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Conflict Resolution in a Multi-level IT-enabled Outsourcing Network: A Structured Solution Approach

Shreekant Vijaykar
International Management Institute, New Delhi, svijaykar@copc.com

Mahesh Gupta Prof.
College of Business, University of Louisville, KY, USA, mahesh.gupta@louisville.edu

Pradip Kumar Bhaumik Dr.
International Management Institute, New Delhi, pkbhaumik@imi.edu

Conflict Resolution in a Multi-level IT-enabled Outsourcing Network: A Structured Solution Approach using the TOC Evaporating Clouds

S A Vijaykar
(*International Management Institute, New Delhi*)
M C Gupta
(*College of Business, University of Louisville, KY, USA*)
P K Bhaumik
(*International Management Institute, New Delhi*)

ABSTRACT

Using the case study of an Indian IT outsourcing service provider "SmartKey" (real but renamed company), and its relationship with a global healthcare provider, this paper analyses inter-organizational conflict in specific conditions. While the core conflict is typical to choosing between flexibility and control, the different dynamics of outsourcing make the conflict-resolution challenging, and this helps us explore general issues arising from a multi-layered IT-enabled outsourcing design. We explore Goldratt's Evaporating Clouds (ECs) from Theory of Constraints (TOC), as a systematic approach to reasoning in particular and managing conflicts in general. This paper attempts to add to the literature about applying TOC Thinking Processes, especially to conflict-resolution in the area of service outsourcing. The paper explains the process of using ECs for conflict-resolution with the specific application to SmartKey case, compares the results of before ECs with after ECs, as well as with what happened in reality, and finally explores the effectiveness of the approach in a specific learning environment, and how ECs provided valid and long-term resolutions to the conflict.
We suggest that this approach can be used proactively as a springboard to ensure win-win resolutions of conflicts, with a larger implication to decision-making processes in IT-enabled outsourcing management.

Keywords: Theory of Constraints, Evaporating Clouds, Conflict resolution, Healthcare, Service supply chain, Supplier Networks, Decision-making, multi-level supply chain, IT-enabled outsourcing, outsourcing.

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INTRODUCTION

Outsourcing, in its most basic form, is the economic process of purchasing goods or services that were previously provided internally by a firm (Schermann, Dongus, Yetton, & Krcmar, 2016). Recent years have witnessed an increase in the offshore outsourcing activity, especially in the service sector and the phenomenon of "servitization" i.e. "the development of new business models for adding customer-centred services to product-centric business models" (Field et al., 2018). With this, new business models and production systems for services have come into practice and some traditional ones have undergone radical strategic makeovers.

However, like all strategic decisions, the execution of global offshore outsourcing happens in the operational realm and requires ongoing coordination between the firm's strategy, its structure, the practices, and the processes (Bhattacharya & Singh, 2019) in order to resolve conflicts at various levels and come up with win-win solutions for all stakeholders. To achieve better outsourcing satisfaction (Mani & Barua, 2015), the chief issue for IT clusters in enterprises is to handle the management of progressive relationships in outsourcing, the vendor capabilities, and cultural differences, which often lead to inter-organizational conflicts.

This paper discusses effectiveness of a structured conflict-resolution approach using the TOC (Theory of Constraints) Evaporating Clouds. The case study used is of an IT-enabled services management company SmartKey (Vijaykar & Gupta, 2017), providing services to a global healthcare insurance company GoodHealth2U (both real but renamed companies, for confidentiality purposes) in the fifth year of their offshore outsourcing relationship. The SmartKey case also exhibits general issues and challenges arising from a multi-layered IT-enabled outsourcing design and offers future directions for conflict resolution.

GLOBAL IT-ENABLED OUTSOURCING

The main motivations for outsourcing services are cost reduction and a focus on core competence (Fundin, Backstrom, & Johansson, 2019; Tate & Bals, 2017). However, the resulting structure also provides strategic and tactical benefits like access to specialized expertise like that in computing or technology infrastructure, business process improvement, and additional quality checks (Ekman, Raggio, & Thompson, 2016). With the advent of technology in the last few decades, as well as our understanding of different types of technology-enabled service supply

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networks, service outsourcing across geographies has become not only possible, but an integral part of companies' global strategies.

A number of perspectives have evolved in the last couple of decades that explain the motivations to outsource services, like the ones using the agency theory (Ishizaka, Bhattacharya, Gunasekaran, Dekkers, & Pereira, 2019), or based on transactional-cost viewpoint (Lioliou & Willcocks, 2019), or with the help of a synthesis of multiple theories (Mehta & Mehta, 2017). Three viewpoints seem to be most dominant in this – the transactional cost view, core competency view and rational view (Magnani, Zucchella, & Strange, 2019). Whichever view is used to explain rational behind outsourcing, the success of outsourcing solutions relies heavily on the advent of technology, especially Information Technology as both an enabler and a support system.

IT-enabled outsourcing as a strategic decision

For a little over two decades, selective and IT-enabled, outsourcing (McIvor, 2013) has become a critical strategic decision. We find companies combating with the "innovation through outsourcing" paradox (Aubert, Kishore, and Iriyama, 2015), and are increasingly employing IT-enabled outsourcing strategies to enhance organizational efficiency by lowering product and transaction costs and flexibility. This is done by transforming fixed costs into variable costs, allowing focus on its core competencies, increasing the responsiveness of business processes, and thereby creating sustainable competitive advantage.

The role of IT in innovation is variously studied (Mamonov & Peterson, 2020; Hofmann & Rusch, 2017), and it is now established that IT is not just an enabler but is driving the next wave of industry and business across the world. In a lot of cases, the offshore outsourcing is itself enabled largely by the IT solutions deployed (Kerr, 2018; Bhaumik, Chakrabarti, & Mäkinen, 2009).

Several internal IT departments of companies have also selectively outsourced their IT activities to suppliers across the globe, and IT-enabled outsourcing is now a norm in the business world.

