk factors, knowledge process outsourcing

**Abstract:** Globalization has entered a new phase due to significant advancements in technology. This progress has allowed organizations to reduce costs while enhancing their market responsiveness, thus gaining a competitive edge. Nowadays, organizations prioritize knowledge process outsourcing (KPO) as a crucial element in their strategies, particularly in the service sector. However, research indicates that several challenges are negatively impacting the performance of the supply chain network when it comes to KPO. One major challenge is the financial risk associated with this environment. Various factors, such as switching costs, adaptation costs, and layoff costs, influence this financial risk. The aim of this research is to comprehend and identify the interconnectedness of these financial risk factors, which can affect the operational performance of KPO. The authors have meticulously reviewed relevant literature to identify these financial risk factors. Based on this subject matter, an integrated model has been constructed using Interpretive Structural Modeling (ISM) to address the finance-related challenges impacting KPO. Additionally, the Cross-Impact Matrix analysis evaluates the dependency and driving power of financial challenges. This analysis assists decision-makers in classifying and identifying important factors, as well as understanding the direct and indirect effects of each factor on operations related to KPO. The results indicate that switching costs, disputes & litigation, and measurement problems have strong driving power and weak dependency, making them independent factors. By mitigating these independent factors, the overall performance of the model can be improved.

### Introduction

Knowledge Process Outsourcing (KPO) is a business strategy where organizations delegate knowledge-intensive processes that require specialized expertise, analytical skills, technical abilities, and decision-making capabilities to external providers. Unlike focusing on cost-saving, KPO aims to add value to the business by improving performance (Mondejar and Asio, 2022). It has become popular among global firms as a means to reduce operational costs and enhance efficiency (Shaharudin et al., 2014). KPO covers a range of areas such as research and design, legal and insurance claims, intellectual property, investment research, and valuation research (Ndiiri and Kilika, 2021). KPO providers offer comprehensive solutions that span from simple to complex processes (Umarova, 2022).

Organizations choose to outsource knowledge-intensive work to external parties for several reasons. Firstly, it allows them to concentrate on their core business functions, rather than diverting resources and energy to non-core processes (Gupta, 2022). Additionally, outsourcing certain services leads to cost reduction and value creation, providing a competitive advantage (Agrawal et al., 2010). Outsourcing also brings operational expertise and improves the quality of output since non-core functions are handled by specialized KPO providers (Gupta, 2022). Moreover, outsourcing enables sourcing flexibility and peak load balancing, eliminating the need for large fixed-cost commitments (Gupta, 2022). Lastly, it provides access to a global reach, allowing organizations to expand beyond their local boundaries (Gupta, 2022). While there is still a lack of understanding



regarding how internal and external knowledge integration impacts innovation within KPO firms, it is crucial for these firms to address challenges such as domain expertise, location advantage, regulatory compliance, and risk management to maintain a competitive edge (Liu, 2019; Sayed and Agndal, 2021). Organizations adopt outsourcing operations and implement new systems engineering to create work capabilities and adapt to the global village concept and technological discontinuities (Kumar et al., 2014). Although there are potential challenges, both the business process outsourcing (BPO) and KPO sectors hold significant potential (Umarova, 2022).

In terms of financial risks, inshore KPO poses fewer risks compared to offshore KPO as knowledge of the vendor, and management difficulties (Handley et al., 2022). Financial risk, which typically relates to an organization's assets, is the most common type of risk associated with KPO (Dana et al., 2021). It includes costs such as switching, layoff, contractual amendments, and adaptation (Hamilton et al., 2020). Financial risks are often overlooked initially but can emerge as hidden costs later on (Stüber, 2020). Research on risk mitigation in KPO has yielded successful results through various approaches. Flexibility, information exchange, and solidarity are key norms for successful software development in KPO (Mathew and Chen, 2013; Lee, 2022). Behavioural economics models have been developed for decision-making in overseas finance (Beerbaum et al., 2019), while structural modelling approaches have been used to analyse intentions for overseas direct finance (Ali, 2017). The assets dependency framework has addressed marketing and strategic issues in KPO (Iankova and Katz, 2003).

Previous studies have focused on understanding financial risks associated with KPO, but there is limited research that examines the relationships among multiple risk factors. The complexity of financial issues at both micro and macro levels in KPO makes it challenging to comprehend the connections between different financial risk factors (Kano et al., 2020). Therefore, managing micro and macro-financial risks should be a top priority for businesses seeking cost or flexibility advantages through outsourcing (Fierro Hernandez and Haddud, 2018). This study consists of two main stages. In Stage 1, descriptive data analysis is conducted to identify the key factors that impact the financial risk and performance of KPO. This involves designing a questionnaire and conducting interviews to rank the different financial risk factors. Moving on to Stage 2, an Interpretive Structural Modeling (ISM) and Cross-Impact Matrix analysis are

performed. This stage involves establishing contextual relationships between the identified financial risk factors, followed by the development of a Structural Self Interaction Matrix (SSIM). Next, a Reachability Matrix is created and partitioned into different levels. Subsequently, a diagraph is developed based on the relationships between the factors, an ISM model is constructed, and finally, a cross-impact matrix is created. Resources are always limited therefore by optimum utilization of resources for addressing the independent factors will mitigate all factors of financial risk in KPO.

The main objectives of the paper are to identify financial risk factors related to KPO, establish relationships among these factors. Categorization of financial risks factors into independent, dependent, autonomous, and linkage factors.

### Literature Review

Numerous factors have a significant impact on the financial risk associated with the performance of KPO. This section examines a few crucial factors supported by relevant literature.

#### Switching cost

When a service provider fails to meet expectations, the client organization is compelled to seek an alternative provider, leading to additional expenses. The reasons for switching between providers can include channel conflicts, the emergence of new competitors, or the termination of business contracts (Lesmono et al., 2020). However, in the presence of financial constraints, the ability to switch between in-house production and external contracting at a predetermined cost is limited in Knowledge Process Outsourcing (KPO) (Choi et al., 2018). The risks associated with these costs include switching costs, unforeseen transition and management expenses, costly contractual amendments, and potential legal disputes (Chou and Chou, 2009). Switching costs refer to the financial implications incurred when changing policies, products, services, or suppliers (Gao et al., 2021). They can be used as indicators to identify areas for improvement in corporate sustainability strategies. These costs significantly impact the financial aspects of high-demand industries, including installation expenses, administrative tasks, loss of discounts, and strained relationships (Guandalini et al., 2019).

In addition, complex political relationships between countries can necessitate a switch in service providers, resulting in additional costs. In some cases, the client organization may opportunistically choose a new service provider, incurring alternative costs. Cultural differences, such as variations in employee accents, can negatively affect customer satisfaction and lead to significant losses,

prompting a switch in service provider and incurring alternative costs. Moreover, political instability in the service provider's country can burden the client organization, requiring a change in providers and resulting in additional expenses. When opting for a different service provider, the buyer may encounter various expenses and damages based on the associated switching costs (Ye et al., 2022). However, financial limitations make it challenging to switch between in-house production and external contracting at a predetermined cost (Choi et al., 2018).

### Measurement Problems

Categorizing costs based on various factors such as industrial objects, contracts, and agreements is an outcome of the measurement of performance under high-standard employment contracts (Alkarawy et al., 2021). This measurement of performance serves as a valuable tool for comparing established processes with actual processes and evaluating progress toward business goals (Park et al., 2017). Performance measurement is closely linked to both outputs and outcomes, (Yaghoobi and Haddadi, 2016) and outsourcing services can enable a firm to concentrate on core activities and potentially enhance customer satisfaction, which is a crucial performance indicator (Kyusya, 2015). To effectively measure performance, four perspectives are considered: financial, internal processes, customer, and learning and growth of the firm (Nyambura et al., 2020). This comprehensive approach allows organizations to evaluate the strengths and weaknesses of their sourcing strategies and assess the efficiency and effectiveness of existing approaches (Soh et al., 2019). While performance measurement has traditionally focused on cost-effectiveness and financial aspects, current practices also emphasize alignment with organizational goals, such as customer satisfaction, internal processes, innovation, and learning. Six performance measurements are typically employed, including cost-effectiveness, timeliness, work compliance, responsiveness, client needs fulfillment, and service delivery reliability (Soh et al., 2019).

