Chapter

Outsourcing: State-of-the-Art in India and an Insight to Coal Mining Industry

Mousumi Modak, Khanindra Pathak and Kunal Kanti Ghosh

Abstract

In the present era of globalization, outsourcing proves to be one of the prominent and emerging business practices widely adopted by the firms around the world in order to stay competitive. The academic literature on outsourcing in the Indian context mostly deals with the outsourcing of information technology/information systems (IT/IS) and business process outsourcing (BPO) that are outsourced to Indian IT firms by the multinational companies (MNCs) located abroad. However, studies on outsourcing practices followed by the Indian firms may be inadequate in the extant literature. It was observed that the decision of outsourcing is often taken in an aggressive manner with an emphasis on short-term cost advantage rather than giving due consideration in realizing the significant contribution of such decisions over the long-term competitiveness of the organization. The present study provides a structured approach to analyze the suitability of outsourcing in line with the organizational strategy for performance improvement for the coal mining organization in India.

Keywords: outsourcing, India, coal mining industry, decision model

1. Introduction

In the present era of globalization, outsourcing proves to be one of the prominent and emerging business practices widely adopted by the firms around the world in order to stay competitive [1]. There are various definitions and explanations of outsourcing in the literature, all mostly conveying a similar meaning. Outsourcing is an abbreviation for “outside resource using” which essentially means using external parties in the value chain of a firm [2]. Outsourcing is defined as a management approach in which an enterprise delegates its operational responsibilities to an external party which was prior performed in-house [3]. Tadelis [4] defines outsourcing as “the transfer of a business activity or function to an external provider (or vendor) who takes control of the activity’s inputs, and then performs that function off the company’s balance sheet and sells the activity/function back to the company”. Outsourcing to third-party firms when based within the same continent or substantially in the similar cultural environment is termed as near shore outsourcing whereas third-party vendors when based on a different continent or substantially in a different cultural environment is termed as offshore outsourcing [5, 6].

Hätönen and Eriksson [7] and Zhu et al. [8] define outsourcing as one of the strategies that are being recently practised among most of the manufacturing and service industries so as to gain competitive advantage. Considering the potential benefits of such a business practice in terms of catering to the customer requirements in reduced time and cost, a wide application of outsourcing has been noticed by industries all over the globe. Though originated in the eighteenth-century, such business endeavour has gained prominence during the 1980s. Since then there has been a massive paradigm shift in such a business outlook [9, 10]. Traditionally, outsourcing practices were confined to peripheral jobs like cleaning, catering, and security that has shifted to potential core jobs like design, research and development, manufacturing, mining, human resource, sales and marketing [11–15]. A large number of firms view outsourcing as a value-addition process and a means to achieve business transformation [16, 17]. Thus, the motivation of outsourcing that was solely based on cost criteria has gradually transformed into a strategy-based approach more likely to be known as transformational outsourcing. In this reference certain concepts like vested outsourcing, crowdsourcing, white collar outsourcing has emerged in the era of 21st century.

Outsourcing has offered several benefits to the organizations that have enabled managers to use it as a strategic tool to be ahead in the competitive race [18]. The motivation for outsourcing differs from one organization to the other and accordingly a wide spectrum of possible benefits is witnessed in the existing literature. Outsourcing has been a proven mechanism in offering a plethora of strategic benefits including skilled workforce, state-of-the-art technology, cost reduction, greater flexibility are to name a few [19, 20]. Organizations have experienced several other benefits of outsourcing, some of them are mentioned below [21]:

- Outsourcing non-value-added activities to third-party service providers allow the companies to focus on their core activities. Outsourcing non-strategic activities allow the client firms to invest in capital, resources, and time to the areas that contribute to the competitiveness of the firm [22–24].

- Outsourcing allows the companies to achieve cost-savings in terms of reduced overheads and consequent training costs by delegating low-skilled and labour-intensive activities to low-cost locations [25, 26].

- Outsourcing enables organizations to achieve cost-savings by capitalizing on economies of scale gained through production efficiencies and specialized personnel of the outsourced firm [22, 27].

- Outsourcing allows achievement of improved and quality services due to service provider's standardized and consistent service levels which ensures an improved and appropriate level of service through their specialized equipment and expertise [28, 29].