As an example, in the case of the GoodHealth2U and SmartKey relationship that is discussed in this work, GoodHealth2U had to manage a large volume of medical insurance claims from its members each month. The solution was a combination of two technologies – the first was the optical character recognition (OCR) to automate some of the data entry work of loading the information from claimant forms into the company's databases, and the second was a robust workflow management

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platform that could easily separate and later combine different tasks like data entry, review and claims decision making (called 'adjudication' in insurance).

The first technology solution helped automate about 70% of data entry work for GoodHeathl2U over three years and provided efficiency in data processing. The second technology solution made it possible for GoodHealth2U, and later SmartKey, to digitally transform the workflow, to de-skill the work and to allocate selectively to different vendor partners.

Rise of conflicts in the IT-enabled outsourcing relationships

The "trust, power and control" in inter-organizational relationships between the buyer of the outsourcing services and the supplier is examined at length by researchers for several years (Bachmann, 2001), and we now have a well-documented study across different theoretical perspectives like the resource-based theory, resource-dependence theory, transaction cost theory and agency theory – either independently or an a synthesis of many theories (Creon, Grover, & Teng, 2017). Yet, as some of the co-authors of this paper have studied elsewhere (Vijaykar, Gupta & Metri, 2014), we find it important to critically review the understanding of relationships, contracts and pricing structures between the buyers and suppliers of these IT-enabled outsourcing services, and this forms part of imperative strategic concerns and conflicts that affect IT-enabled outsourcing relationships.

As the SmartKey case described in this paper later shows, global IT-enabled outsourcing often leads to a network of multi-level service supply chains, with different players, nodes and retailer-wholesaler relationships with a "digitally dominant paradigm" (Stank, Esper, Goldsby, Zinn, & Autry, 2019). By creating these multi-level relationships, Ravindran, Susarla, Mani, & Gurbaxani (2015) argue that firms may mitigate the hazard of ex post transaction costs in long-term contracts by relying on the information available from embedded firms in buyer–supplier network.

These global supply chain networks usually need to ensure a fine balance between the market requirements based on customer needs, market position, and competitive structure of the industry, as well as the operational resources available with the firm in terms of staff, equipment, relationships, capabilities and processes across the network.

As the IT-sourcing supply chain networks expands in size and depth, so does the complexity of managing the inter-dependencies and the day-to-day yield and quality (Damanpour, Magelssen & Walker, 2020; also Prahalad & Krishnan, 2008).

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Most firms need to ensure a fine balance between the flexibility of a multi-level, multi-site, multi-vendor service network and the day-to-day control over processes and performance. This creates specific conflict situations for managers and leaders at all levels across the network, which call for the need of structured conflict-resolution and decision-making approaches and tools to help making better decisions in real-world applications.

The purpose of this paper

Conflict-resolution remains a strategic and contemporary topic of practice as well as study (Johansson, Olhager, Heikkilä, & Stentoft, 2018; also Brinkkemper & Jansen, 2016). We find that the subject can be approached through a variety of viewpoints like the social-exchange perspective (Mandal, 2020), or the knowledge integration viewpoint (Stepanova, Polk, & Saldert, 2020). This paper explores the use of a Theory of Constraints (TOC) based systems approach in addressing conflicts in the IT-enabled outsourcing space.

We have chosen to use a TOC-based approach because it is established as one of the leading approaches for conflict-resolution (Huang, Liu, & Ai, 2017). Our approach is based on one of the Thinking Processes (Kuruvilla, 2017; Banerjee & Mukhopadhyay, 2016; Goldratt, 1994) called the Evaporating Cloud (EC) – as suggested in the Theory of Constraints (TOC). In this paper, we study the efficacy of Evaporating Clouds (ECs) in improving the conflict-resolution process (Lu, 2015) for a specific conflict situation in IT-enabled outsourcing. We will use this grass-root example to reflect on the generic role of managerial decision-making and conflict management, along with the challenges and dilemmas faced by practitioners in the overall dynamic offshore outsourcing landscape.

The applications of Goldratt's Thinking processes in general (Gaspar, Cristovão, & Tenera, 2019; Onursal, Aydin, & Birgün, 2018) and ECs in particular (Mabin, Yee, Babington, Caldwell, & Moore, 2017; Sommer & Mabin, 2016; Gupta, Boyd, & Kuzmits, 2011) are studied at length in the professional literature for several years now in different conflict situations. But there is little evidence of its widespread use as a decision-making tool. This is hypothesized to be due to the difficulty users have in "surfacing and dealing with assumptions", as espoused by Fedurko in her book (2013). This paper attempts to apply the TOC Evaporating Cloud as a systems-based conflict-resolution tool in inter-organizational conflict situation and suggests larger implications to decision-making processes in IT-enabled outsourcing management.

Moreover, several TOC-based cases in service industry (e.g. Patel, Sahi, Gupta, & Jayaram, 2020; also Hooshmand, Mehrazeen, Davoody, & Shorvarzi, 2019) are

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usually longitudinal studies of TOC concepts like throughput orientation in the service enterprise, but they and do not address conflict-resolution processes specifically. This paper attempts to add to the literature of application of TOC Thinking Processes, especially to conflict management in the area of service outsourcing.

THE SMARTKEY CASE

This section details some of the salient features of the SmartKey case that are pertinent to the work described in the later part of this paper. This section lists the background and motivation for the SmartKey case, the approach taken to preparethe case, and how the conflict situation of SmartKey arose.

Background

One of the co-authors of this paper has been providing consulting services to IT-enabled outsourcer companies across regions in improving their operational performance and in implementing business process management systems like the COPC CSP (Customer Service Provider) standard (COPC Inc., 2019; Yingyu, Xinyuan, & Yuki, 2013). As part of this, consulting was also provided to the offshore outsourcing service provider company SmartKey for over five years, specifically in the following areas – managing operational performance, improving quality and competency of staff, streamlining organizational processes like hiring, training, and change management.