In order to derive maximum benefits, it is crucial to measure organizational performance based on strategy, considering all aspects rather than focusing solely on staff. Organizations must use measurement and management systems derived from their strategies and capabilities to survive and maintain competitiveness. The inability to measure performance is due to incomplete or immeasurable specifications, or poor measurement systems (Ellram et al., 2008). However, challenges can arise due to cultural perceptions, geographical differences, and language barriers, leading to potential

conflicts between the service provider and client organizations. Currency devaluation may also affect the service provider's interest, potentially resulting in decreased commitment to the assigned task. Payment discrepancies can arise in services, as wages are often calculated on an hourly basis and exclude compensation for the management team, leading to conflicts. Additionally, problems may arise during the course of a contract when additions or improvements to the work are needed, as the service provider may demand higher rates while the client expects the work to adhere to the initial contract terms. Proper initial calculations and effective communication throughout the project are essential to mitigate such issues.

### Dispute and Litigation

Geographical and cultural disparities can give rise to disputes and legal conflicts and vague terms and conditions often lead to disagreements between organizations (Herath and Kishore, 2009). In KPO projects, agreements between clients and vendors are frequently violated due to opportunistic behavior, misunderstandings, or external factors (Yao et al., 2021). Cost-related risks include switching costs, unanticipated transition and management costs, expensive contractual amendments, disputes and litigation (Chou and Chou, 2009). Experienced vendors in the outsourcing industry have an advantage during negotiations compared to inexperienced ones. Conversely, inexperienced vendors are less likely to make significant concessions, potentially resulting in terms that may lead to future disputes and litigation (Virginia & Jackson, 2021). Strict enforcement of contracts can escalate conflicts and legal battles, endangering the mutually beneficial long-term relationships between the parties involved (Yao et al., 2021).

Differences in performance standards can cause misunderstandings, while geographic and cultural disparities can create conflicts when certain default settings in one country do not apply in another. These disparities, coupled with intellectual property rights and variations in legal systems, further complicate matters and contribute to litigation issues. Unsatisfactory work and dissatisfied clients may also prompt organizations to resort to legal action. To prevent disputes and legal conflicts with tax authorities, multinational businesses engaged in global transactions and supplying goods or services to affiliated or associated companies now have alternative options for effectively managing their global supply chains. This can be achieved by carefully selecting an appropriate pricing driver component within

the supply chain management (SCM) framework (Chugan and Panchal, 2022).

### **Adaptation Cost**

The client organization needs to develop competency in order to understand the high-level solutions provided by the service provider (Gunasekaran et al., 2015). Unexpected changes often require trade partners to engage in costly renegotiations, resulting in adaptation costs (Ge et al., 2021). High-end work or changes in technical specifications can lead to significant adaptation expenses for the client organization. While short-term contracts can reduce adaptation costs, they may eventually become excessively expensive. In the later stages, acquiring knowledge about the service provider's work involves substantial travel expenses (Krishnan and Mani, 2020). Even with good intentions from both parties, unforeseen circumstances during implementation can result in ineffective adjustments (Ge et al., 2021). To develop solutions collaboratively, team members from the client organization need to work closely with employees from the service provider organization, which incurs additional costs for training. The client organization may also hire new staff members to gain a better understanding of the service provider's work, which can be expensive. There is always a risk of inadequate work by the service provider, so it is important to have a backup plan in place, which can also be costly, especially for complex projects.

### **Costly Contractual Amendments**

Contractual amendments typically occur when there is a lack of clarity regarding future events and the behavior of the other party involved (Bahli and Rivard, 2017). Costs arise from revisions and amendments that were not initially identified in the contract (Aubert et al., 2006). Many project-related factors are defined at later stages, and these changes may result in significant charges from the service provider. KPO, which carries inherent risks, can lead to negative outcomes and costly contractual amendments (Cedeño and Alonso, 2018). In particular, R&D outsourcing often involves failures and requires contract revisions to establish new terms and conditions. Implementing contractual measures to prevent imperfect commitment is challenging (Paterson and Wilson, 2018). It is impractical to include every minute detail in a formal contract, and this can lead to situations where the service provider organization takes advantage, resulting in losses for the client organization. The most satisfactory solution for managing outsourcing involves a combination of formal contractual management and informal relationship management (Paterson and Wilson, 2018). Upon contract completion, service provider organizations may retain

confidential information, which can influence the pricing of future contracts. Changes in rules and regulations by the service provider organization's government can impact the client organization, leading to contract revisions with new taxes. The risk of uncertainty increases the likelihood of costly contractual amendments, which can escalate costs, degrade service quality, and can be mitigated through sequential contracting and contract flexibility mechanisms (Bahli and Rivard, 2017).

### **Layoff Cost**

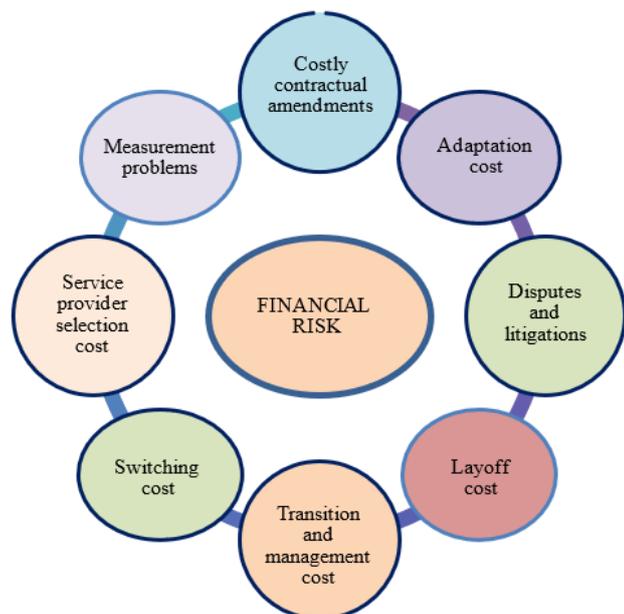
The cost of layoffs can disrupt the equilibrium of unemployment, leading to increased turbulence in the economy (Baley et al., 2021). During financial crises, when there is a lack of surplus funds for reconstruction, firms often resort to layoffs and wage cuts as a means to gather necessary funds (Baley et al., 2021). Layoff costs encompass severance allowances and expenses associated with finding new employees who meet the employer's preferences (Yokoyama and Obara, 2017). Furthermore, these costs contribute to a decrease in production due to the reduced number of workers (Merzifonluoğlu et al., 2007). However, when internal agreements are utilized, the impact on hiring is mitigated as the expense of layoff costs can be transferred to workers through reduced wages.

The cost of pink slips for employees in the client organization is also a significant consideration (Zhang et al., 2009). Favorable rules and regulations for employees can have a substantial impact on the client organization when they terminate jobs. Moreover, outsourcing work can lead to a deterioration of the client organization's social image (Pfannenstein & Tsai, 2004). Additionally, through layoffs, the client organization may lose valuable core professionals. After implementing layoffs, the client organization becomes bound to work with a service provider, which can potentially make them vulnerable. In some cases, the service provider organization may even emerge as a competitor to the client organization.

### **Service Provider Selection Cost**

Service provider selection plays a critical role in minimizing costs, maximizing delivery rates, reducing problematic delivery rates, and ensuring offer-invoice consistency rates (Özcan and Ahiskali, 2020). It is crucial to closely consider the cost of service provider selection along with factors such as quality and professionalism (Ecer, 2018). By emphasizing and maximizing quality and professionalism in KPO activities, the cost of service provider selection can be minimized (Ecer, 2018). Recognizing the recurring nature of client requests and optimizing service deployment accordingly allows the

service provider to achieve significant efficiency gains, including reduced costs, faster response times, and better resource utilization (Turner & Khamfroush, 2020). Hence, a KPO organization must invest time in the proper selection of a service provider.



**Figure 1. Factors related to financial risk**

However, the selection process incurs costs. Communication systems between different countries can be expensive, adding to the overall expenses (Overby, 2003). Additionally, due to the confidentiality of tasks, physical verification becomes necessary, which can be a burden for the client organization. To mitigate risks, decisions are often consulted with multiple field consultants, indirectly prolonging the service provider selection process. Furthermore, if changes to the product arise after the contract's completion, the existing service provider may refuse to make refinements or charge unreasonable amounts, leading to financial risks. Political issues related to KPO can also emerge later on, contributing to increased outsourcing costs.

