

## **Strategic Business Process Insourcing: Insights of an Action Research in the Railway Sector**

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*Abstract:* - The academic literature on Business Process Outsourcing is relevant, offering a well-structured background and very interesting case studies. By the other hand, little research effort has been performed for Business Process Insourcing, which in contrast to the traditional view of outsourcing, where the outsourcer and vendor are separate players, sets the delegation of a pull of operations to a co-shared, but stand-alone, business entity that specializes in that operations. Thus, managers and experts, considering BPI strategies, are claiming for rigorous methodologies to support this critical transition in a practical way. In this paper, insights from an action research, in relation to a BPI strategy chosen by a multinational organization operating in the railway sector (Bombardier Transportation, BT) is reported. According to this strategy, the creation and starting phases of an engineering centre, co-shared by BT and Infotech (a selected Indian engineering services vendor), namely BTECI (Bombardier Transportation Engineering Centre India), are analyzed and reported. The knowledge contribution of this work is about the empirical evidence of a set of methodologies and tools useful to a BPI implementation strategy through the clear evidence of hidden problems and potential implementation pitfalls.

*Key-Words:* - Strategic Out-Sourcing, In-Sourcing, Action Research, Railway Sector, Case Study.

# 1 Introduction

## 1.1 Context of the research

The competition in the railway market got harder in the last years. A multinational environment, such as that of Bombardier Transportation (BT), has different contexts in relation to the country of belonging, due to completely different social and economical scenarios. These environmental changes forced all competitors to take solid actions to survive in a more competitive market, making the change itself becoming a need and representing the possibility to survive. Four major causes can be identified as a common issue:

- Privatization of the Railways leads to a bigger attention to gross margin by the rail operators,
- The possibility of spending was reduced,
- Raw materials costs increase; and
- Open markets provoked a stronger pressure on costs.

A more detailed analysis, of the last point, has to be performed in order to identify the business areas mostly influenced. In the last decade, the railway market faced an increasing competition due to open markets, which, in turn, provided new suppliers (especially those from low-cost countries), forcing companies to change procurement activities into strategic sourcing processes. The deliver and after-sales processes saw parts suppliers becoming competitors operating unfair sales to the company's customers at reduced price, trying to take over the after-sales business. Furthermore, some customers became competitors developing new infrastructures and forming dedicated personnel with the scope to include maintenance as core business. On the product development side, engineering activities usually devoted to excellence, suffered increasing pressure of costs. Today, the competitiveness in the railways market is based on prices.

To fight this rapidly evolving situation, collaborative relationships became a factor of success and dedicated organizations raised in the company to evaluate and negotiate new partnerships with the following observed results:

- Mergers and acquisitions changed the shape of the Market for more players,
- More projects assigned to consortiums instead of single players, and
- Low cost countries providing engineering services became integrated suppliers, so transforming the concept of out-sourcing into in-sourcing.

## 1.2 From traditional out-sourcing to in-sourcing

Typically, primary reasons to outsource or not outsource can be summarized into: cost reduction, competency focus and revenue considerations [1]. Outsourcing is the process of establishing and managing a contractual relationship with an external supplier concerning provision of capacity that

has previously been provided in-house [2]. A minimum of two organisations are involved in an outsourcing arrangement – an outsourcer and a vendor. In today business scenario, Business Process Outsourcing (BPO) is becoming a fundamental leverage to help enterprises to increase their competitiveness. The BPO is generally characterized by five distinct phases [3], which answer different questions that emerge during the process, as shown in Figure 1. A set of methodologies and tools is depicted in Figure 2. In recent years, BPO has become highly controversial, as it has been linked to job losses and the shut down of many firms [4]. Moreover, BPO cannot be properly understood and analyzed following the “YOU WIN – I LOSE” approach. Instead, BPO is all about economy, and substantially it can become part of an integrated business strategy with the objective of increasing firm competitiveness. The main idea is that BPO should not be seen only as a cost reduction opportunity by following an operational approach [5]. Instead, companies should act strategically in relation to outsourcing, in order to view BPO as the main gate to sustainable competitive advantage and to rethink the business model in order to innovate and transform an old business into a new one. Nevertheless, the strategic decision toward a BPO is a big challenge requiring dramatic efforts and huge investments that are known for sure, while the benefits are usually affected by a high degree of uncertainty and risks. Considering that the risk of losing control and critical competencies are particularly relevant to railways sector organizations, a pure outsourcing strategy could be not completely adequate. When this is the case, companies have to be objective and carefully decide whether transferring to a new supplier, moving to a multi-sourcing model or even simply re-engineering the whole relationships/processes (whereby they use a mix of in-sourcing and out-sourcing) to deliver the service in an appropriate and costly way. In fact, the traditional view of out-sourcing, where the outsourcer and vendor are separate players, could be overcome by the delegation of a set of operations to a co-shared, but stand-alone, business entity that specializes in that operations. This could be referred as Business Process In-Sourcing (BPI). BPI is often expensive and complicated to implement and it should be considered only when all other avenues have been explored. If a company in-sources a problematic process that the supplier couldn't handle, they must ensure they will have the capability, systems and know-how in place to improve the supplier's service. In order to verify a possible BPI strategy, organizations would need some kind of framework or methodology. In this research Authors decided to use a general reference model derived from BPO (Figure 1), taking into account the peculiarities and key issues of a BPI strategy. A list of the experienced key issues is the following:

- Leverage on the current status (existing outsourcing agreements/internal processes);
- Analyze third-party;

- Design the flexibility of changing volume, scope and other parameters of the outsourced services through the life of the agreement;
- Integrate Processes, Human Resources, Technologies and Tools, and Infrastructures;
- Plan a pilot project and mid-term re-scoping (due to complexity and strategic level of the intervention);
- Measure the process (planning, measurement, benchmarking)

### 1.3 Research contribution

The academic literature and reported experiences on BPO topic are relevant, offering a well-structured background and very interesting case studies [6], while little research effort has been performed for BPI. Thus, managers and experts, considering BPI strategies, are claiming for rigorous methodologies to support this critical transition in a practical way. In this paper, insights from an action research, in relation to a BPI strategy chosen by a multinational organization operating in the railway sector, is reported. According to this strategy, the creation and starting phases of an engineering centre, co-shared by Bombardier Transportation and Infotech (a selected Indian engineering services vendor), namely BTECI (Bombardier Transportation Engineering Centre India), are analyzed and reported. The knowledge contribution of this work is about the empirical evidence of a set of methodologies and tools useful to a BPI implementation strategy through the clear evidence of hidden problems and potential implementation pitfalls.