As an auxiliary outcome of this consulting engagement, we prepared a case about the relationship between SmartKey and GoodHealth2U, a large global healthcare insurance service provider that has selectively outsourced its claims processing work to SmartKey's Indian sites. This was done as part of a study about service supply chain management (Slack & Lewis, 2017), and service operations and production, in order to understand conflict-resolution and decision-making in managing a network of service suppliers and vendors.

This is an exploratory case and not a longitudinal study of the enterprise over time. The SmartKey Case is situation-based, practical, and conflict-focused. This provided us the necessary technique of immersing in a 'real, life-like' scenario as is required for action research (Sirias, 2020; Sandy & Dumay, 2011; also Creswell, 2003), along with interviews, and experimental design, and one of the authors' knowledge and hands-on experience as a consultant to the stakeholders in the SmartKey case.

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The SmartKey case synopsis

The SmartKey case is about managing a network of IT-enabled service provider vendors. GoodHealth2U, a healthcare insurance provider company in the USA, outsourced its healthcare claims processing work to SmartKey, an Indian firm. The Indian company SmartKey, in turn, created a platform to manage work digitally and sub-outsourced the data entry work to a network of semi-skilled vendors in small towns in India. Although this provided SmartKey the flexibility to manage volumes in real time, GoodHealth2U considered this proliferation of vendors to be at the cost of control over business processes and performance.

When one of the smaller vendors showed signs of employee unrest, this latent conflict between the two positions came to surface, and the two operational managers at both ends faced a situation that needed to be resolved urgently and with a sustainable solution. There were also various stakeholders within the service supply chain – the two organizations, vendor proprietors, vendor employees, SmartKey's clients other than GoodHealth2U, and community at large in three different towns in India – that made the conflict management uniquely challenging.

Details of the SmartKey case

In this subsection, we will go in the details of the relationship between SmartKey and GoodHealth2U, along with the challenges that this IT-enabled supplier network faced, and the specific conflict that had to be addressed.

Background of SmartKey case

A few years ago, the North American unit of a global healthcare insurance provider GoodHealth2U outsourced work to an Indian IT-enabled outsourcer SmartKey. The work outsourced was the back-office data entry part of its claims processing activity. Part of the reason for this offshoring was to manage the large volumes of claims within the time required by government regulation. But most of it was in order to contain costs by leveraging Indian resources.

The Indian IT-enabled outsourcer firm SmartKey had won the contract from GoodHealth2U by demonstrating that costs can be brought down further beyond USA-to-India labour arbitrage, by fundamentally re-engineering the process and de-skilling it in such a way that it was no longer required for the people entering data in the system to have any knowledge of healthcare insurance industry.

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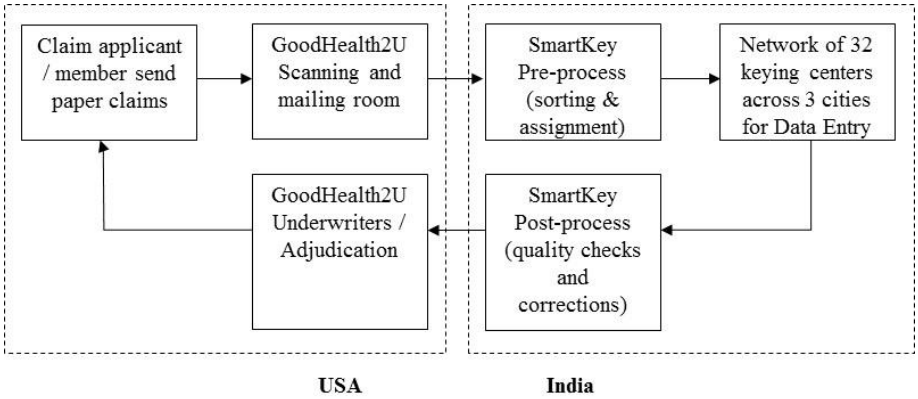
Development of SmartKey vendor network

For this, SmartKey developed a network of small and low-cost vendors to which work was further sub-outsourced, although SmartKey controlled the overall process.

Figure 1. Schematic of the Global Healthcare Supply Chain in SmartKey



Note: This is a schematic drawn as part of the consulting assignment that one of the co-authors of this paper had with SmartKey. The schematic is part of baselining the operations and understanding the different players and stakeholders in the conflict situation.

As the schematic of the process flow shows, the claim applicants would send their insurance claims to GoodHealth2U, who had scanning and OCR facilities in the US. The documents would get scanned and uploaded in the workflow by GoodHealth2U, and sent to SmartKey in India, where a team of trained experts would split the documents and allocate them to different vendors based on a load balancing schedule.

The vendors had relatively unskilled staff, whose role in the process was to receive part of the document, see what is on the screen and then simply key it into the system. There was a system to check the data entry work within the teams, after which the keyed data would be received by SmartKey through the same workflow platform. The SmartKey team would then do one final quality check for sample transactions, assemble the work orders, and send to GoodHealth2U. The actual processing of the claim (called "adjudication") would be done by GoodHeath2U, for which they used a combination of expert system and manual judgement.