#### **Transition and Management Cost**

There are several cost-related risks involved in transitioning tasks from the client organization to the service provider organization. These risks include switching costs, unforeseen expenses related to transition and management, costly contract amendments, and the potential for litigation (Chou and Chou, 2009). The process of transitioning tasks often takes longer than expected, requiring the original client organization to dedicate their time and resources to assist the service provider. This additional support adds to the overall cost of managing the transition (Ketonen, 2021). It's important to consider this cost as part of the overall global cost calculation, which considers all resources involved.

Viewing costs independently for each resource may significantly underestimate the actual lower bound (Wang and Barnier, 2020).

When assigned tasks are complex, the associated transition costs can be substantial and impact the profitability of the client organization, especially during the initial stages of transferring responsibilities to the service provider. While KPO can reduce certain expenses, it also introduces upfront costs such as selecting vendors, legal and contractual expenses, and the costs of transitioning work to the outsourcing provider (Overby, 2003). Geographical distances can result in significant travel expenses and complicate the alignment of organizational cultures, leading to extended transition and management costs. When making decisions about KPO, it is essential to consider the costs involved in managing complexity and mitigating risks (Ellram et al., 2008). Additionally, cost issues can arise when resources are underutilized, and the reluctance of client organization employees to provide training for service provider personnel can increase transition costs. As a consequence, there is a potential risk of incurring substantial transition costs, project expenses, and vendor management costs that may outweigh the expected savings from outsourcing, ultimately resulting in a net loss for the client organization (Tjader et al., 2013).

After conducting a comprehensive literature review, the authors identified various financial risk factors associated with KPO. These factors were categorized into eight distinct categories, as depicted in Figure 1 and summarized in Table 1.

#### **Analysis**

##### **Stage 1 (descriptive data analysis)**

Quantitative data analysis serves two primary purposes: descriptive data analysis and inferential data analysis. Descriptive data analysis involves summarizing the information contained within the data, typically through the use of graphs and tables (Chauhan et al., 2017; Frey et al., 2000). This type of analysis is carried out through structured interviews, and the findings are presented in a visual format to provide a clear representation of the data.

##### **Structured Interviews Technique**

The study conducted structured interviews with 40 executives from KPO organizations to gather data. The outsourcing practices in India as a service provider initially emerged in response to the Y2K problem, also known as the millennium bug.

**Table 1. Factors of Financial Risk with References**

Sl. No.	Factors	Definition	References
1.	Switching cost	Alternative cost arising out of change of assigned tasks from one service provider to other	Chou and Chou, 2009 ; Gunasekaran et. al., 2015 ; Lacity et al., 2008 ; Choi et al., 2018 ; Guandalini et al., 2019 ; Lesmono et al., 2020 ; Pang et al., 2021
2.	Measurement problems	Conflict of identification/ measurement of performance of between client organization and service provider	Ellram et al. 2008 ; Fel and Griette, 2012 ; King and Ehrenberg, 2020), (Krancher and Dibbern, 2020; Hodosi et al., 2021.
3.	Disputes and litigations	Geographically and culturally apart bring repetitive problems	Overby, 2003; Chou and Chou, 2009), (Herath and Kishore, 2009; Bahli and Rivard, 2015; Bahli and Rivard, 2017; Olanrewaju et al., 2021.
4.	Adaptation cost	Competency has to be developed by client organization for understanding of high-level solutions which are provided by service provider	Ellram et al., 2008 ; Lacity et al., 2008 ; Tadelis and Williamson, 2012 ; Gunasekaran et al., 2015 ; Gil et al., 2017 ; Krishnan and Mani, 2020 ; Ge et al., 2021.
5.	Costly contractual amendments	Cost arising out of revision/ amendments not identified in the initial contract	Aubert et al., 2006 ; Lacity et al., 2008, Chou and Chou, 2009) (Ongwattanasirikul et al., 2013, Aguilar Alonso, 2019; Aubert and Bernard, 2022.
6.	Layoff cost	Costing of pink slip of employees of client organization	Pfannenstein and Tsai, 2004, Merzifonluoğlu et al., 2007; Zhang et al., 2009; Demirel, 2014; Guesh, 2021, Chaabane et al., 2022
7.	Service provider selection cost	Cost incurred in selection procedure of service provider	Overby, 2003; Tjader et al., 2013; Lee, 2016; Bulgurcu and Nakiboglu, 2018; Holkeri, 2019; Wang et al., 2021.
8.	Transition and management cost	Cost of initializing and startup when tasks are transferring from client organization to service provider	Ellram et al., 2008 ; Overby, 2003 ; Pfannenstein and Tsai, 2004 ; Chou and Chou, 2009 ; Tjader et al., 2013 ; Ramkumar et al., 2016; Bahli and Rivard, 2017; Alemu, 2017; Pang et al., 2021.

As Indian organizations successfully completed these tasks, they established strong relationships with organizations primarily located in Europe and America. This led to the outsourcing of back-office work to India, which was predominantly carried out by Business Process Outsourcing (BPO) organizations. In India, due to high unemployment rates, graduates, particularly from

engineering and science backgrounds, were assigned low-level tasks. However, their intellectual capabilities often made them feel unchallenged by routine work, prompting them to suggest improvements within the system (Ramadorai, 2011; Kumar and Puranam, 2012). These suggested improvements were frequently communicated to the client organizations, who highly appreciated them.

**Table 2: Details of KPO service providers\***

S. No.	Specialized area of KPO	S. No.	Specialized area of KPO
1.	Analytics service	17.	Engineering R&D
2.	Application Development and Maintenance	18.	Enterprise Application Services, Testing and infrastructure management services
3.	Artificial intelligence	19.	Financial service
4.	Technical consulting	20.	Information services and knowledge management
5.	Business development and sales support service	21.	Learning development
6.	Competitive intelligence.	22.	Legal outsourcing services
7.	Contract drafting management and administration	23.	Legal service Intellectual property services
8.	Customer relationship management	24.	Mobile product engineering
9.	Customer value mapping	25.	Patent research
10.	Cyber security	26.	Program tracking
11.	Data storage and analysis, networking	27.	Research and development solutions
12.	Database generation	28.	Risk and Compliance
13.	Digital content production	29.	Social media monitoring service
14.	Digital Experiences through cutting-edge technology	30.	Training and support
15.	Digital transformation	31.	Training consultants
16.	Document review		

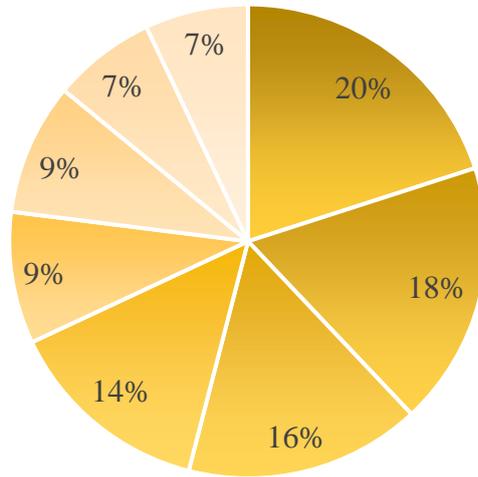
\*For technical reasons the identity of these organizations is concealed

Furthermore, service provider organizations, upon observing the assigned tasks, often identified their capacity to undertake additional related tasks. This exploration of new dimensions in outsourcing has shattered the notion that the lowest rungs of the skill ladder for innovation-related jobs are limited to Western countries (Kumar and Puranam, 2012). India's highly knowledgeable and skilled workforce has positioned it as a hub for KPO organizations catering to global demand. Cities such as Bengaluru, Pune, Hyderabad, Gurugram, Noida, Chennai, New Delhi, and Chandigarh have become focal points for KPO organizations. In this study, various KPO industries, as outlined in Table 2: Details of KPO Service Providers, were extensively surveyed to examine the financial risk factors associated with them.