- Outsourcing enables organizations to convert fixed cost into variable cost. Components that are required occasionally are often selected as the candidates for outsourcing since maintaining capacity for such items may lead to cost incurrence throughout the year [30, 31].

- Outsourcing enables organizations to gain access to the state-of-the-art and most effective technology, innovation, proven methodologies, and specialized capabilities of the outsourced firm [10, 27, 29].

- Outsourcing enables firms to deliver products/services at a much-reduced time. Reduced cycle time leads to better responsiveness in catering to the ever-changing customer needs through the utilization of state-of-the-art technology, specialized knowledge, and expertise workforce [2, 32, 33].

- Outsourcing brings in greater flexibility. Outsourcing is beneficial at times when sudden necessity arises for a certain resource that may be either human or equipment that are not required on a full-time basis [30, 34, 35].

- Outsourcing is helpful at times in terms of sharing risks when conditions like market fluctuations, volatile financial conditions, and change in government regulations occur [32, 35].

Though outsourcing has been considered as a strategic tool in providing organizations with a competitive advantage, there are quite a few drawbacks which adversely affects the firm in form of cost escalation and inherent risks [30, 36]. Some of the outsourcing risks are highlighted as follows:

- Outsourcing may lead to loss of core competencies of the firm. It has been witnessed that firms often indulge in an aggressive outsourcing in view of the short-term cost advantage failing to realize the significance of such an activity in contributing to the long-run competitiveness of the firm [32]. Delegating a potential activity may be vulnerable in terms of the service provider becoming a competitor in the near future [21].

- Dependency on the service provider sometimes leads to opportunism demonstrated by the service provider which is another risk factor in an outsourcing relationship. Opportunism occurs when individuals act deceitfully and in a self-seeking manner as and when need arises [37, 38]. Such negative behaviour influences an outsourcing relationship by increasing cost and decreasing revenue [39].

- Client organization investing in specialized assets and resources (tangible and intangible) that are specific to that relationship often encounter difficulties in switching providers known as lock-in situation. Interruption of supply, delivery of inferior quality of products, unexpected cost escalations, and non-performance of the service provider are some of the complications encountered by the client organization in such situation [37].

- One of the primary motives behind outsourcing is to gain cost advantage. However, there are several unexpected costs associated with outsourcing such as, cost of monitoring, implementing, negotiating, coordinating, enforcing and terminating the existing exchange agreements that goes unnoticed and unreported while taking an outsourcing decision [32].

- Possession of proprietary knowledge and methods, customer specific data, organizational know-how are examples of intellectual capital that need to be identified and protected through contract clauses when engaging a third party as they can be easily copied and thereby prone to risks and leakages [40, 41].

The academic literature on outsourcing in the Indian context mostly deals with the outsourcing of information technology/information systems (IT/IS) and business process outsourcing (BPO) that are outsourced to Indian IT firms by the multinational companies (MNCs) located abroad. However, studies on outsourcing practices followed by the Indian firms may be inadequate in the extant literature. It was observed that the decision of outsourcing is often taken in an aggressive manner with an emphasis on short-term cost advantage rather than giving due consideration in realizing the significant contribution of such decisions over the long-term competitiveness of the organization [42]. The present study provides a structured approach to investigate the appropriateness of outsourcing, as a strategic decision, in accord with the organizational strategy for performance improvement in the context of an Indian coal mining organization. Therefore, the objectives of the present study are to provide a general overview of outsourcing in the backdrop of the Indian outsourcing scenario focussing on the coal mining organization and manufacturing and service industries in general. The study then discusses the significant contribution of the coal mining organization in reference to the growing importance of coal in the country. Subsequently, the relevance of outsourcing in view of the improved organizational performances for the Indian coal mining organization has been elucidated. Finally, the study proposes an outsourcing decision model that may provide a comprehensive approach towards evaluating the appropriateness of such strategic decision as outsourcing in consistent with the organizational strategy for performance improvement for the coal mining organization in India.