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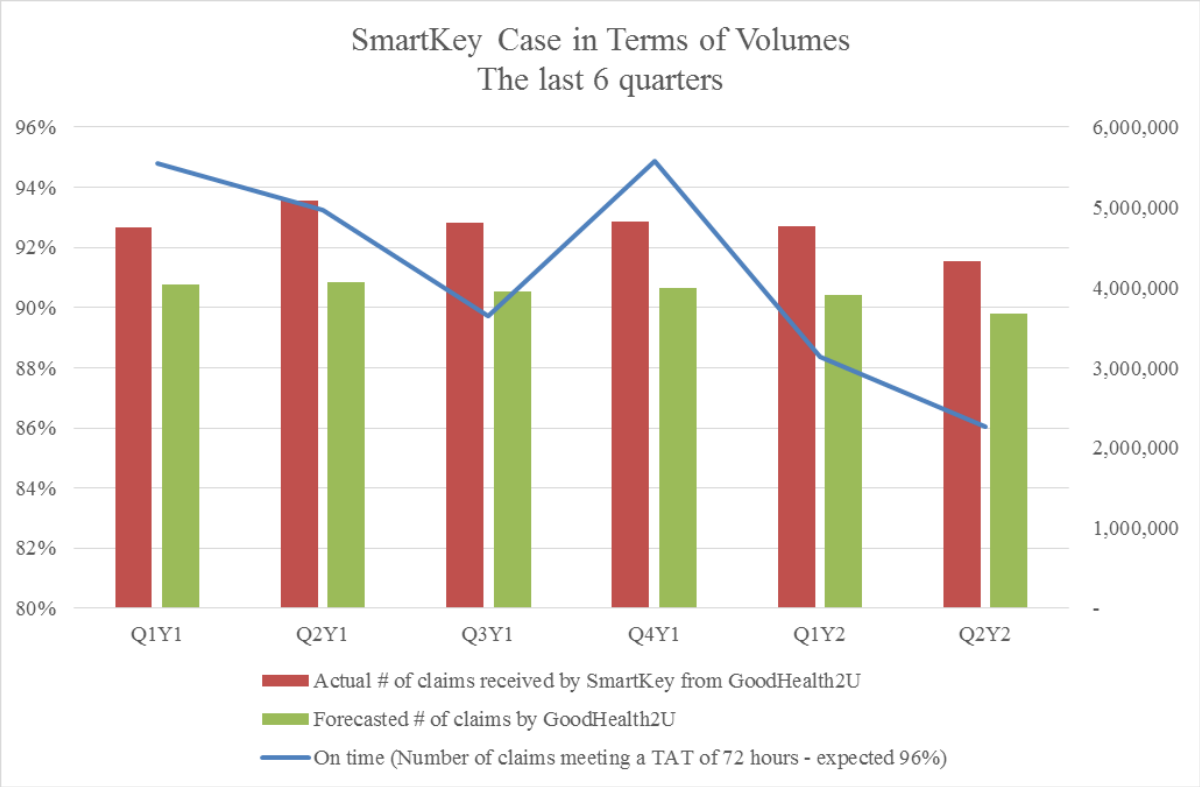
The digitally powered vendor network was successful in handling the volume of work, and therefore was considered in favourable light within the two companies. This was despite the fact that due to heavy volumes of work the vendor network did not meet some of the operational requirements of meeting timelines and accuracy.

Figure 2. Volume and On-Time performance by SmartKey before crisis



Note: This is based on the internal reporting and performance summary reports from SmartKey before the crisis described in the SmartKey situation occurred. The data shows the high volume of claims received, even beyond the forecasted volume of claims per quarter, leading to a poor turnaround time and on time performance for SmartKey

The vendor network grew to about 32 small vendors across three different cities in India, all managed through a small team at SmartKey in New Delhi and headed by Sanjay Jain. Sanjay was actively involved in the design of the solution and was also responsible for the daily service production. Sanjay worked closely with Mark

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Joslin in GoodHealth2U's office in North America. Mark was the business head of the complete claims-management process, and while the decisions on claims disbursement were still taken by his team in North America, he was largely benefitted by the outsourcing of back office work to India.

Initial success of the innovative vendor network.

The vendor network provided flexibility to SmartKey in balancing the workload and was useful in handling massive volumes each month, leading to the vendor network's robustness. SmartKey had maintained to keep the size of vendors to a maximum of 30 staff per vendor in order to mitigate risk of over-reliance on a few vendors. It did, however, take some control away from SmartKey, as the vendors ran their own shops, with their own teams and staff schedules.

Both Sanjay and other leaders within SmartKey looked at this as a CSR (Corporate Social Responsibility) initiative, wherein entrepreneurial and employment opportunities were generated by them in semi urban and rural parts of India. They also spoke at length about their process innovation, with the work they did for GoodHealth2U as a 'show-case', and won several more contracts from other companies and industries, who benefitted from the 'two-tier' outsourcing model.

The conflict situation in the case

The arrangement of vendor networks was largely accepted over the years by both companies in India and USA – that is, until a few staff members at one vendor site tried 'collective bargaining' by remaining absent and demanding raise in pay. The SmartKey leader Sanjay had to intervene in this case and avoid the crisis negatively affecting daily production.

The incident, however, revealed the gaps in the otherwise successful model. In any case, the changes in technology and management of GoodHealth2U had led the company to look at India once again. The lack of performance of the Indian vendor network and the issue of employee unrest and process control came under acute scrutiny, including the ongoing poor performance on service, quality, and staff absenteeism and turnover at vendors.

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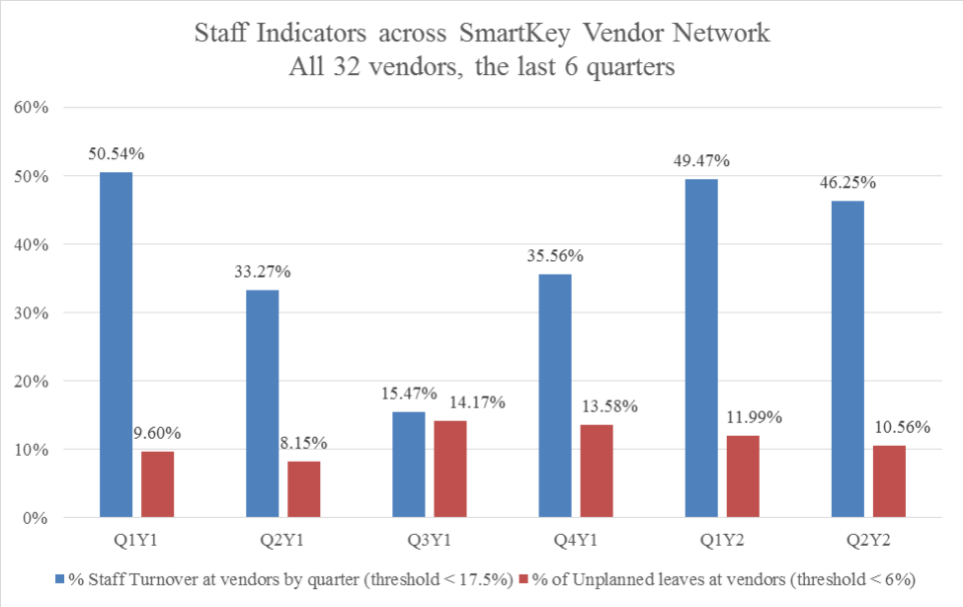
Figure 3. People Performance Indicators in SmartKey Vendor Network before crisis