The paper develops as follow: in section 2 the research methodology is explained, in section 3 the BPI action research overview is reported, in section 4 BPI outcomes are evaluated, in section 5 reflections on the case presented in the light of the experience and theory are discussed, and in section 6 some conclusions are drawn.

## 2 Research methodology

The action research approach has been considered an appropriate methodology to improve knowledge on BPI leading to practical outcomes with broad relevance to practitioners and important contributes to theory refinements [7]. This kind of approach differs from the conventional case study methodology, which typically relies on data gathered from key informants by interview or survey to provide a window on reality in that it allows researchers to gain a deeper knowledge of the case and its dynamics. Moreover, the Authors believe that a action research experience can be resumed in practical guidelines to support whoever will take the decision to dismiss part of the company activities in favor of any kind of vendor becoming an in-sourcing partner and requiring an integration process. Since the action research is exploratory in nature and longitudinal, this research took three years to

complete. During this extended period of study one of the Authors, supported the company involved in the project from its inception, participated with the enterprise top and middle managers in the outsourcing preparation, vendor selection and transition phases. From this point of view our work might be further classified as action research, as defined by [8], since in this approach “the action researcher is not an independent observer, but becomes a participant, and the process of change becomes the subject of research”. The role played by the Academics was to address the methodology of the research/project.

## 3 BPI Action Research Overview

### 3.1 Preparation Phase – “Whether” question

According to the BPI strategy, the preparation phase focused on analyzing cost structure of outsourcer process, so as to identify areas of cutting intervention. This process was accompanied by the setting of variables and parameters to be measured, in order to verify saving achievement. Before achieving the decision of adopting a BPI strategy, Bombardier Transportation decided to launch a six-sigma project so as to try to cut internal costs due to inefficiencies, and consequently, based on results achieved, evaluate the need of a BPI or not. Six-sigma process of continuous improvement was implemented in the whole organization. It worked as the well-known bottom up approach involving progressively all the employees. Major scope was to develop saving projects to be approved by local managers and controllers. The Six Sigma organization had virtually costs, because projects and people were fully paid back by the savings achieved. For example, only in Italian Services, in 2004 the total amount of savings certified by the controller overcame the sum of 300k€, while the relevant working time invested was accounting for less than 22k€. A Recognize, Define, Measure, Analyze, Design, and Verify (RDMADV) approach was used, as presented in Figure 3.

The minimization of the wastes allowed the achieving of a significant cost reduction, but the operational result was not enough to reach the expected competitiveness on the market, neither to respect the margins targeted by the management. As a consequence of that, Bombardier Transportation decided to act strategically, by starting the BPI strategy evaluations requiring significant investments and dramatic efforts, but, hopefully, resulting in exceptional expected savings, allowing the company to reach the final goal. In order to minimize negative impacts of implementing this type of strategy, a diagnosis and problem identification methodology was performed by using a SWOT analysis (results on Figure 4).

Data required performing SWOT analysis was collected or generated in different ways. “Hard” data were gathered through performance statistics, derived from Six Sigma methodology, such as information on time, hours spent, costs, saving achieved, necessity of re-work. “Soft” data,

such as employees' expectations and perceptions of BPI, quality, processes, and human resources feeling, were gathered through direct observation, discussion, interview, and general informal observation-in-action. Based on weaknesses and key threats, formal risk management methodologies were applied in order to identify, quantify, handle and further monitor potential risks, as presented in Figure 5.

### 3.2 Preparation Phase – “What” question

In terms of processes/activities to be outsourced, management formulated an ambitious target: the opportunity of reducing engineering costs thanks to a hourly rate reduced with ratio 1 to 7. Preliminary analyses of processes highlighted that most significant activities outsourced would have been related to design engineering for coaches (particularly the interiors). Design engineering for coaches was considered one of the examples most fitting the possibility of vendors to perform. In fact, these tasks are usually simple and re-iterated, giving to potential vendors the possibility to develop an excellent learning curve. Other activities of graded satisfaction were:

- Virtual Reality (VR) for Vehicle Refurbished Modernization (VRM),
- Development of Technical Documentation (D&T),
- Archiving and scanning, and
- Development of management databases.

The results obtained from preliminary analyses clearly indicated that integration of outsourcer/vendor activity should have been extended from technologies to the whole factors impacting efficiency, in order to harmonize not only the systems and the tools used, but also infrastructure and managerial best practices. The action research presented in this paper focuses on the in-sourcing activity related to the Development of Technical Documentation.

### 3.3 Preparation Phase – “How” Question

When the strategic decision to outsource was taken by management, and main activities to be outsourced identified, a plan of actions was prepared. The outsourcing strategy had the target to transfer hundred thousand-of working hours to the vendor, so as to cut internal costs.

In order to evaluate outsourcing activities best performed by potential vendors, several pilot projects would have been launched according to a formal mechanism of reiterated process of selecting minor projects with low exposure to risk and monitoring / measuring the results along all phases in order to secure the efficiency standards proposed.

The decision of answering the ‘how’ question through pilot projects, gave the possibility of establishing contacts with several vendors. This led, shortly, to the identification of the most proper vendors.

### 3.4 Vendor Selection Phase – “To whom” Question

At the previous stage, India was identified as the country characterized by most interesting vendors for the activities that Bombardier Transportation wanted to perform. In order to select the vendor, it was decided to use a collaborative approach instead a transactional one. The strategic level of the BPI drove this decision. Based on this, the methodology for vendor selection proposed by [9] was used (see Figure 6). The result of the vendor selection phase was the identification of Infotech (Indian Provider of Engineering Services, counting more than 2.000 Engineers).