2. Outsourcing: state-of-the-art in India

As aforementioned, the extant literature on outsourcing in the Indian context mostly highlights outsourcing of IT, IS, and BPO that are offshored to Indian IT firms by the MNCs located overseas [43, 44]. However, studies on outsourcing practices by the Indian firms may be inadequate in the extant literature. According to the outsourcing survey by Deloitte, the business functions that are recently being outsourced are IT, operations, finance, human resources, legal, real estate/facilities, procurement, and sales/marketing support [45]. As reported in this survey, while IT, finance, and operations are expected to be heavily outsourced in offshore locations, business functions such as procurement, human resources, sales and marketing, legal, and real estate/facilities are likely to be outsourced within the national boundaries (India). Some of the publicly known cases of outsourcing by Indian firms are (a) IT outsourcing contract to IBM by Airtel [46], (b) outsourcing of business process and technology by Indian banking sector [47], (c) outsourcing of mining operations by Hindustan copper Ltd. and Mahanadi Coalfields Ltd. [48, 49], (d) outsourcing of back-office operations to Tata Consultancy Services (TCS) by Passport Seva, Ministry of External Affairs [50], (e) outsourcing of passenger services by Indian Railways [51], and (f) human resources management system outsourcing contract to TCS by the Indian Railways [52]. Some of the recent cases of outsourcing reported in Indian context that are more transformational in nature are relocation of high-tech industries like pharmaceutical industry outsourced to India [53], study of professional service outsourcing in India while examining the impacts of task traits (complexity, connectivity and security) and their alignments with inter-firm governance control mechanisms in improving service capabilities by Jayaraman and Liu [54], the impact of employer branding strategy on employee engagement consideration a case of a business process outsourcing (BPO) in India [43], and R & D offshore outsourcing to India, the service provider, taking into account their innovation performance gained through learning from their clients for a biopharmaceutical industry [55].

3. Importance of coal and the coal mining organization in India

Mineral and mining sectors play a pivotal role in the economic development of a country as they are the principal source of raw materials for an array of industries. Among them, coal is the most dominating energy resource and remains as the lifeline for fuelling Indian industries since its first use in the 1700s. Coal mining constitutes a share of 80% of the total mining in India while the remaining 20% includes mining of various other ores such as gold, copper, iron, lead, bauxite, zinc, etc. [56]. At present coal contributes about 52% to the India's total commercial energy needs and about 66% of the country's power generation and is expected to remain the most viable energy resource contributing to sustainable economic growth for the years to come [56–59]. As India is among the top three fastest-growing economies in the world, the coal mining industry in India plays a substantial role in fulfilling the uprising demand of coal from the increasing power plants, steel, and cement industries.

The state-owned coal mining organization of India came into existence in the year 1975 after the Coal Mines (Nationalization) Act in the year 1973 taking over the private coal mines by the Government. For the purpose of this study, this organization is referred to as the Indian coal mining organization (ICMO). ICMO owns seven coal producing subsidiaries along with a mine planning and consultancy company located in eight provincial states in India. They are Eastern Coalfields Limited (ECL), Bharat Coking Coal Limited (BCCL), Central Coalfields Limited (CCL), South Eastern Coalfields Limited (SECL), Western Coalfields Limited (WCL), Northern Coalfields Limited (NCL), Mahanadi Coalfields Limited (MCL), and Central Mine Planning and Design Institute Limited (CMPDIL) [57]. Ministry of Coal (MoC) is responsible for the development and implementation of policies and strategies for the entire coal sector that are exercised through ICMO and its subsidiaries along with Singareni Collieries Company Limited (SCCL) which is a public-sector undertaking company jointly governed by Government of Andhra Pradesh and the Government of India [56]. ICMO is of strategic importance to the country because of several reasons as mentioned below [57]:

- India is the third largest coal-producing country in the world after China and USA where ICMO contributes to about 81.1% of India's overall coal production and is the single largest coal producer in the world.

- Out of the 52% of India's primary commercial energy which is coal-based, ICMO alone contributes to around 40% of the primary commercial energy requirement.

- ICMO accounts for about 74% of the Indian coal market.

- ICMO maintains the stability of coal prices to the Indian coal customers.

The main business of the organization is based on the identification of coal reserves, coal exploration, design, optimization and application of operational activities for excavation of coal while distributing them to industries across the nation as per the demand.