The questionnaire designed to assess financial risk factors in the context of KPO was specifically tailored to

involve individuals with direct involvement in day-to-day activities and frontline experience. The development of the survey questionnaire was based on an extensive review of existing literature. Input from experts, academics, and practitioners from KPO organizations was taken into account to refine the questionnaire. Each participant was asked to evaluate the instrument, considering factors such as understanding, readability, ambiguity, and the relevance of each item to the financial risk factors associated with KPO. To gain insights into the critical financial risk factors, personal interviews were conducted with 40 managers or executives from various KPO organizations. According to their perspectives, the most significant financial risk factors were identified. Based on the percentage distribution, the interviewees' views revealed that disputes and litigations accounted for 20% as the most critical factor, followed by measurement

problems at 18%. Switching costs accounted for 16%, adaptation costs for 14%, layoff costs, and transition and management costs for 9% and both service provider selection costs, and costly contractual amendments each contributed by 7% of the respondents, as depicted in Figure 2. Furthermore, Table 3 presents some viewpoints regarding the discussed risk factors within or across organizations.



V is represented by the inter-relationship of the impact element i has on element j  
 A is represented by the inter-relationship of the impact element j has on element i  
 X is represented by the inter-relationship of both directions of impact  
 O is represented by non-existence of inter-relationships.

- Disputes and litigations (20%)
- Measurement problems (18%)
- Switching cost (16%)
- Adaptation cost (14%)
- Layoff cost (9%)
- Transition and management cost (9%)
- Service provider selection cost (7%)
- Costly contractual amendments (7%)

**Figure 2. Descriptive analysis of financial risk factors**

**Stage 2. Interpretive Structural Modeling (ISM) and Cross-Impact Matrix**

**Interpretive Structural Modeling (ISM)**

By conducting structured interviews with executives, the study identifies and presents the key factors associated with financial risks in KPO, along with their interrelationships. The identified factors directly impact the desired outcomes of collaboration between the client organization and the service provider organization involved in outsourcing process of knowledge. To achieve the desired results, it is essential to address these risk factors effectively. This can be done by prioritizing and addressing the most influential factors individually, considering their impact on other factors. Interrelationships among the different risk factors have been established using the ISM and cross-impact matrix analysis for KPO’s financial risks.

**Development of an SSIM**

In Table 4, the interrelationships among risk factors are depicted using a structural self-interaction matrix (SSIM). The matrix uses symbols to represent the influence between financial risk factors are as follows:

**Development of the IRM**

Table 5 represents the initial reachability matrix (IRM), which is derived from the SSIM. In the IRM, the symbols used in the SSIM are converted into binary values: "V" is substituted with 1 for (i, j) and 0 for (j, i), "A" is substituted with 0 for (i, j) and 1 for (j, i), "X" is substituted with 1 for both sets (i, j) and (j, i), and "O" is substituted with 0 for both sets. The resulting binary matrix is displayed in Table 5.

**Development of the FRM**

Table 6 illustrates the final reachability matrix (FRM), which is obtained by converting the IRM. The FRM incorporates the reachability concept of the ISM methodology, meaning that if risk factor 'A' influences risk factor 'B', and risk factor 'B' influences risk factor 'C', then risk factor 'A' also influences risk factor 'C'. This relationship is denoted in the table with an asterisk sign (\*). Table 7 presents the FRM, which includes the driving power and dependency relationships among all eight financial risk factors of KPO, indicating how each factor influences the others.

**Table 3. Summary of selected views regarding financial risk**

Sl. No.	Summarized views
1.	Due to costing of asset specificity, switching cost increases greatly and service provider organization may take advantage because of this reason.
2.	Transition and management costs, especially at the starting stage, maybe beyond expectations.
3.	Layoff cost, many times, is a big burden on the client organization and it happens due to reduction of existing work because it is outsourced.
4.	Because the service provider organization belongs to a different country, any type of communication system may be a costly affair.
5.	Many times, in the beginning, the total calculation about work is not done correctly and afterwards, when things change, it creates problem.
6.	Each and every minute point cannot be put on a formal contract and many times, service provider organization takes advantage of this and it maybe a loss for client organization.
7.	There are conflicts about standards of performance among both organizations which may create misunderstanding on many occasions.
8.	Whenever there is a high-end work or change of technical specifications of the work, it causes high adaptation cost for the client organization.
9.	Adaptation cost is also very high due to fast changing technological solutions.
10.	Whenever there are disputes and litigations due to any reasons, these put financial burden on client organization.
11.	Measurement in terms of financial units may differ and it converts in a huge invisible cost for client organization.
12.	Whenever performance of service provider is not up to the mark, client organization has to change the service provider which adds up to financial implications.
13.	Trade-off between the organization cultures of both organizations takes time and it reflects as transition and management cost.
14.	After completion of the contract, much confidential information is kept by the service provider organization and due to this; it might increase the next contract amount.

**Table 4. Construction of SSIM**

S. No.	Factor	2	3	4	5	6	7	8
1	Switching cost	V	O	O	O	V	A	V
2	Transition and management cost		X	O	O	A	O	A
3	Layoff cost			O	O	O	A	O
4	Service provider selection cost				A	O	O	V
5	Measurement problems					V	V	V
6	Costly contractual amendments						A	V
7	Disputes and litigations							O
8	Adaptation cost							

**Table 5. Construction of IRM**

S. No.	Factor	1	2	3	4	5	6	7	8
1	Switching cost	1	1	0	0	0	1	0	1
2	Transition and management cost	0	1	1	0	0	0	0	0
3	Layoff cost	0	1	1	0	0	0	0	0
4	Service provider selection cost	0	0	0	1	0	0	0	1
5	Measurement problems	0	0	0	1	1	0	0	0
6	Costly contractual amendments	0	1	0	0	0	1	0	1
7	Disputes and litigations	1	0	1	0	0	1	1	0
8	Adaptation cost	0	1	0	0	0	0	0	1

**Table 6. Construction of FRM**

S. No.	Factor	1	2	3	4	5	6	7	8
1	Switching cost	1	1	1*	0	0	1	0	1
2	Transition and management cost	0	1	1	0	0	0	0	0
3	Layoff cost	0	1	1	0	0	0	0	0
4	Service provider selection cost	0	1*	1*	1	0	0	0	1
5	Measurement problems	0	1*	1*	1	1	0	0	1*
6	Costly contractual amendments	0	1	1*	0	0	1	0	1
7	Disputes and litigations	1	1*	1	0	0	1	1	1*
8	Adaptation cost	0	1	1*	0	0	0	0	1

**Table 7. Construction of FRM with Driving Power and Dependence**

S. No.	Factor	1	2	3	4	5	6	7	8	Driving Power
1	Switching cost	1	1	1*	0	0	1	0	1	5
2	Transition and management cost	0	1	1	0	0	0	0	0	2
3	Layoff cost	0	1	1	0	0	0	0	0	2
4	Service provider selection cost	0	1*	1*	1	0	0	0	1	4
5	Measurement problems	0	1*	1*	1	1	0	0	1*	5
6	Costly contractual amendments	0	1	1*	0	0	1	0	1	4
7	Disputes and litigations	1	1*	1	0	0	1	1	1*	6
8	Adaptation cost	0	1	1*	0	0	0	0	1	3
	Dependency	2	8	8	2	1	3	1	6	

**Table 8. Result of Four Iteration**

Factor	Reachability	Antecedent	Intersection	Level
1	1,2,3,6,8	1,7	1	IV
2	2,3	1,2,3,4,5,6,7,8	2,3	I
3	2,3	1,2,3,4,5,6,7,8	2,3	I
4	2,3,4,8	4,5	4	III
5	2,3,4,5,8	5	5	IV
6	2,3,6,8	1,6,7	6	III
7	2,3,6,7,8	7	7	IV
8	2,3,8	1,4,5,6,7,8	8	II

### Partitioning the FRM

Once the FRM of financial risk factors has been established, the next step is to create the structural model. The reachability set comprises the considered risk factor and the other risk factors that are influenced by it. In the FRM, each column containing a 1 in the row of the specific risk factor indicates that the risk factor in that column is part of the reachability set. Similarly, the antecedent set includes the considered risk factor and the other risk factors that may influence it. In the FRM, each row containing a 1 in the column of the considered risk factor signifies that the risk factor in that row is included in the antecedent set. By determining the reachability and antecedent sets for each risk factor, the intersection of these sets is obtained for all the financial risk factors. The financial risk factors that have the same reachability and intersection are assigned the top level in the ISM hierarchy. This process continues until all levels of the structure are identified. In this specific case, four levels are identified through four iterations, as depicted in Table 8. These identified levels are crucial for the development of the model.