### 3.5 Transition Phase – “How” Question

Once the best vendor was identified, analyses followed in order to determine the optimal in-sourcing business model to apply with the new partner. Five different scenarios were developed with the scope to:

- Understand if the D&T business was sustainable in house;
- Maximize gross margin and minimize risks;
- Analyze in depth all possibilities.

The characteristics of the scenarios identified were:

**Scenario 0 (SC-0)** – D&T activity of every division (DIV) is assigned to internal BT service office (SER), which become responsible for D&T (SER-Mgmt), and partially outsources sub-activities to external vendors (EXT) and to the identified partner (IP).

**Scenario 1 (SC-1)** – D&T activity of both SER and DIVs is assigned to ESTs.

**Scenario 2 (SC-2)** – D&T activity is assigned to SER, which become responsible for D&T (SER-Mgmt), which partially outsources to EXTs.

**Scenario 3 (SC-3)** – D&T activity is assigned to SER, which become responsible for D&T (SER-Docu2), which partially outsources to EXTs obliged to use staff from IP.

**Scenario 4 (SC-4)** – D&T activity is assigned to SER, which become responsible for D&T (SER-Mgmt), which totally in-sources D&T to IP.

Based on these scenarios, SWOT analysis was performed (Figure 7) as well as financial analysis (Figure 8). Final evaluation led to the choice of SC-3, which appeared to offer good results by maximizing profits and minimizing risks.

This decision brought to the creation of an Engineering Centre in Hyderabad, fully dedicated to Bombardier, namely BTECI (Bombardier Transportation Engineering Centre India) co-shared with Infotech.

It is evident therefore the role played by the Indian company, which acts as a partner and not as a supplier.

In order to test the new partnership, a complex *Pilot Project* was run with the scope to reduce risks, reduce cost exposure

and allow improvement in future contracts. In Figure 9 a schema of the Pilot Project “Excellence in Business Documentation” is reported.

Moreover, in order to mitigate the risks of the BPI and managing the transition phase gradually, the management planned a *project of integration* with the aim of maximizing efficiency of the new partnership. Particularly, target of this project was the integration of the two organizations at four levels, as suggested by [10]:

1. Processes;
2. Human Resources;
3. Technologies and Tools, and;
4. Infrastructures.

An overview of the scopes, key-figures, methodologies, issues and achievements of the four levels of integration is presented ahead:

#### Integration of Processes:

- **Scope:** Integration of working processes in order to maximize the effectiveness of the collaboration and reduce the level of re-work.
- **Key-figures:** Timetables associated to existing processes to measure the efficiency, compared to the ones of the new processes.
- **Methodology:** Mapping of all European processes relevant to each activity to be outsourced and definition of standards; then, mapping of Indian processes; adoption of Business Process Reengineering (BPR) techniques in order to harmonize the processes into one single process properly designed to work together in full respect of both parties constrains; definition of procedures; training of personnel.
- **Related issues:** Know how retention by the personnel provoking difficulties in process mapping; passive resistance to change.
- **Achievements:** Same efficiency with lower costs.

#### Integration of Human Resources:

- **Scope:** Integration of people in order to minimize the conflicts between resources.
- **Key-figures:** Change of joined working modalities, definition of clear rules, increment of discipline and definition of review understanding processes. Design and implementation of a rigorous change management program to make people understand that change is needed and leads to improvement. Assignment of internal Champions in relation to the change process and ensuring that people have a clear leader to refer to whatever issues they might face along the change.
- **Related issues:** Jet lag of travelers, work on turns, ethics and religion, respect of new rules, mindset, know how retention, language, communication. Passive resistance by critical Resources.

- **Achievements:** Improvement of collaboration effectiveness, alignment of human resources to new strategy.

#### Integration of Technologies and Tools:

- **Scope:** Integration of technologies in order to enable effective communication through the parties.
- **Key-figures:** KPIs related to time response to Customer’s inquiries; failure rate in communication protocols (FTP, video conferencing, remote access to DBs & Systems).
- **Methodology:** Harmonization of systems and investments in communication tools in order to give secure accessibility to trusted and entitled operators to access all systems in remote and by guarantying real time data exchange. Dedicated databases to be developed to reach proper level of data exchange.
- **Related issues:** Achievement of local permissions to access from remote; installation of proper tools for remote communication; cost of investment.
- **Achievements:** Significant decrease of failure rate; achievement of ICT stability.

#### Integration of Infrastructures:

- **Scope:** Integration of infrastructures in order to facilitate communication and operations for performing professional activities at a lower rate.
- **Key-figures:** Rating of activities performed in India.
- **Methodology:** Hardware and Logistics reorganization of departments in European and Indian sites; movement of machinery from Europe to India.
- **Related issues:** Cost for moving machineries; resistance by European specialists to release activities and machineries.
- **Achievements:** Layout re-designed in European and Indian sites; key machineries identified and moved; dramatic cost reduction on activities performed.

As evident from description above, all parts of the organization were affected and re-organized, from management and middle management, to engineering level. The engineering departments in both companies (joined under the BTECI company) were re-organized in workgroups with clear competences and hierarchies in order to facilitate the communication and the in-sourcing relationship between Europe and India based on trust rather than a market based or bureaucratic based pattern [11]. The execution of these planned actions required the management support up to President level including legal aspects in order to avoid legal conflicts [12]. In order to manage the resistance, a strong leadership was required while building up a list of best practices to show people that benefit was

real. Feedback data were recovered directly from field people and managers belonging from the two companies.