Note: This chart is based on the internal reporting and performance summary reports from SmartKey and the vendors before the crisis described in the SmartKey situation occurred. The data shows high levels of staff turnover (voluntary attritions and involuntary terminations) and unplanned absenteeism (unscheduled shift absences) of the vendor staff. Coupled with the high volume, this loss of working capability added to the poor service and quality performance for SmartKey vendor network before the crisis.

Sanjay from SmartKey and Mark from GoodHealth2U, who earlier promoted the vendor network, faced the dilemma of whether to continue with the vendor network and benefit from its flexibility as before, or to consolidate it to a handful of vendors and exercise more control. Sanjay was summoned to the GoodHealth2U headquarters in North America, where he was expected to present to top executives in the company his plan regarding the vendor network, at which point the case narrative ends.

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WORKING ON THE SMARTKEY CASE CONFLICT

We will now move away from the narrative of the case in order to discuss the conflict situation for SmartKey. Briefly, the conflict situation is as follows – Sanjay, the operations lead from SmartKey argued that reducing the number of vendors would reduce flexibility of moving volumes in real time, thereby reducing the effectiveness of the vendor network that gives him competitive edge. Mark, the business leader from GoodHealth2U, however, suggested that in order to have more control on the vendor network, the number of vendors need to be reduced. Recent changes in the business and technology, as well as the mismanagement of one vendor site were his reasons. Although Sanjay's decision had dependency on Mark's opinion, just as many IT-enabled outsourcing relationships do (Gopalakrishnan & Zhang, 2019), Sanjay could still be innovative and make decisions for SmartKey's vendor network.

Workplace conflicts and their resolution

There are several implications of workplace conflicts and these have been studied over the ages. Cloke & Goldsmith (2011) argue that workplace conflict results in significant economic and emotional losses including litigation, strikes, reduced productivity, poor morale, wasted time, employee turnover, lost customers, dysfunctional relationships with colleagues, destructive inter-departmental battles, and stifling rules and regulations. Dana (2001) has earlier argued that organizations that fail to address the strategic management of workplace conflicts run the risk of losing their competitive advantage. Confronting and managing organizational conflicts has been a major challenge to organizations that wish to successfully compete in a global economy.

There are several conflict types – ranging from Inter-organizational to Intra-organizational, Inter-departmental to Intra-departmental, Inter-group to Intra-group, and Inter-personal to Intra-personal. The conflict in SmartKey case is an example of inter-organizational conflict situation, specifically the core trade-off being between two choices of flexibility versus control.

Many competing viewpoints exist on managing inter-organizational conflicts especially in the outsourcing environment (Pankowska, 2019). Some of these take the contingency fit and configuration approach (Cho, 2020; also Lee, YoungKi, Detmar, & Yunmo, 2019). Some focus on the culture of uncertainty avoidance (Handley & Angst, 2015), while the others look at the strategic benefits in terms of intellectual property and knowledge creation (Chen, Bharadwaj, & Goh, 2017). Lacity & Willcocks (2017) argue that the collaborative and

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switched-to-collaborative styles are able to resolve conflicts to the satisfaction of all parties involved in the inter-organizational relationship perspective.

Among these, we find the TOC-based approaches (Onursal, Birgün, & Mızrak, 2019) to be contemporary and well-received, and especially the use of Thinking Processes in conflict situations (Taylor & Rekha, 2018) to be well-documented. Therefore, we have chosen the TOC-based approach for the SmartKey case.

Theory of Constraints (TOC) and conflict resolution

The Theory of Constraints (TOC) is a relatively new managerial philosophy that has been steadily evolving since the early 1980s (Victoria University, 2016; Cox & Schleier, 2010) and is largely based on the works of Eliyahu M. Goldratt (Goldratt & Cox, 1992). Over the years, the TOC has established itself as one of the leading comprehensive managerial theories (Ikeziri, de Souza, Gupta, & de Camargo, 2019) that challenges existing paradigms. An integration of TOC with other theories and methodologies, like Lean and Six Sigma, (Sproull, 2019) provides professionals and managers a framework, a measurement system, and a toolset for day-to-day operational, tactical and strategic decision-making.

Managerial decision-making is closely linked with conflict management, which, as Rahim had suggested (2003), is "an interactive process manifested in incompatibility, disagreement, or dissonance within or between social entities (people, parties, groups)". The TOC toolset for decision-making is conceptualized as a series of Thinking Processes (TPs) – which typically includes the following five tools: Current Reality Tree (CRT), Evaporating Cloud (EC), Future Reality Tree (FRT), Pre-requisite Tree (PRT) and Transition Tree (TRT). From the time this set of TOC Thinking Processes (TPs) was introduced, many articles related to their usage and applicability are seen in the literature (Cattaneo & Bassani, 2016). A detailed review of these articles related to Thinking Processes was done by Kim et al. (Kim, Mabin & Davis, 2008), and then by Mabin & Davis (2010), who term the TP tools as 'guides for the decision-making process'.