### Development of Diagraph

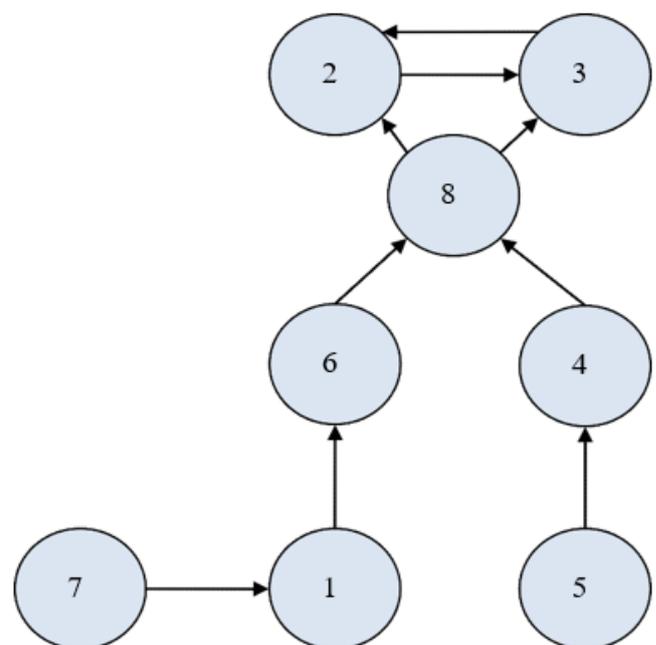
Following the elimination of transitivity, the final diagram (Figure 3) is constructed. In this diagram, relationships between risk factors are represented by arrows pointing from the influencing risk factor (i) to the influenced risk factor (j). The Arabic numbers within the circles in Figure 1 correspond to the risk factors' serial numbers as presented in Table 4.

### Development of ISM model

The ISM model is constructed by substituting the nodes in the diagraph with the names of the financial risk factors of KPO. Figure 4 represents the ISM model, indicating the levels of the risk factors within the model.

### Cross-Impact Matrix Approach

The cross-impact matrix is utilized to identify the critical financial risk factors of KPO that adversely affect the performance of the supply chain system, while also influencing other risks. This matrix employs the principles of matrix multiplication and is commonly referred to as MICMAC analysis. The main objective of using a cross-impact matrix approach is to categorize all parameters based on their driver power and dependency (Govindan et al., 2012; Kumar et al., 2014; Chauhan et al., 2015), as demonstrated in Figure 5. In the current study, the financial risk factors have been classified into four categories, as outlined in Table 9, according to their driver power and dependency. Typically, a risk factor with a significant driver power is referred to as a "key risk factor" and is positioned within the independent or linkage risk factor category.



**Figure 3. Diagraph representing the level of financial risk factors of KPO**

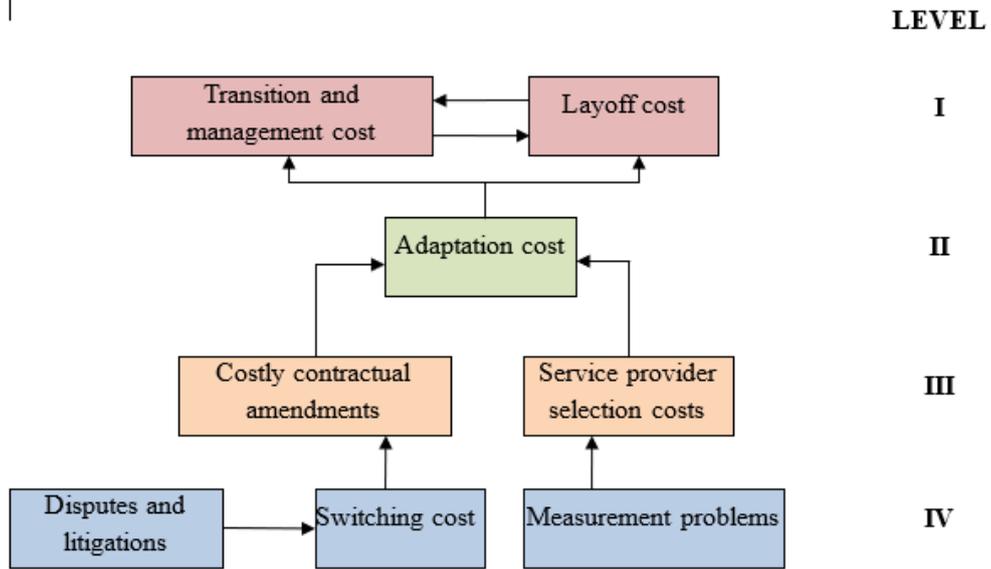


Figure 4. ISM model of financial risk factors at various level

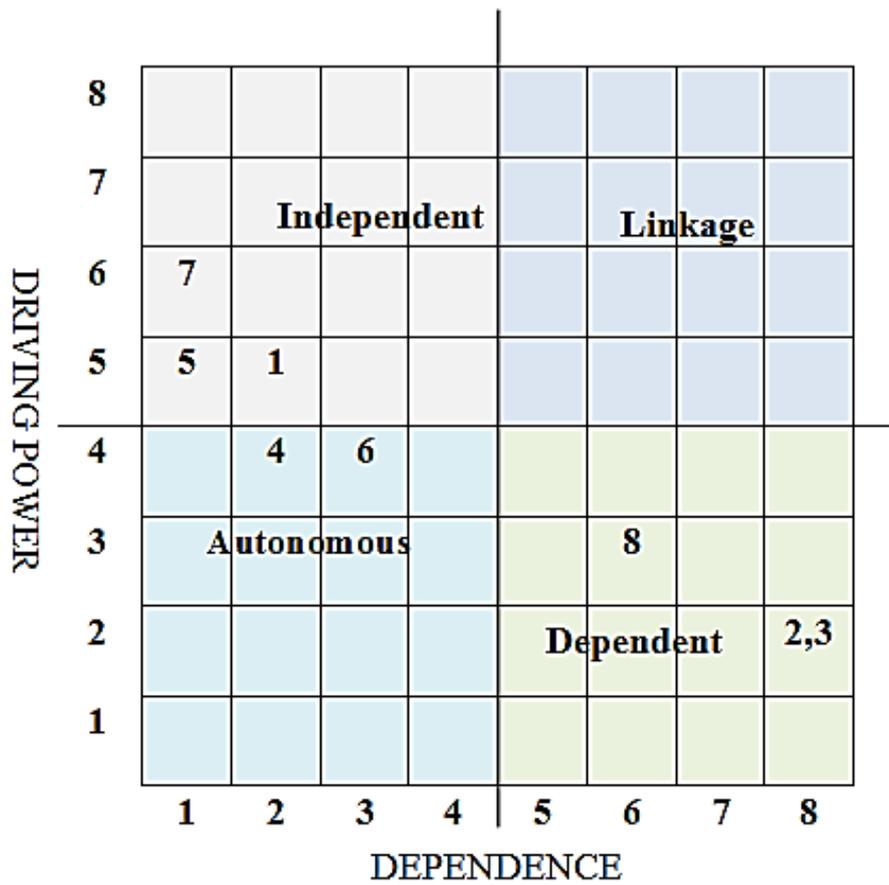


Figure 5. Cross-Impact Matrix Analysis

**Table 9. Categories of financial risk factors**

S. No	Categories	Definition	Risk factors (Driver power index, dependency index)
1	Independent risk factors	These risk factors exhibit a high level of driver power but possess a relatively low degree of dependence power.	Disputes and litigations (6,1), Measurement problems (5, 1), Switching cost (5, 2)
2	Linkage risk factors	These risk factors demonstrate both strong driver power and strong dependence. They are also characterized as being unstable. Any intervention or action taken regarding these factors not only affects other factors but also produces a feedback effect on themselves.	
3	Dependent risk factors	This category encompasses risk factors that possess a strong dependence power but exhibit a weak driver power.	Adaptation cost (3, 6), Transition and management cost (3, 8), Layoff cost (3,8)
4	Autonomous risk factors	These risk factors demonstrate a weak driver power and a weak dependence. They are characterized by their relatively disconnected nature within the system, having only a few strong connections.	Service provider selection cost (4, 2), Costly contractual amendments (4, 3),

### Findings and Discussion

The main aim of this study was to examine the financial risk factors that pose significant obstacles to the success of KPO. The objective was to provide managers and executives with effective strategies to address these risk factors. Through the development of an ISM-based model, the interrelationships among various financial risk factors in KPO were analysed. The study offers valuable insights for decision-makers, enabling them to gain a better understanding of these risk factors and their relative importance in ensuring the success of KPO projects. Here are some key findings from the research.