#### 4 BPI - Outcomes

BTECI developed from 6 to over 500 Employees in three years. The detailed BPI over the three years period was the following:

Year 1	Year 2	Year 3
<i>Preparation</i>	<i>Vendor Selection and Beginning of Transition</i>	<i>Closure of Transition</i>
6σ RDMADV Project SWOT Analysis Risk Management	Analysis of processes to be out/in-sourced  Small pilot projects for vendors' identification  Vendor Selection  Complex Pilot Project  Project of Integration	Total Insourcing of Identified Activities  Continuous Improvement

Table 1 – Overview of the Main Stages of the new strategy

The results given by the integration project were successful; in fact the two Companies were fully integrated. Joint work had same performances than the work previously done in Europe in terms of quality and re-work rate. Costs as well were dramatically reduced according to budget expected. Due to Bombardier IPR (Intellectual Property Rights) numerical data notifying cost saving and performance achievements cannot be reported.

#### 5 Reflections on Story in the Light of Experience and Theory

After a long period working to full integrate the two Companies some reflections can be reported and discussed. Feedback data process from preliminary pilot projects was disastrous in the second year, justifying the choice of management about running an integration project. During this first year Authors needed to deal with rumors and to start a parallel change management project to keep people informed and understanding the reasons of the change. Due to this difficulty in operating major projects were moved along the course of the second year. At the end of the

second year the project was at a good stage. The final pilot project with the selected partner highlighted excellent results. As a consequence of that, at the beginning of the third year all identified activities were in-sourced, and integration and optimization projects initiated.

The reduction of European Personnel, replaced by Indian Engineers, allowed achieving exceptional savings. This means that in Europe no engineering department was willing to give activities up in favor of India and the selection needed to be forced; Worker Council and Employees Committee, in most countries, were a big obstacle as well.

The outsourcing framework proposed by [3] proved to be a strong base for the management of the BPI, as well as the continuous support of the Author that provided methodological help in facing various issues that arose during the project.

Globally, it is possible to affirm that the action research experience outlined the following issues:

- Strong preparation phase is vital to analyze benefits and potential pitfalls;
- Risk analysis methodologies as well as the use of small pilot projects to seek vendors/partners reduce the risk of the global project;
- Consistent methodologies are needed in order to achieve effectively the various stages of a BPI;
- Motivation of people is important as processes and technologies for a successful integration;
- Integration plans shall be 360 degrees and well supported by change management program.

This story of insourcing to India probably does not differ from some other similar stories in other places in the world. Action research revealed the complexity of BPI initiatives, confirming therefore the theoretical evidence that companies need to be supported in the various stages of BPI with specific frameworks and guidelines. Similar results were highlighted through action research in different types of strategic processes [13].

Moreover, the specific action research revealed interesting insights as the key role of small pilot projects in reducing risks and integration projects for processes' optimization and alignment. Refers to [14] and [15] to read about methodologies to support these activities.

The general learning, and the authors' involvement in the problem solving of the specific action research, lead the authors the possibility to assess the effectiveness of available theory and tools.

It is opinion of the Authors that current body of knowledge is consistent. However, complexity of BPI projects requires strong methodologies and skills to be put in place.

Insights from this action research experience can be extrapolated to a broader context, and therefore constitute valuable information.

In relation to BPI peculiarities, the following reflections summarize the learning from this action research:

**Leveraging the existing agreement:** Blind in-sourcing can be as disastrous as blind outsourcing. Organizations have to conduct very thorough needs analysis in order to the transition to be as seamless as possible. Like the mantra for outsourcing, don't in-source your 'mess for less', certainly not before you've considered re-engineering the relationship with the supplier instead. You might have more leverage at this stage in the relationship, and a clearer view of the difficulties, than you had at the beginning.

**Personnel provisions:** In outsourcing, staff is often transferred to work for the supplier under the TUPE legislation. There must be carefully thought-out provisions for the transfer of staff back in-house if necessary. This tends to get overlooked in the outsourcing agreement. The transfer of staff expertise and knowledge of the operations is crucial to successful BPI. Staff transfer back in-house will need planning and meaningful incentives to be effective, including providing for the transfer of necessary intellectual property rights the staff have produced or gained. The latter can prove a nasty hidden cost if not provided for at the outset.

**In-sourcing complex processes:** In-sourcing complex processes high in the value-chain - such as value-add services and service management - will need careful analysis as to whether the organization has the in-house capability to provide these services. A gradual, planned handing-back is crucial to ensure an organization can manage the in-source whilst safeguarding quality.

**Flexibility:** Companies embarking upon outsourcing need to approach it from a realistic perspective - it isn't necessarily going to last forever - so from a legal perspective, organizations need to build flexibility into the contract to allow them to in-source should they have to. Too few organizations think about how their business will change over the course of the outsourcing, and how this will affect their ability to in-source and their relationship with their supplier. This dynamic needs to be reflected in the agreement wherever possible - it's important to push hard for the ability to change volume, scope and other parameters around the outsourced services throughout the life of the agreement.

**Mid-term reviews:** Continuous review is essential in ensuring organizations are able to reorganize the deal mid-term, making provision for in-sourcing, or re-scoping if a mid-term review indicates that course - such reviews must result in the ability to change the legal agreement.

**Measurement:** Benchmarking and key performance indicators (KPIs) are an integral part of helping organizations decide whether they should stay with their

supplier, change supplier or in-source. Benchmarking needs to cover price and quality, and too often KPIs are concerned with the internal mechanics of the services and not the end-result - KPIs should primarily measure customer's facing outputs.

**Third party analysis:** Getting objective third-party advice on service levels and total cost of ownership can help to assess that the service is meeting its objectives, not just from the organization's viewpoint but also that of its clients. If the consensus is that it isn't, then it should be possible to take steps to partially or wholly in-source, or to multi-source.

## 6 Conclusion

This paper has presented an action research related to a business process in-sourcing (driven by cost reduction motivation) to India of a European multinational company operating in the railway sector. Particularly, preparation, vendor selection and transition phases of the BPI were presented. Such phases required a three years period to be completed. Methodologies employed and criticalities occurred have been highlighted, revealing a significant complexity of the BPI project.

The initial diagnosis, carried out in the preparation phase, did not change significantly over the three years but the way to achieve it was not straight. The great collaboration of hundreds people through Europe and India allowed a full success of this strategic approach and the results were far away from the ones expected.