4. The Indian coal mining organization and outsourcing

As coal is an important source of primary energy in India, the demand for coal has always been on the rise. The demand for coal has further aggravated in view of the increasing power sectors and steel and cement industries growing nationwide. Despite the fact that India has been ranked fourth in terms of the total coal reserve and is also considered as the third largest coal producing country in the world, India is still chasing to encounter the escalating demand of coal.

As per the Coal India Report (2014–2015), between 2007–2008 and 2014–2015, the demand for coal in India has increased from 492.5 million tons (MT) to 787.03 MT showing an increase of 60% over a period of seven years. **Figure 1** illustrates the year-wise details of overall demand for coal and the corresponding share of ICMO, SCCL, and other indigenous sources contributing to the overall demand while the gap is met through import [57].

From **Figure 1** it may be observed that the share of demand met by ICMO, SCCL, and other indigenous sources have always been substantially below the expected demand which has necessitated the coal mining organization to depend on coal imports from the neighbourhood countries. The gap, bridged by import between the period 2007–2008 and 2012–2013 has increased from 30.61 MT to 192.54 MT, showing a rise of 529% over a period of five years.

The Ministry of Coal articulates several reasons for such dependency on imported coal. As stated, increasing unavailability of indigenous coal, limited availability of coal with desired quality, environmental consideration in combining the low-quality coal with good quality imported coal, and locations-based cost issues are among the primary influencers [57]. However, coal imports are associated with certain risks and challenges that include fluctuations in global spot prices and foreign exchange rates, law and order issues in exporting countries, and many more [60]. In view of the growing inclination towards the import of coal from oversea sources, there have been several initiatives to enhancement in-house coal production to the outmost possible which are within the ICMO's 12th Five-year plan. The strategies within the 12th Five-year plan include enhancement of exploration drilling capacity, introduction of new mines, and fast initiation of activities related to projects in-process [57]. However, the improvement and expansion of in-house domestic mines involve a substantial amount of investment resulting in a considerable increase in the price of coal [60]. At the same time, it has been also noticed that service providers have facilitated firms in enhancing their business processes though their technical efficiency, expertise, cost-saving techniques, and flexibility when they were deployed for operational activities. Likewise, the captive mines

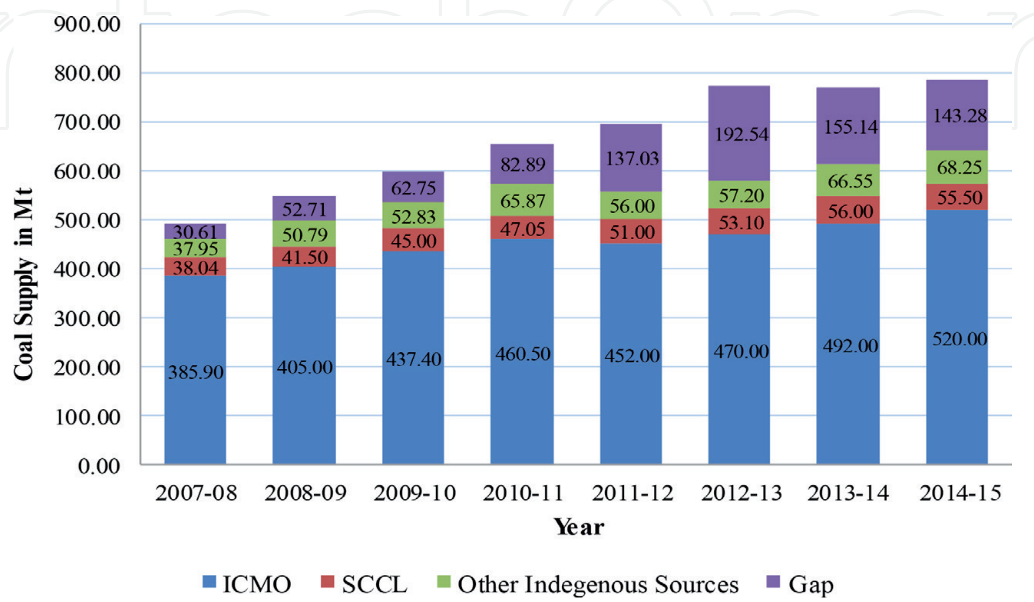

Figure 1.
Year-wise demand and supply of coal.

have realized competitive advantage through deployment of modernized equipment, adoption of new technologies, and utilization of experience and expertise of the service providers [60]. The presence of these third-party private agencies has also been noteworthy in the development and operation of coal mines through contract mining and related technical services.