The study revealed that three factors, namely switching costs, disputes and litigation, and measurement problems, possess a strong driving power and exhibit less dependency on other variables. These independent variables not only have significant influence but also serve as fundamental sources impacting other factors. Consequently, financial managers should prioritize addressing these factors as their effective management can lead to increased profitability in KPO by mitigating financial risks.

Improving the alignment between the client organization and the service provider organization has the potential to reduce switching costs. By nurturing a close relationship, both parties can collaborate effectively and utilize their collective experience and knowledge to achieve desired outcomes more efficiently (Dong et al.,

2022). Regular internal customer surveys can also play a crucial role in assessing the performance of the service provider organization in a timely manner, thereby mitigating switching costs (Sigroha, 2019).

Adopting a collaborative mindset promotes transparent communication and acknowledges the varying capabilities of each party, helping to prevent disputes and litigations. Relational contracting policies further emphasize the importance of cultivating strong relationships, incorporating contract provisions that enable joint resolution of disputes and shared decision-making on obligations. This reduces reliance on external entities like courts or arbitrators. By fostering improved communication and nurturing informal working relationships, this approach encourages the development of mutually acceptable solutions and incentivizes productive interactions (Halfhide, 2020).

Measurement problems, such as opportunistic renegotiation and agent issues, are inherent in nature. Addressing these concerns involves evaluating the changes and advancements in an organization's internal operations, as well as implementing improvements in work organization practices (Dekker et al., 2020).

Transition and management costs, layoff costs, and adaptation costs are identified as factors that have a weak driving power but a strong dependence on other variables. These factors hold critical positions within the ISM hierarchy, being at the top three levels, and thus

require careful attention. It is important to note that these risk factors may not be directly mitigated on their own, but rather through addressing the strong driving risk factors such as independents and linkages. Decision-makers should prioritize addressing these factors and understanding their impact on other variables in the system.

In the linkage category, all factors demonstrate either strong dependence or strong driving power, indicating their significant influence. On the other hand, certain factors fall into the autonomous category. For instance, service provider selection cost and costly contractual amendments are classified as autonomous variables with weak driving power and dependence. These variables exert minimal influence on the overall system. Consequently, it becomes essential for competent authorities to address these autonomous risk factors individually for a successful KPO project.

### Conclusion

The primary objective of this study was to identify and analyse the interrelationships between financial risk factors faced by client organizations in the KPO industry using the ISM methodology. Eight categories of risks were identified, including switching cost, transition and management cost, layoff cost, service provider selection cost, measurement problems, costly contractual amendments, disputes and litigations, and adaptation cost.

Among these risk factors, switching cost, measurement problems, and disputes and litigations were found to have a strong driving power in influencing other risk factors. Switching cost encompasses various elements such as the initial cost of transitioning between client and service providers, training costs, relationship development, and procedure development. These factors need to be carefully addressed by global task managers to ensure more effective outcomes in KPO projects (Ju et al., 2019).

Measurement problems arise from differences in performance interpretations, toxic workplace practices, unethical contract negotiations, and low adaptability to technological advancements. Disputes and litigations are typically caused by hidden terms and conditions, market inflation uncertainties, political instability, poor workplace standards, and inadequate implementation of labour laws.

Organizations can opt following strategies (both long term & short term) to improve risk minimization and mitigation in KPO.

- i. To observe domestic policies of service provider organizations.
- ii. Inter-organizational communication is needed to improve the relationship building as well as for reducing communication gap.
- iii. To reduce switching cost more emphasis is given to clauses of legal document of contract in such a manner so that there is less chances of switch over requirement.
- iv. More dialogue at different levels is required before contract agreement to reduce later on disputes and litigations problems.
- v. Human resource should be fixed in terms of quantity as well as qualification and expertise so that there is less chances of further reduction of human resource from the assigned task.
- vi. Develop mechanism to distribute appropriate resource allocation from service provider organization side for timely completion of task.
- vii. Alignment about objectives regarding work is prerequisite because conflict of objectives may be present.
- viii. Job satisfaction is required for experts who have tacit knowledge.
- ix. To judge the competency to complete the task, certification is required from competent authority.

To mitigate these risks and maximize the benefits of KPO, detailed planning at each dimension is essential from the beginning. This includes reducing conflicts related to decision-making, goal alignment, and perceptions of reality through joint decision making. Future research could employ confirmatory approaches, such as structural equation modeling (SEM), to analyse data and include additional financial risk factors that impact KPO processes. These models can be utilized to map out various risk mitigation strategies.

### Conflict of Interest

The authors declare no conflict of interest.

### References

- Aguilar Alonso, I. J. (2019). Early Study of IT Outsourcing in Public Organizations in the Province of Manabí Ecuador. <https://doi.org/10.1109/INFOMAN.2019.8714688>
- Alemu, S. (2017). Analysis of Factors Affecting Supply Chain Management Efficiency: A Case Study on Ethiopian Construction Works Corporation (Doctoral Dissertation, St. Mary's University).
- Ali, S. M. E. A. (2017). The Effect of Service Quality on Customer's Satisfaction of Sudanese

- Agricultural Bank, Wad Medani Branch, Sudan (2015) (Doctoral dissertation, University of Gezira).
- Alkarawy, H., Alaallah, A., Al-Sultani, M., & Ostrovskaia, O. (2021). Optimizing the cost of accounting work and financial rules within the framework of outsourcing. *Accounting*, 7(6), 1293-1304.
- Aubert, B. A., & Bernard, J. G. (2022). Outsourcing of accounting information systems. In the *Routledge Handbook of Accounting Information Systems* (pp. 140-155). Routledge.
- Aubert, B. A., Patry, M., & Rivard, S. (2006). Measuring and managing IT outsourcing risk: lessons learned. *Information Systems Outsourcing: Enduring Themes, New Perspectives and Global Challenges*, pp. 161-185. [https://doi.org/10.1007/978-3-540-34877-1\\_7](https://doi.org/10.1007/978-3-540-34877-1_7).
- Bahli, B., & Rivard, S. (2015). Information technology outsourcing risk: A resource-based perspective. Routledge, In *Information technology outsourcing*, pp. 131-146.
- Bahli, B., & Rivard, S. (2017). The information technology outsourcing risk: A transaction cost and agency theory-based perspective. *Outsourcing and offshoring business services*, pp. 53-77. [https://doi.org/10.1007/978-3-319-52651-5\\_3](https://doi.org/10.1007/978-3-319-52651-5_3).
- Baley, I., Ljungqvist, L., & Sargent, T. J. (2021). Returns to Labor Mobility: Layoff Costs and Quit Turbulence.
- Beerbaum, D., Piechocki, M., & Puauschunder, J. M. (2019). Measuring accounting reporting complexity with customized extensions XBRL—A behavioral economics approach. *Journal of Applied Research in the Digital Economy (JADE)*, 1(3), 4-42.
- Bulgurcu, B., & Nakiboglu, G. (2018). An extent analysis of 3PL provider selection criteria: A case on Turkey cement sector. *Cogent Business & Management*, 5(1), 1469183. <https://doi.org/10.1080/23311975.2018.1469183>.
- Cedeño, F. D., & Alonso, I. A. (2018). Results of the Information Technology Outsourcing Study from the Perspective of Internal Users in Public Organizations in the Province of Manabí-Ecuador. In *Proceedings of the World Congress on Engineering and Computer Science*, Vol. 1.
- Chaabane, A., As'ad, R., Geramianfar, R., & Bahroun, Z. (2022). Utilizing energy transition to drive sustainability in cold supply chains: a case study in the frozen food industry. *RAIRO-Operations Research*, 56(3), 1119-1147. <https://doi.org/10.1051/ro/2022043>
- Chauhan, P., Kumar, S., & Sharma, R.K. (2015). Modeling drivers of political risk in offshore outsourcing'. *European Journal of Business and Management*, 7(9), 34-44.
- Chauhan, P., Kumar, S., & Sharma, R. K. (2017). Investigating the influence of opportunistic behaviour risk factors on offshore outsourcing. *International Journal of Business Excellence*, 12(2), 249-274.
- Choi, J. J., Ju, M., Kotabe, M., Trigeorgis, L., & Zhang, X. T. (2018). Flexibility as firm value driver: Evidence from offshore outsourcing. *Global Strategy Journal*, 8(2), 351-376. <https://doi.org/10.1002/gsj.1181>.
- Chou, D. C., & Chou, A. Y. (2009). Information systems outsourcing life cycle and risks analysis. *Computer Standards & Interfaces*, 31, 1036-1043. <https://doi.org/10.1016/j.csi.2008.09.032>.
- Chugan, P. K., & Agrawal, N. (2018). New transfer pricing regime in information technology sector. Transformation Through Strategic and Technological Interventions” Book of (NICOM 2018), Eds., Balakrishnan Unny R., Nityesh Bhatt, & Shahir Bhatt, McGraw Hill Education (India) Pvt. Ltd. for Institute of Management, Nirma University, Ahmedabad, pp. 978-93.
- Chugan, P. K., & Panchal, N. (2022). Managing global supply chain: transfer pricing issues and solutions. *International Journal of Management, Public Policy and Research*, 1(2), 34-41.
- Dana, L. P., Nguyen, H. T., & Rafal Kuc, B. (2021). Strategic outsourcing risk management of Van Hien University in Vietnam. *International Journal of Advanced Multidisciplinary Research and Studies*, 1(2), 1-6.
- Dekker, H. C., Mooi, E., & Visser, A. (2020). Firm enablement through outsourcing: A longitudinal analysis of how outsourcing enables process improvement under financial and competence constraints. *Industrial Marketing Management*, 90, 124-132.
- Demirel, E. (2014). Flexible Planning Methods and Procedures with Flexibility Requirements Profile. The University of North Carolina at Charlotte, Charlotte, NC.
- Dong, C., Li, X., & Chang, X. (2022). Interdependence with suppliers in the innovation ecosystem: the