The interest in TOC TPs increased in the last decade, with the introduction of the strategy and tactic tree (Chang, Chang & Chang, 2017; Goldratt, 2007), and further advancements within the techniques of TPs, like the use of the 'three-cloud method' (Scheinkopf, 2010), which is applicable not only in operational and tactical contexts, but also in strategic decision-making sphere.

There has also been a rise to a body of literature that provides conceptual underpinnings of using one of these thinking processes – the Evaporating Clouds (ECs) – specifically as a tool for conflict management in various types of conflicts

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(Gupta & Kerrick, 2015; Dettmer, 2007). This paper focuses and derives example of the use of ECs towards one type of conflicts, the inter-organizational conflict, as described in the SmartKey case.

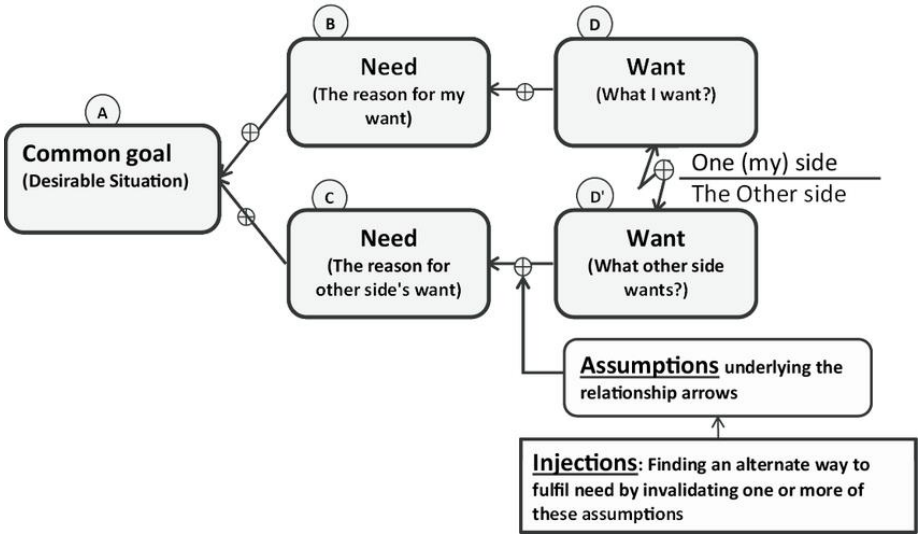
Goldratt's Evaporating Clouds (ECs)

Within the various TOC TPs, the Evaporating Cloud (EC), also called conflict resolution diagram (CRD), stands out as a pivotal conflict-resolution tool using necessity-based logic (in order to …, we must …). The ECs are typically used for solving problems related to dilemma or conflict between seemingly opposing points.

It must be noted that the word "cloud" is used in this context only throughout this paper, and not in the sense of "cloud computing" technologies (Sunil, Khadri, & Sachin. 2020; Othman & El-Mousa, 2020). For the purpose of clarity, the abbreviation EC will be used for Goldratt's "Evaporating Clouds" in the paper instead of "cloud".

An Evaporating Cloud is a logical diagram that represents the problem related to the dilemma or conflict, as well as their underlying assumptions, through five boxes or "entities" connected with a series of cause-and-effect statements based on the logic of necessary conditions, as is drawn with five boxes and five arrows.

Figure 4. A typical structure of Goldratt's Evaporating Cloud



Note: Based on a typical EC design (Andersen, Gupta & Gupta, 2013)

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Generic approach for drawing the evaporating clouds

The process of working with an Evaporating Cloud has three steps: (a) drawing the *entities* - these are five elements A, B, C, D, D' which are the goal, wants and needs that create the conflict situation; (b) surfacing the *assumptions* for each of the five arrows A-B, A-C, B-D, C-D' and D-D'; and (c) identifying *injections* i.e. identifying the wrong assumptions or assumptions that can be changed to "evaporate" the EC.

At the start, the EC is comprised of the statements related to the different entities (Cohen, 2010): the wants, the needs and the common goal /focus area – which are characterized by D, D', B, C and A, respectively, in typical literature related to Evaporating Clouds. The conflict itself is described in the two entities D and D'. The entity D is the necessary condition for entity B, just as D' is for C. Both B and C entities are necessary conditions for entity A, which is a common underlying objective or goal.

Once these statements are written down, the nature of the decision-making dilemma or conflict comes to light. Next, the EC process tries to identify the underlying assumptions i.e. presenting the logical arguments supporting the cause-and-effect relationships between the entities (e.g. B-D, C-D', D-D', A-B and A-C).

Later, the Evaporating Cloud process attempts to arrive at potential 'injections' – possible solutions that can cause the above cause-and-effect relationships to alter or even disappear (hence the name 'Evaporating' Clouds). Injections help 'burst' the assumptions written down earlier i.e. make them redundant. Some injections will help evaporate the conflict entirely if the assumptions can be challenged.

The strong belief that every cloud can be 'evaporated' comes from the fundamental belief in 'inherent simplicity' and a 'naturally harmonious reality' (Goldratt, 2007), which leads to the logic that what appears as a necessity is not an established fact, but is based on a particular interpretation and a point-of-view, with their own inherent assumptions. When the underlying assumptions are identified and challenged (through 'injections'), the cause of the conflict or dilemma gets eliminated, and that is how the resolution to a conflict situation is achieved.