Through action research, this paper has revealed several themes that could add to the existing body of knowledge about BPI. Particularly, key analysis best practices to manage BPI have been highlighted. These represent a contribute to to the existing body of knowledge (Figure 10). Moreover, the important role of small pilot projects in reducing risks and identifying vendors/partners was remarked, as well as the significant role played by integration projects for processes' optimization.

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Figure 1 – Phases of the Outsourcing Process

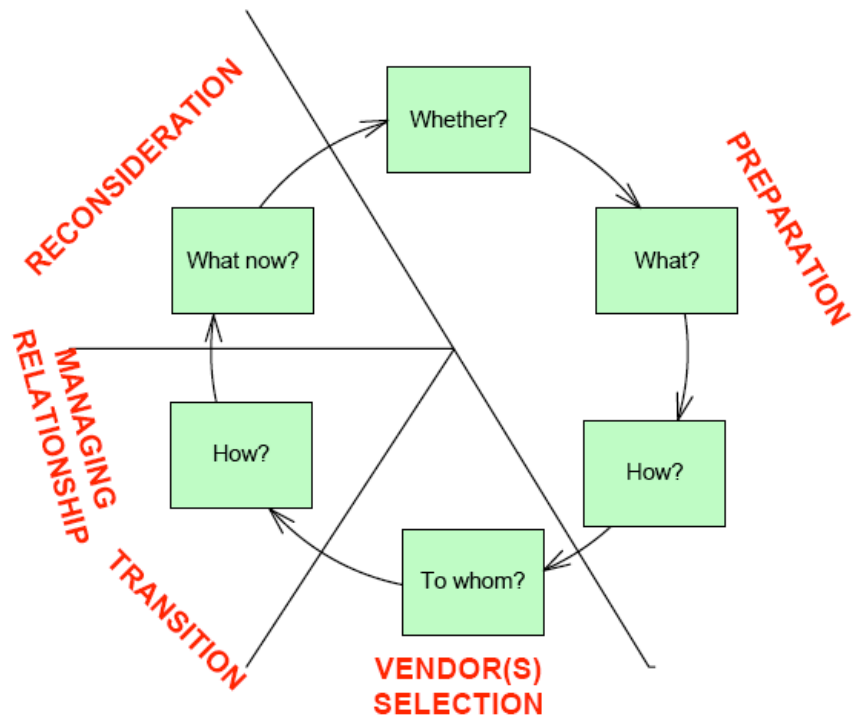


Figure 2 – Management of Outsourcing Phases: Principal Contributes Available in Literature