- effects of supplier concentration on firm innovation. *Chinese Management Studies*, 16(5), 1145-1160.
- Ecer, F. (2018). Third-party logistics (3PLs) provider selection via Fuzzy AHP and EDAS integrated model. *Technological and Economic Development of Economy*, 24(2), 615-634.
- Ellram, L. M., Tate, W. L., & Billington, C., (2008). Offshore outsourcing of professional services: A transaction cost economics perspective. *Journal of Operation Management* 26, 148-163. <https://doi.org/10.1016/j.jom.2007.02.008>.
- Fel, F., & Griette, E. (2012). An Analysis of the Offshoring Decision Process: The Influence of the Company's Size. *Procedia - Social and Behavioral Sciences*, 58, 596 – 605. <https://doi.org/10.1016/j.sbspro.2012.09.1037>.
- Fierro Hernandez, D., & Haddud, A. (2018). Value creation via supply chain risk management in global fashion organizations outsourcing production to China. *Journal of Global Operations and Strategic Sourcing*, 11(2), 250-272. <https://doi.org/10.1108/JGOSS-09-2017-0037>.
- Frey, L., Botan, C. H. and Kreps, G. (2000) Investigating Communication, Allyn & Bacon, NY.
- Gao, M., Xie, T., Du, S. S., & Yang, L. F. (2021). A provably efficient algorithm for linear markov decision process with low switching cost. arXiv preprint arXiv:2101.00494.
- Ge, L., Wang, X., & Yang, Z. (2021). The strategic choice of contract types in business process outsourcing. *Business Process Management Journal*.
- Gil, R., Kim, M., & Zanarone, G. (2017). The value of relational adaptation in outsourcing: Evidence from the 2008 shock to the US airline industry. Johns Hopkins University, working paper
- Govindan, K., Palaniappan, M., Zhu, Q. and Kannan, D. (2012) 'Analysis of third-party reverse logistics provider using interpretive structural modeling', *Int. J. Production Economics*, 140(1), 204–21.
- Guandalini, I., Sun, W., & Zhou, L. (2019). Assessing the implementation of Sustainable Development Goals through switching cost. *Journal of Cleaner Production*, 232, 1430-1441
- Guesh, Y. (2021). Effects of Strategic Sourcing Practice on Organizational Performance in Case of Dashen Brewery Share Company at Gondar Branch (Doctoral dissertation).
- Gunasekaran, A., Irani, Z., Choy, K. L., Filippi, L., & Papadopoulos, T. (2015). Performance measures and metrics in outsourcing decisions: A review for research and applications. *International Journal of Production Economics*, 161, 153-166.
- Gupta, M. G. (2022). India's Ascent to a Global Leadership: KPO as a Case in Point. *Journal of Business and Management Studies*, 4(4), 224-230.
- Halfhide, A. (2020). An Investigation into the Feasibility of the Vested Outsourcing Methodology within IT Outsourcing Departments (Doctoral dissertation, Dublin, National College of Ireland).
- Hamilton, A. L., Characklis, G. W., & Reed, P. M. (2020). Managing financial risk trade-offs for hydropower generation using snowpack-based index contracts. *Water Resources Research*, 56(10), e2020WR027212. <https://doi.org/10.1029/2020WR027212>.
- Handley, S., Skowronski, K., & Thakar, D. (2022). The single-sourcing versus multisourcing decision in information technology outsourcing. *Journal of Operations Management*, 68(6-7), 702-727. <https://doi.org/10.1002/joom.1174>.
- Herath, T., & Kishore, R. (2009). Offshore outsourcing: risks, challenges, and potential solutions. *Information Systems Management*, 26(4), 312-326. <https://doi.org/10.1080/10580530903245549>.
- Hodosi, G., Haider, A., & Rusu, L. (2021). Risk factors in cloud computing relationships: a study in public organizations in Sweden. *Procedia Computer Science*, 181, 1179-1186. <https://doi.org/10.1016/j.procs.2021.01.315>.
- Holkeri, J. (2019). Outsourcing of aviation technical services—a literature survey. *Journal of Quality in Maintenance Engineering*, 26(1), 33-52. <https://doi.org/10.1108/JQME-11-2017-0079>.
- Iankova, E., & Katz, J. (2003). Strategies for political risk mediation by international firms in transition economies: the case of Bulgaria. *Journal of World Business*, 38(3), 182-203. [https://doi.org/10.1016/S1090-9516\(03\)00018-X](https://doi.org/10.1016/S1090-9516(03)00018-X).
- Ju, M., Murray, J. Y., Gao, G. Y., & Kotabe, M. (2019). Concurrent sourcing strategy of multinational firms in China: Drivers and performance implications. *Journal of World Business*, 54(6), 101015.