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SMARTKEY CASE ANALYSIS AND FINDINGS

We have tried to use Goldratt's Evaporating Clouds (ECs) to the SmartKey case. This section describes the analysis of the case situation, the process of using ECs for SmartKey conflict situation, and findings from an experiment when the authors tried to use this case situation and the EC process (Sirias, 2020) described earlier in a learning environment with corporate executives and post-graduate students of management. This section describes a specific application of ECs where we used the SmartKey case with a group of consultants and students

Using the EC process for SmartKey conflict

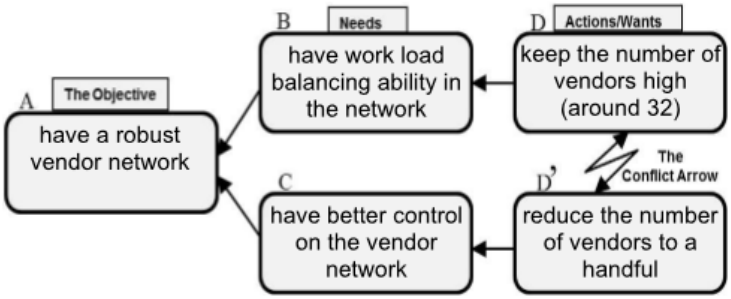
The process of working on the SmartKey case began by drawing the EC for SmartKey, thereby verbalizing the conflict. Then we wrote down the assumptions for each of the arrows connecting the entities. The final step was to come up with possible injections for the assumptions.

Drawing the SmartKey EC

The first step of working on the conflict using the Evaporating Clouds (ECs) is to identify the *entities* and draw the EC for the situation, thus verbalizing the conflict. For the SmartKey case, the process was as follows.

On one hand, SmartKey wants to "keep the number of vendors as high as it is, that is around 32", while on the other hand SmartKey managers are required to "reduce the number of vendors to a handful" – therein lies the conflict. This identifies the different entities as seen in the figure below. Note that this could be different for different learning environments, and what is shown in the figure is a typical visualization.

Figure 5. The SmartKey Case cloud entities



Note: Based on a common EC design drawn by the participants from a group of 61 participants

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The need to keep the number of vendors high, more than anything else, suggests a need to affect a workload balancing ability in the network so that the work can be distributed among the vendors. This takes care of variability in demand, forecasting errors, surge of volume due to unforeseen circumstances etc.

On the other hand, the need to reduce the number of vendors suggests a requirement for having better control of the vendor network, to be able to control and manage their performance. The ultimate goal or objective for both situations is to have a robust and performing vendor network. These definitions of the 'entities' and their relationships are verbalized in a table format as the ABD side of the EC, the ACD' side of the EC, and the DD' side of the EC.

Table 1. The SmartKey case Evaporating Cloud verbalisation

The ABD [a] side of the cloud reads as:			
In order to	Have a robust vendor network	**I must**	Have work-load balancing ability in the network
In order to	Have work-load balancing ability in the network	**I must**	Keep the number of vendors high (around 32)
The ACD' [b] side of the cloud reads as:			
In order to	Have a robust vendor network	**I must**	Have better control on the vendor network
In order to	Have better control on the vendor network	**I must**	Reduce the number of vendors to a handful
The D-D' side of the cloud reads as:			
I can't both	Keep the number of vendors high (around 32)	**And**	Reduce the number of vendors to a handful

Notes:

[a, b] - In this table and the next ones, the following names are used for the different EC entities:

A (the objective): have a robust vendor network
D (want): keep the number of vendors high (around 32) i.e. do not consolidate
B (need): have workload balancing ability in the network

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D' (want): reduce the number of vendors to a handful
C (need): have better control on the vendor network

Surfacing the assumptions

The next step was to identify the *assumptions* i.e. presenting the logical arguments supporting the cause-and-effect relationships between the entities . While arriving at the set of entities and drawing the EC for the SmartKey case in the earlier step was relatively straightforward and consistent for the learning environment we used, it was found that the second step of identifying *assumptions* behind the 'arrows' in the Evaporating Cloud was relatively difficult. We followed the general guidelines provided by Dettmer (1999) for verbalising the entities and the situation as given in the next table.

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Table 2. The SmartKey case Evaporating Cloud surfacing the *assumptions*

	Verbalization of the side of cloud	**Surface the assumptions:**
B – D side of the Cloud (Not to Change)	B-D: In order to Have work-load balancing ability in the network; we must Keep the number of vendors high (around 32)	BECAUSE … 1. Volumes can be moved in real time from vendor to vendor 2. Vendors are at physically distinct locations 3. Small vendors are easier to control and manage 4. The current model with vendors is profitable 5. We need 32 vendors for balancing load 6. Vendor network for GoodHealth2U is showcased to other clients
The C – D' side of the Cloud (To Change)	C-D': In order to Have better control on the vendor network, we must reduce the number of vendors to a handful	BECAUSE … 1. The new network design will have better buy-in from stakeholders 2. Fewer vendors allow better visibility across the network 3. Fewer vendors means less training and management costs 4. Firing of vendors will create pressure on remaining vendors 5. Fewer vendors will mean more visibility and control 6. Continue to receive business from GoodHealth2U
The D – D' side of the Cloud (The Conflict)	D-D': On the one hand, we must Keep the number of vendors high (around 32); likewise, we must reduce the number of vendors to a handful	BECAUSE: 1. These two actions are mutually exclusive 2. The vendors need to be at physically distinct places 3. The vendors need to have distinct proprietors

Once the *assumption* statements are written down, the nature of the conflict came to light. Youngman (2013, also 2012), in a series of slide presentations, has suggested a use of Goldratt's Change Matrix (1994) along with Evaporating Clouds

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that enables the surfacing of assumptions at this stage. A slightly modified version of this process was used in the experiment in order to verbalise the assumptions, but a detailed use of this can be one of the further research directions.

Identifying potential injections.

Next, the EC process tries to identify the *injections* for the underlying assumptions. We used the traditional brainstorming techniques to come up with possible *injections* for SmartKey Evaporating Cloud and came up with 14 possible ideas that can be possible solutions that can cause the above cause-and-effect relationships to change.