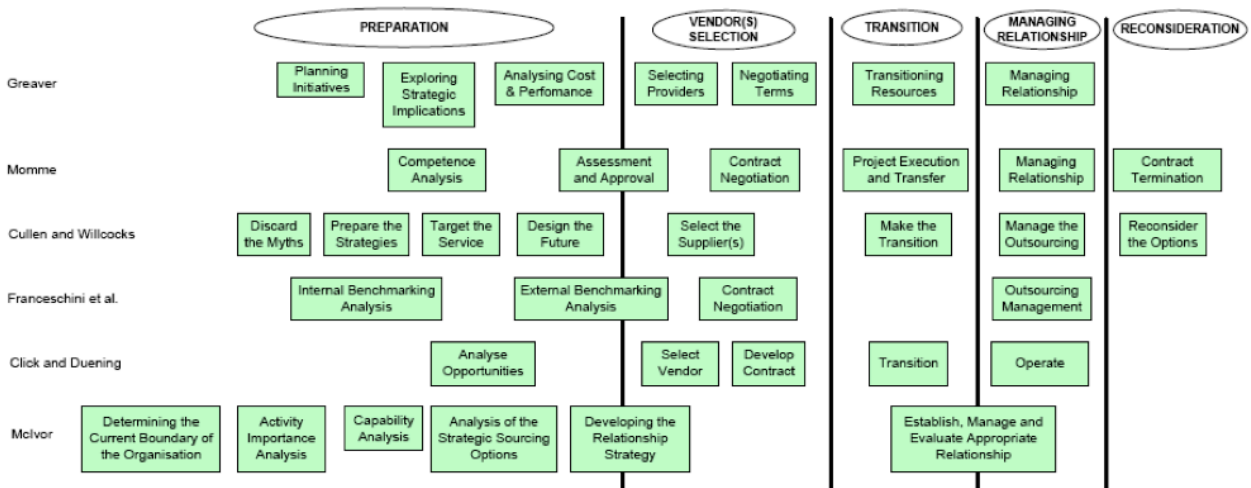


Figure 3 – The RDMADV Approach

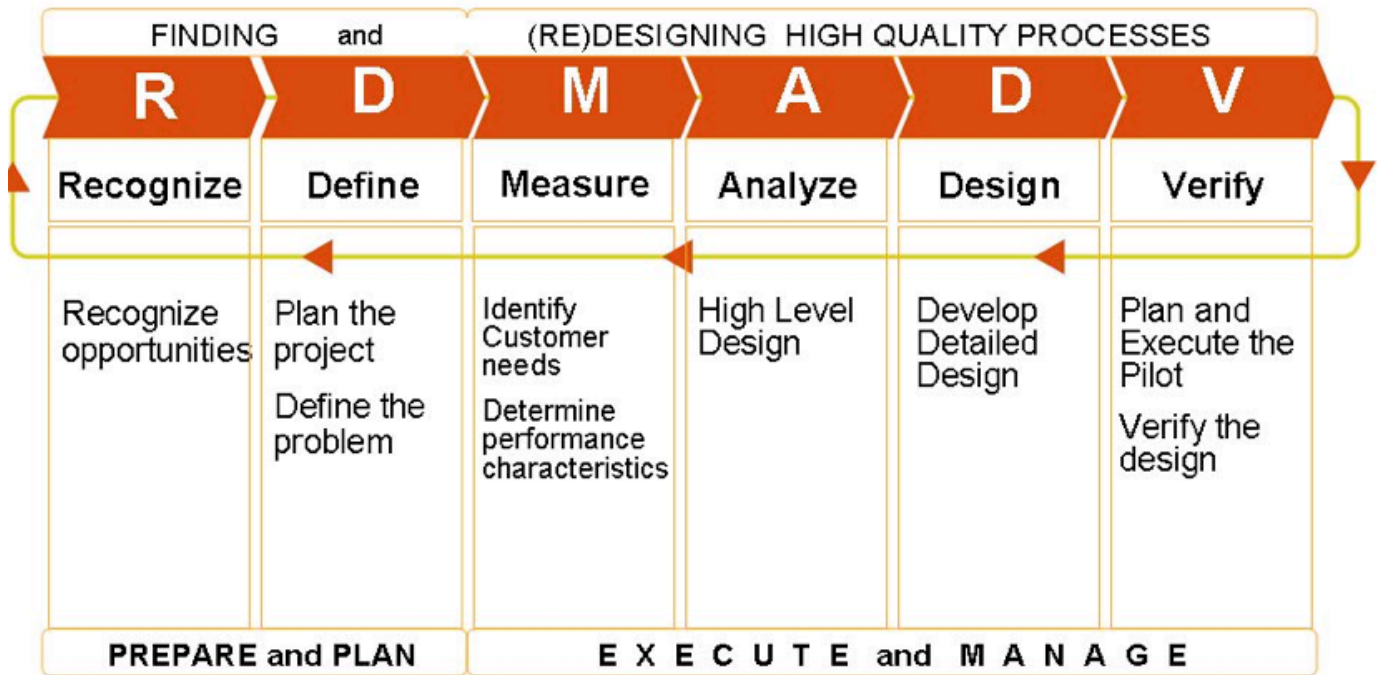


Figure 4 – SWOT Analysis Results

**STRENGTHS**

- Business experience
- Academic support
- Availability of a large set of suppliers

**OPPORTUNITIES**

- Significant cost reduction
- Business process re-engineering leading to higher internal efficiency

**WEAKNESSES**

- Inexperience of insourcing processes
- Investments required
- Know-how loss
- Labor law restrictions

**THREATS**

- Disalignment of employees and middle-level managers
- Poor quality and delays of insourcing provider
- Transition time (risks of delays)
- Cost out of control

Figure 5 – Application of Risk Management Principles

KEY RISKS	CONSEQUENCES	POSSIBLE CAUSES	MITIGATING ACTIONS	PROB.	GRAV.
<b>COST OUT OF CONTROL</b>	<ul style="list-style-type: none"> <li>▪ Diminish GM</li> <li>▪ Profit loss</li> <li>▪ Loss of new Documentation bids</li> </ul>	<ul style="list-style-type: none"> <li>▪ Non Budgeted costs</li> <li>▪ Non budgeted travels</li> <li>▪ Excess of re-work</li> <li>▪ Extra hrs charged</li> <li>▪ Language related issues</li> <li>▪ BTECI non autonomous in operations</li> </ul>	<ul style="list-style-type: none"> <li>▪ Project initial workshop</li> <li>▪ Clear contract with BTECI</li> <li>▪ Continuous monitoring</li> <li>▪ Preliminary stand beside period</li> <li>▪ BTECI to pay extra costs</li> </ul>	L	H
<b>DELAYS IN DELIVERIES</b>	<ul style="list-style-type: none"> <li>▪ Customer dissatisfaction</li> <li>▪ Damage BT Image</li> <li>▪ Extra costs (hrs)</li> <li>▪ Penalties</li> <li>▪ VEH not exiting warranty</li> </ul>	<ul style="list-style-type: none"> <li>▪ Bad estimation of volumes</li> <li>▪ Excess of re-work</li> <li>▪ Language related issues</li> </ul>	<ul style="list-style-type: none"> <li>▪ Project initial workshop</li> <li>▪ Continuous monitoring</li> <li>▪ Preliminary stand beside period</li> <li>▪ BTECI to provide local Language fluent interfaces</li> </ul>	L	H
<b>POOR QUALITY</b>	<ul style="list-style-type: none"> <li>▪ Re-work needed</li> <li>▪ Extra costs for BT</li> <li>▪ Customers dissatisfaction</li> <li>▪ Damage BT Image</li> </ul>	<ul style="list-style-type: none"> <li>▪ Language related issues</li> </ul>	<ul style="list-style-type: none"> <li>▪ Continuous monitoring</li> <li>▪ Preliminary stand beside period</li> <li>▪ BTECI to provide local Language fluent interfaces</li> </ul>	L	H
<b>KNOW HOW LOSS</b>	<ul style="list-style-type: none"> <li>▪ Competitors unfair advantage</li> </ul>	<ul style="list-style-type: none"> <li>▪ Fired BT Resources being captured by Competitors</li> </ul>	<ul style="list-style-type: none"> <li>▪ BTECI to employ part of fired Employees</li> </ul>	M	H
<b>OVERALL POOR PERFORMANCES</b>	<ul style="list-style-type: none"> <li>▪ All of the previous risks mentioned</li> </ul>	<ul style="list-style-type: none"> <li>▪ BTECI never managed whole Documentation Projects for Bombardier</li> </ul>	<ul style="list-style-type: none"> <li>▪ RUN A PILOT PROJECT (low risks and cost exposure)</li> <li>▪ Preliminary stand beside period</li> </ul>	L	H
<b>MLN NOT ACCEPTING INTEGRATION</b>	<ul style="list-style-type: none"> <li>▪ No integration possible</li> </ul>	<ul style="list-style-type: none"> <li>▪ Middle levels not informed about Corporate scope</li> </ul>	<ul style="list-style-type: none"> <li>▪ Information to be cascaded from Top Level</li> </ul>	M	H
<b>LAW NOT ALLOWING RESTRUCTURING</b>	<ul style="list-style-type: none"> <li>▪ Low integrated to avoid duplication of Resources</li> </ul>	<ul style="list-style-type: none"> <li>▪ Local Work Councils (SE and DE) refusing firing</li> </ul>	<ul style="list-style-type: none"> <li>▪ Infotech to recruit by contract some outgoing BT Resources</li> </ul>	H	H