In view of the significant participation of the third-party providers, the coal mining organization in India have started several interventions involving such organizations to delegate some of the key operational activities. This, in turn, is expected to diminish the ever increasing demand–supply gap through increase in operational efficiency, cost-reduction techniques, sustainability of operations and minimization of wastes [56]. Considering the above, outsourcing of operational activities has been introduced by ICMO to suffice the growing energy demand.

One of the primary objectives of ICMO is to enhance its internal exploration drilling operation to accomplish the expected target as mentioned in the 12th Five-year plan. Outsourcing of drilling operation by CMPDIL has increased from 0.07 lakh meter in 2007–2008 to 2.86 lakh meter in 2012–2013 over a period of five years that has further increased to 6.15 lakh meter in 2013–2014 showing a significant increase of 115%. For the year 2014–2015 the drilling operation has further increased to 8.28 lakh meter realized through departmental resources and outsourcing [57]. The estimated target for the year 2015–2016 has considerably increased to 15 lakh meter where the departmental capacity has been raised to 4 lakh meter and the rest through outsourcing [61]. According to the report, a total of 50 blocks involving 17.7 lakh meter of drilling was awarded since 2008–2009, however, drilling has been performed in only 24 blocks. The rest of the blocks are remaining non-functional because of reasons like local law and order problems and non-availability of forest clearance [61].

As reported, ECL, a coal producing subsidiary within ICMO, produced 141.73 lakh tons of coal and raised 587.91 lakh cubic meter of overburden (OB) from 27 outsourcing opencast patches in 2014–2015 that increased to 171.12 lakh tons of coal and 882.20 lakh cubic meter of OB in the year 2015–2016 from 31 outsourced opencast patches [62]. CCL, another subsidiary, has already outsourced several opencast mines and have been outsourcing a number of activities like OB removal, exploration, and monitoring of geological exploration. NCL has been planning to outsource OB removal along with departmental outsourcing which is within their 2015–2016 production program [63]. As reported, MCL has been also planning to outsource activities for the expansion of the opencast projects [64]. Further, it has been clearly stated by ICMO and MoC that they have already engaged an international agency for studying the mine operations in order to modernize the existing mines through the implementation of state-of-the-art technology [57].

5. Research issues and scope of work

Thus, the above-stated facts emphasize the importance of outsourcing as a strategic decision of the organization in view of the improved organizational performances. However, while conducting the site visits and interacting with the company executives, the researcher discovered several lacunas related to the absence of strategic perspectives in regard to the outsourcing decisions of operational activities. It was observed that the decision of outsourcing is often taken in an aggressive manner with an emphasis on short-term cost advantage rather than giving due consideration in realizing the significant contribution of such decisions over the long-term competitiveness of the organization. Management of the company ought to have recognized the need to develop a logical step-wise approach towards adopting outsourcing through a clear understanding of the contribution of each operational activity and its relation to organizational core competencies. Second, the need to analyse the appropriateness of the organization's outsourcing decision in the context of organizational strategy and its effect on organizational performance is another area of concern. There is absence of any performance evaluation framework for identification of the attributes (drivers) and their relative rank order for assessing organizational performance as a consequence of an outsourcing decision. In view of the advantages and short-term as well as long-term challenges, it may be worthwhile to develop a framework that can provide guidance to the practitioners faced with the dilemma of retaining activities in-house, or enter into outsourcing in a transactional manner, or to maintain an alliance relationship with the service provider. Last but not the least, one of the primary challenges of the organization is how to maintain an outsourcing arrangement with the service providers so that current competitive position along with a sustained business performance is maintained over an extended period of time. So, the identification of critical success factors for developing and maintaining a sustainable outsourcing relationship between the service provider and the client may be another area of research.