- Kano, L., Tsang, E. W., & Yeung, H. W. C. (2020). Global value chains: A review of the multi-disciplinary literature. *Journal of International Business Studies*, 51(4), 577-622. <https://doi.org/10.1057/s41267-020-00304-2>.
- Ketonen, J. (2021). Indirect spend optimization: a case study from the financial industry.
- King, J. L., & Ehrenberg, A. J. (2020). The productivity vampires. *Information Systems Frontiers*, 22, 11-15. <https://doi.org/10.1007/s10796-019-09943-9>.
- Krancher, O., & Dibbern, J. (2020). Knowledge transfer in software maintenance outsourcing: The key roles of software knowledge and guided learning tasks. Information systems outsourcing: The era of digital transformation, pp. 147-181. [https://doi.org/10.1007/978-3-030-45819-5\\_7](https://doi.org/10.1007/978-3-030-45819-5_7).
- Krishnan, R., & Mani, D. (2020). Uncertainty and compensation design in strategic interfirm contracts. *Contemporary Accounting Research*, 37(1), 542-574.
- Kumar, N., & Puranam, P. (2012), "India inside: the emerging innovation challenge to the West", Harvard Business Press.
- Kumar, S., Sharma, R.K., Chauhan, P. (2014). ISM Approach to Model Offshore Outsourcing Drivers. *International Journal of Production Management and Engineering*, 2(2), 101. <https://doi.org/10.4995/ijpme.2014.2096>.
- Kyusya, J. M. (2015). Effect of logistics outsourcing on the operational performance of shipping industry in Kenya (Doctoral dissertation, University of Nairobi).
- Lacity, M. C., Willcocks, L. P., & Rottman, J. W. (2008). Global outsourcing of back office services: lessons, trends, and enduring challenges. *Strategic Outsourcing: An International Journal*, 1(1), 13034. <https://doi.org/10.1108/17538290810857457>.
- Lee, G. (2022). Matching Task Complexity with Supplier Management to Enhance Outsourcing Performance. *SAGE Open*, 12(3), 21582440221123460. <https://doi.org/10.1177/21582440221123460>.
- Lee, S. (2016). Economic view and strategic management view toward understanding outsourcing in amateur sport. *Journal of Amateur Sport*, 2(1), 12-38. <https://doi.org/10.17161/jas.v2i1.5019>.
- Lesmono, S. U., Santoso, T., Wijaya, S., & Jie, F. (2020). The effect of switching cost and product return management on repurchase intent: A case study in the B2B distribution channel context in Indonesia (Doctoral dissertation, Petra Christian University).
- Liu, Z. (2019). The Mediating Role of Innovation in Knowledge Process Outsourcing. Available at SSRN 3341080.
- Mathew, S. K., & Chen, Y. (2013). Achieving offshore software development success: An empirical analysis of risk mitigation through relational norms. *The Journal of Strategic Information Systems*, 22(4), 298-314. <https://doi.org/10.1016/j.jsis.2013.03.001>.
- Merzifonluoğlu, Y., Geunes, J., & Romeijn, H. E. (2007). Integrated capacity, demand, and production planning with subcontracting and overtime options. *Naval Research Logistics (NRL)*, 54(4), 433-447. <https://doi.org/10.1002/nav.20219>.
- Ndiiri, A., & Kilika, J. (2021). Business Process Outsourcing and Firm Performance of Selected Real Estate Firms in Nairobi City County, Kenya. *International Journal of Business Management, Entrepreneurship and Innovation*, 3(3), 139-150.
- Nyambura, C. P., Kinyua, J. M., & Mburugu, K. N. (2020). Performance Measurement of the Business Process Outsourcing Sector in Kenya: Balance Scorecard Approach. *The Journal of Social Sciences Research*, 6(11), 962-968.
- Olanrewaju, A., Akbar, A. R. N., Azmi, N. A., & Hong, T. R. (2021). Procurement of maintenance management for public high-rise residential buildings. *Environment-Behaviour Proceedings Journal*, 6(17), 235-240. <https://doi.org/10.21834/ebpj.v6i17.2882>.
- Ongwattanasirikul, T., Malisuwan, S., & Madan, N. (2013). Risk analysis of it outsourcing case study on public companies in Thailand. *Journal of Economics, Business and Management*, 1(4), 365-370. <https://doi.org/10.7763/JOEBM.2013.V1.79>
- Overby, S. (2003). The hidden costs of offshore outsourcing, CIO Magazine, September 1.
- Özcan, E., & Ahiskali, M. (2020). 3PL Service provider selection with a goal programming model supported with multicriteria decision making approaches. *Gazi University Journal of Science*, 33(2), 413-427.
- Pang, Y., Zhang, S., & Jiang, A. X. (2021). Outsourcing: Overview and Trends. Outsourcing and Offshoring.

- <https://doi.org/10.5772/intechopen.98333>.
- Park, S., Lee, H., & Chae, S. W. (2017). Rethinking balanced scorecard (BSC) measures: formative versus reflective measurement models. *International Journal of Productivity and Performance Management*, 66(1), 92-110.
- Paterson, A. S., & Wilson, M. J. (2018). The Routledge companion to accounting information systems, edited by Martin Quinn and Erik Strauss, published in 2018 by Routledge Taylor & Francis Group: London and New York. In *Accounting Forum*. 42(3), 277-280).
- Pfannenstien, L. L., & Tsai, R. J. (2004). Offshore outsourcing: Current and future effects on American IT industry. *Information Systems Management*, 21(4), 72-80.
- Ramadorai, S. (2011). *Tata Consultancy Services Story and Beyond*, Penguin Books India.
- Ramkumar, M., Schoenherr, T., & Jenamani, M. (2016). Risk assessment of outsourcing e-procurement services: integrating SWOT analysis with a modified ANP-based fuzzy inference system. *Production Planning & Control*, 27(14), 1171-1190.  
<https://doi.org/10.1080/09537287.2016.1190877>.
- Sayed, Z., & Agndal, H. (2021). Offshore outsourcing of R&D to emerging markets: information systems as tools of neo-colonial control. *Critical perspectives on International Business*.
- Shaharudin, M. R., Zailani, S., & Ismail, M. (2014). Third party logistics orchestrator role in reverse logistics and closed-loop supply chains. *International Journal of Logistics Systems and Management*, 18(2), 200-215.
- Sigroha, A. (2019). Human Resource Outsourcing: Types and Motivating Drivers of Outsourcing in An Organization. *Think India Journal*, 22(14), 431-439.
- Soh, K. Y., Chua, S. J. L., Ali, A. S., Au-Yong, C. P., & Alias, A. (2019). Relationship between building maintenance sourcing strategy selection factors and performance. *Journal of Facilities Management*.
- Stüber, R. (2020). The benefit of the doubt: wilful ignorance and altruistic punishment. *Experimental Economics*, 23(3), 848-872.  
<https://doi.org/10.1007/s10683-019-09633-y>.
- Tadelis, S., & Williamson, O. E. (2012). Transaction cost economics. *The Handbook of Organizational Economics*, pp. 159.
- Tjader, Y., May, J.H., Shang, J., Vargas, L. G. & Gao, N. (2013). Firm-level outsourcing decision making: A balanced scorecard-based analytic network process model. *International Journal of production Economics*. 147, 614-623.  
<https://doi.org/10.1016/j.ijpe.2013.04.017>.
- Turner, M., & Khamfroush, H. (2020, February). Meeting users' QoS in a edge-to-cloud platform via optimally placing services and scheduling tasks. *IEEE, In 2020 International Conference on Computing, Networking and Communications (ICNC)*, pp. 368-372.
- Umarova, D. (2022). A Opportunities for Business Process Outsourcing And Knowledge Process Outsourcing In Uzbekistan. *International Journal of Multidisciplinary: Applied Business and Education Research*, 3(13), 2134-3244.
- Virginia, M. M., & Jackson, N. Role of Procurement Practices in Managing Outsourcing Risks in Beverage Industries in Kenya. *International Journal of Procurement and Supply Chain Management*. 5(2), 614-630.
- Wang, C. N., Nguyen, N. A. T., Dang, T. T., & Lu, C. M. (2021). A compromised decision-making approach to third-party logistics selection in sustainable supply chain using fuzzy AHP and fuzzy VIKOR methods. *Mathematics*, 9(8), 886.  
<https://doi.org/10.3390/math9080886>.
- Wang, R., & Barnier, N. (2020). Global Propagation of Transition Cost for Fixed Job Scheduling. In *ECAI 2020, 24th European Conference on Artificial Intelligence*.
- Yaghoobi, T., & Haddadi, F. (2016). Organizational performance measurement by a framework integrating BSC and AHP. *International journal of productivity and performance management*.
- Yao, H., Chen, Y., Zhang, Y., Zhang, M., & Zhang, Y. (2021). Managing contract violations in construction projects: a moderated mediating model of enforcement decisions. *Production Planning & Control*, pp. 1-12.
- Ye, Y., Peng, X., Fan, R. L., & Narayanan, A. (2022). An empirical investigation of governance mechanism choices in service outsourcing. *International Journal of Operations & Production Management*, 42(9), 1467-1496.
- Yokoyama, I., & Obara, T. (2017). Optimal combination of wage cuts and layoffs—the unexpected side effect of a performance-based payment system. *IZA Journal of Labor Policy*, 6(1).

Zhang, L. J., Shan, Z., & Mao, Z. H. (2009). An optimal-control-based decision-making model and consulting methodology for service enterprises.

IEEE, *Transactions on Engineering Management*, 57(4), 607-619.  
<https://doi.org/10.1109/TEM.2009.2034270>.

**How to cite this Article:**

Naveen J, Himanshu Payal and Prashant Chauhan (2023). ISM approach to model financial risks in Indian KPO organization. *International Journal of Experimental Research and Review*, 32, 40-58.

**DOI :** <https://doi.org/10.52756/ijerr.2023.v32.003>



This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.