Figure 6 – Methodology Used for Vendor Selection

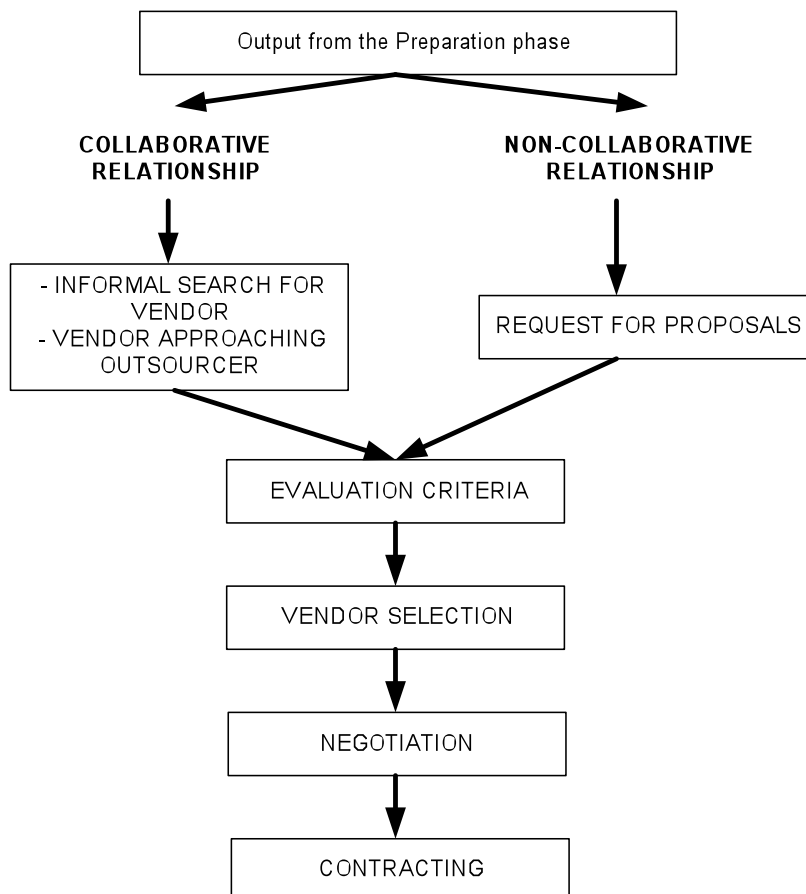


Figure 7 – Scenarios, SWOT Analysis

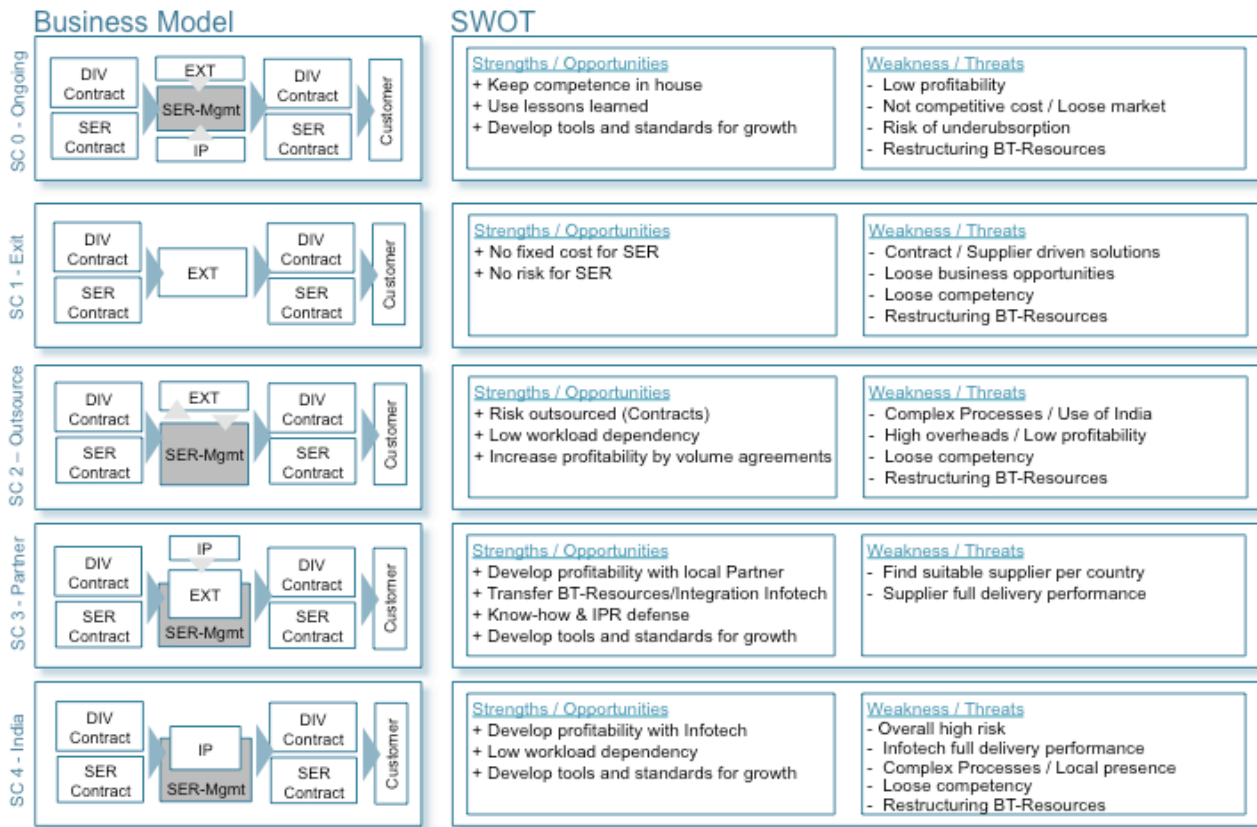


Figure 8 – Scenarios, Financial Analysis