In this reference, it may be noted that apart from few studies conducted by the management consulting firms like the Indian Chamber of Commerce and Deloitte Consulting, there has been very limited studies on outsourcing for the coal mining organization specific to the Indian context. The existing literature does not adequately focus on the outsourcing decision support based on a strategic perspective that may facilitate the mining managers in outsourcing decision-making for the organizational activities. Adequate studies with a focus on the identification of key drivers for the assessment of organizational performance as a consequence of an outsourcing decision are limited in the extant literature. Studies on organization-level outsourcing decision strategies in the context of the coal mining organization in India have been rarely considered. Further, the literature on a structured approach that takes into account the sustainable relationship management aspect of the coal mining organization and its service providers in regard to the long-term competitiveness of the organization is also limited. Thus, reviewing the existing literature and considering the above-mentioned gaps, a comprehensive outsourcing

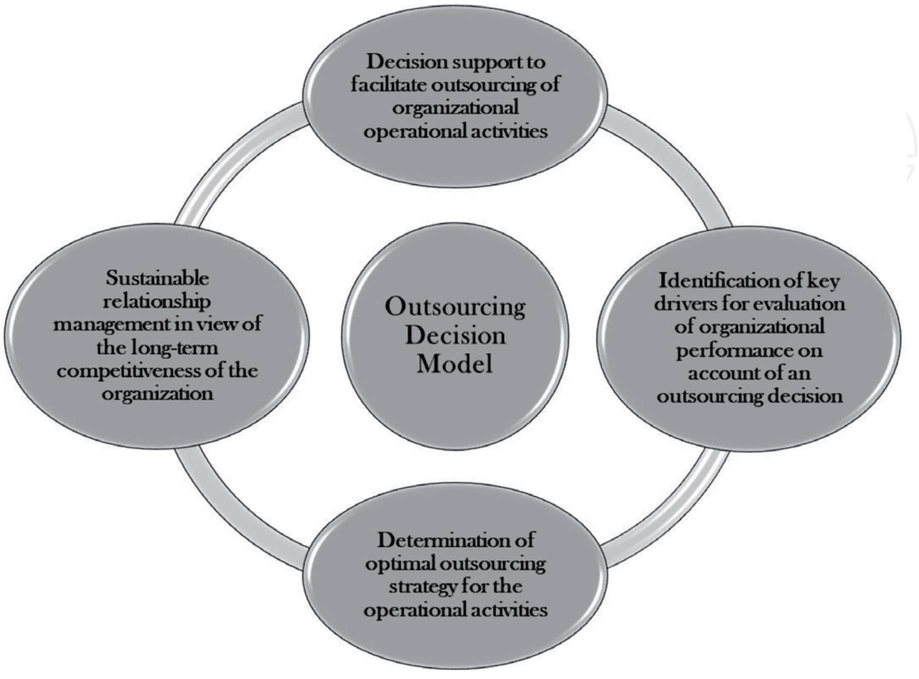

Figure 2.
The graphical representation of the outsourcing decision model.

decision model has been formulated to address the salient issues emerged from the identified gaps as presented in **Figure 2**.

6. The outsourcing decision model

6.1 Decision support to facilitate the outsourcing of organizational operational activities

The study emphases on developing an outsourcing decision support to help management make a more informed decision on outsourcing of the operational activities. The decision support is in regard to the outsourcing decision of operational activities to be strategic rather than an aggressive one. Besides, defining the candidates for outsourcing, the decision support may contribute towards the identification of core, partial core, and non-core activities through a logical phased approach based on their contribution towards the organizational competencies. Thus, comprehending the contribution of each operational activity towards the organizational competencies allows the management to check for its strategic soundness and thus help in retaining the competitive position of the organization.

6.2 Identification of key drivers for evaluation of organizational performance on account of an outsourcing decision

Outsourcing is considered to be one of the strategic options for organizations to improve their business performance. Determination of the unexplored attributes (drivers) and their comparative rank order for the assessment of organizational performance out of an outsourcing decision is another area of research to be taken into consideration [65]. The analysis comprising of both quantitative and qualitative attributes based on the cognition of the decision makers may contribute to a thorough understanding of a practical real-life problem and could help managers in long-term decision making. Understanding the effect of the unexplored attributes may also benefit management of the organization to develop policies in maintaining competitive advantage in the market.

6.3 Determination of optimal outsourcing strategy for the operational activities

The outsourcing decision problem, also known as the make-buy decision of an organization is well-considered as one of the strategic decisions of any organization. The extant literature on the make-buy decision has been predominantly classified into two categories. The first one is related to the financial issues based on Transaction Cost Theory (TCT) whereas the second rests on strategic issues. There are several methods and approaches conferred in the earlier studies addressing such make-buy decision problems. The present study emphasizes on an organizational decision support to assess the optimal outsourcing strategy among insourcing (in-house), outsourcing (involving external service provider), and strategic alliance (partnership) relationship for operational activities of an organization [66].

6.4 Sustainable relationship management in view of the long-term competitiveness of the organization

The focus is to identify the factors responsible for establishing and maintaining a sustainable relationship between the third-party service provider and the client organization. In this era of globalization, when service providers are value-adding partners, trust, commitment, and long-term orientation are the key elements in maintaining a buyer–supplier relationship. Literature has witnessed a relationship characterized by such aforementioned traits not only help to better serve the customer but also intensifies mutual benefits. Investigation of relevant antecedents pertaining to trust, commitment, and long-term orientation have seldom been used in light of an on-going outsourcing relationship and are areas of concern.

7. Conclusion

Outsourcing has been one of the noticeable business practices in view of its demonstrated capability in accomplishing competitive advantage to the organization. With the developing fame of outsourcing in the manufacturing and service sectors, mining sector have also started capitalizing the conceivable outcomes of outsourcing. Outsourcing has now turned into a key device for mining industries for building up corporate capability through its viable and effective methods of value improvement. In view of this business prospect, the coal mining organization of India has started outsourcing its operational activities to meet the escalating demand of coal across the country. However, along with several success stories, there are quite a few pieces of evidence that portray several difficulties encountered by the organization. Accordingly, to accomplish any firm's business goals, it is prudent to consider it as a key aspect of corporate decision choices.

The present study provides a general introduction about outsourcing followed by its potential benefits and the shortcomings as witnessed in the existing literature. Besides giving an overview, the study provides a backdrop of the Indian outsourcing scenario considering the coal mining organization and outsourced activities by manufacturing and service industries in general. The study then discusses the significant contribution of the coal mining organization in reference to the growing importance of coal in the country. Subsequently, the relevance of outsourcing in view of the improved organizational performances for the Indian coal mining organization has been elucidated. Finally, the chapter ends with proposing an outsourcing decision model that may provide a comprehensive approach towards evaluating the appropriateness of such strategic decision as outsourcing in consistent with the organizational strategy for performance improvement for the coal mining organization in India.

The present study contributes in understanding a practical problem of a coal mining industry that may act as a guiding instrument to the mining managers in terms of decision making related to strategic sourcing. Developing an outsourcing decision support may assist the managers of the coal mining organization to determine the candidates for outsourcing, thus identifying the set of core activities that needs to be nurtured and protected for organizational excellence. The study provides elementary guidance to the management in investigating the appropriateness of outsourcing with the organizational performance through identification of key drivers. Further an effective outsourcing decision support tool may help managers to decide upon the optimal sourcing strategy among insourcing, outsourcing, and strategic alliance (partnership) for the organization's operational activities. While the Indian coal mining organization is reliant on third party service providers for identification and exploration of new coal reserves, investigation of relevant antecedents pertaining to trust, commitment, and long-term orientation may facilitate management as client firm to develop and improve outsourcing relationship with the service providers. Determining the impact of the aforementioned factors may also help the mining executives to formulate relevant policies accordingly. However, there are few limitations of the present study. First, the study deals with the development of an outsourcing decision-making framework broadly considering four aspects as presented. However, there are several possibilities to investigate an extensive set of decision elements within the said framework. Second, the outsourcing decision model proposed in the present study is based on the insights gained through the interaction with a particular expert group from the Indian coal mining organization, but to make it applicable for other industries, the framework may be altered/improved upon by incorporating changes as required. For a public sector like the Indian coal mining organization, it was difficult to obtain the various components of cost related to on-going outsourcing projects (particularly when many such projects are in either planning or finalization stage), the present study could not incorporate the influence of cost criteria and the required cost analysis for the proposed outsourcing decision framework. Hence, the current research work may be extended in future by incorporating several dimensions of cost. The study takes into account the client perspective, while it may be relevant to take into consideration the viewpoints of service providers to get a more comprehensive view.

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