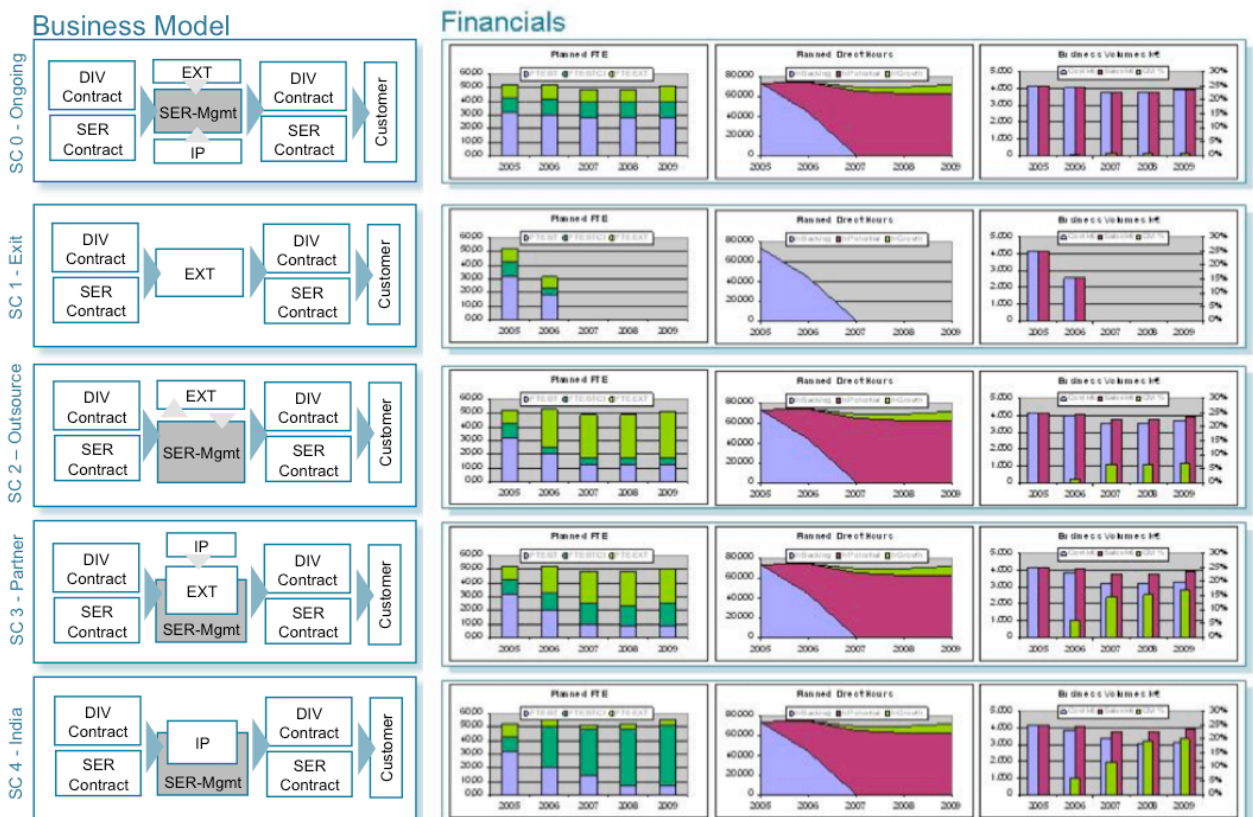


Figure 9 – The Pilot Project “Excellence in Business Documentation”

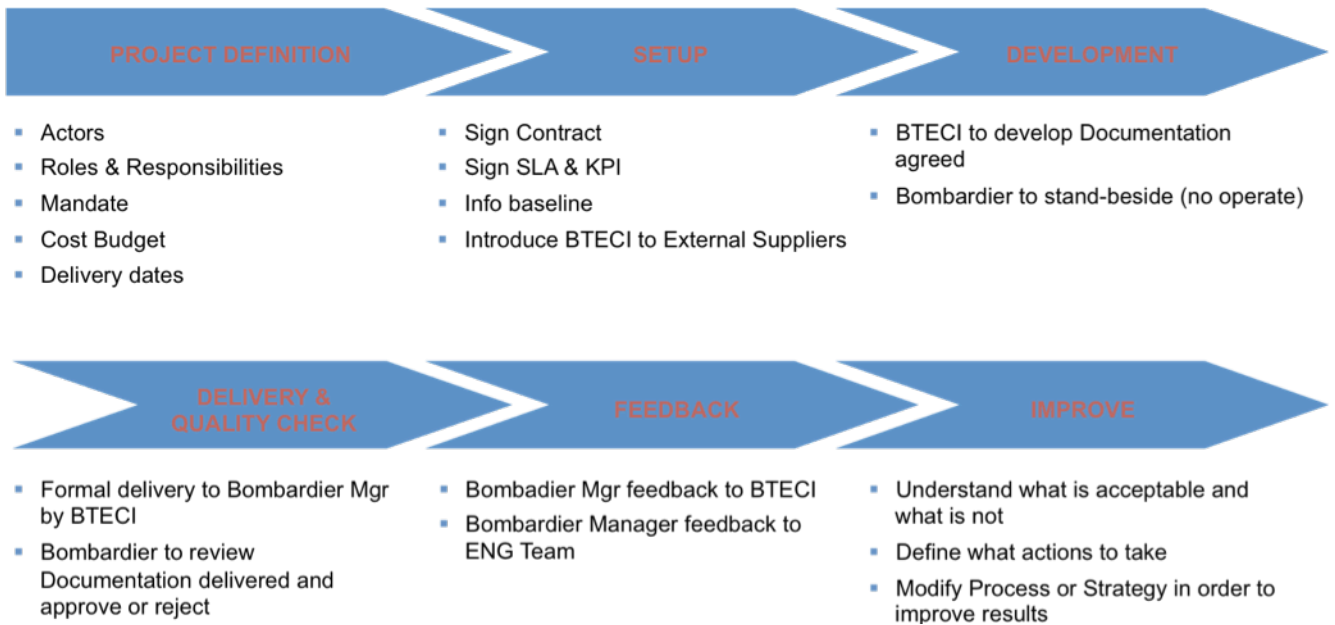


Figure 10 – Authors Contribute to Existing Body of Knowledge