In this case, 14 suggestions were identified that are listed in the earlier table. Out of these, SmartKey used 12 operational injections. The two injections that did not have corresponding solution steps were related to marketing and account management, and although it is known that SmartKey took some steps in these directions, the authors of this paper were not privy to the specific decisions and action steps and cannot comment on the effectiveness of those steps. What is known about the SmartKey case is the use of operational and strategic suggestions that align with the recommendations from the EC.

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Table 3. SmartKey EC with corresponding injections for different assumptions

Relation	Assumptions	Injections / Suggestions
B-D	1. Volumes can be moved in real time from vendor to vendor 2. Vendors are at physically distinct locations 3. Small vendors are easier to control and manage 4. The current business model with vendors is profitable 5. We need 32 vendors for balancing load 6. Vendor network for GoodHealth2U is showcased to other clients	1. Create a workflow to track volumes between vendors 2. Bring the vendors under one roof 3. Improve governance structure to manage larger vendors 4. Change business model to add performance based element 5. Forecast number required based on reducing trend in volumes 6. Position the change in number of vendors as a positive
C-D’	1. The new network design will have better buy-in from stakeholders 2. Fewer vendors allow better visibility across the network 3. Fewer vendors means less training and management costs 4. Firing of vendors will create pressure on remaining vendors 5. Fewer vendors will mean more visibility and control 6. Continue to receive business from GoodHealth2U	1. Showcase change as a strong step to commitment 2. Increase communication with vendors – daily meetings and briefings 3. Modularize training and automate reporting 4. Create a performance management system for vendors with specific performance indicators 5. Increase communication with vendors 6. Ask for other type of business from GoodHealth2U
D-D’	1. These two actions are mutually exclusive 2. The vendors need to be at physically distinct places 3. The vendors need to have distinct proprietors	1. Bring the vendors under one roof 2. Change from full outsourcing to staff augmentation

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Potential Solutions to SmartKey case

What eventually happened with SmartKey was a combination of some of the recommendations from the EC injections, as well as decisions based on the market forces, inter-company contractual relationships, outsourcing service provider needs and performance management requirements.

By end of the year, SmartKey redefined their supplier network strategy. The SmartKey team went back to the drawing board, and after much deliberation, came up with a new approach for supplier management. This approach was based on the traditional concept of 'in-sourcing' rather than outsourcing.

SmartKey created two large facilities within two different smaller towns in India that could each host about 300 people at a time. They changed the overall 'Supplier network model' from suppliers running their sites to suppliers sending their supervisors and operator staff to the Service Provider-run facilities. This way, SmartKey was able to bring the process under control, and, at the same time, take advantage of the flexibility of using multiple suppliers as staffing firms.

Apart from this radical innovation in the multi-level supplier network, SmartKey also changed the pricing models with the vendors, increased the communication and information flow in the service supply chain, and improved the performance management system for the network. They also developed strategies and approaches for vendor development.

In essence, SmartKey was able to simultaneously respond to the needs of the process and provide better service and quality to GoodHealth2U through a stronger coordination within the service supplier network. In addition, SmartKey was also able to have more control and adequate flexibility over the network.

Table 4. SmartKey Case solution steps compared with suggestions using EC approach

Injections / Suggestions based on the Evaporating Cloud	SmartKey Actual Solution Steps
Create a workflow to track volume between vendors	SmartKey improved the reporting from the workflow for real time volume distribution. This was already done by the time of the conflict situation
Bring the vendors under one roof	SmartKey created two facilities and hosted vendors
Improve performance structure to manage larger vendors	SmartKey changed the performance management structure with the vendors and removed the cap of '30 heads per vendor'

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Injections / Suggestions based on the Evaporating Cloud	SmartKey Actual Solution Steps
Change business model to add performance-based element	SmartKey added performance-based element to payment to vendors based on Turnaround Time and Quality of work
Forecast number required based on reducing trend in volume	SmartKey reduced the headcount requirement from 900 to about 600 total staff in the vendor network
Position change in number of vendors as a positive	Not actioned immediately in operations but was eventually done in marketing communications
Showcase the new change as a strong step to commitment	Not actioned immediately in operations but was eventually done in marketing communications
Increase communication with vendors	Daily 2 meetings were started with vendors to discuss absenteeism, capacity, and volume for the day
Modularize training and automate reporting	Modularized training and created training structure. Also automated reporting from workflow
Create performance management system for vendors	Added performance-based element to payment to vendors based on Turnaround Time and Quality of work
Increase communication with vendors	SmartKey started daily 2 meetings as mentioned above
Ask for other type of business from GoodHealth2U	SmartKey pursued and got high end work (claims processing work) along with the existing data entry work from GoodHealth2U. This was given to SmartKey after 6 months from the conflict situation
Bring the vendors under one roof	SmartKey created two facilities and hosted vendors in these (one step back into in-sourcing)
Change from full outsourcing to staff augmentation	SmartKey changed the model with vendors from full outsourcing to staff augmentation

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Results of using EC approach

As the potential solution in the earlier section indicates, we observe that several actions taken by experts associated with the SmartKey situation were identified by the use of ECs.

The above section described a specific application of ECs where one of the co-authors had used the SmartKey case in teaching environments with executives as well as post-graduate students of management. In this, we gave the SmartKey case to the participants and collected their recommendations based on their experience. Then we introduced ECs in a generic manner, rather than directly applying the ECs to the SmartKey situation. This allowed the group to understand the concept and process of ECs, without being led to a common 'groupthink' while coming up with the specific EC for SmartKey. We then collected the work done by the individuals and moved to the next step of discussions where we asked them to identify the assumptions and possible injections.

As a way of comparison, we classified the work of the participants – both before they used EC (Pre-EC) and after they used EC (Post-EC) – into meaningful, mutually exclusive groups and labelled them. We also classified the suggestions in both Pre-EC and Post-EC lists into whether they are valid and long-term or short-term recommendations, based on our understanding of the actual SmartKey situation. We also considered the potential solution of SmartKey discussed in the earlier section as the ideal solution. The details of classification is given in the table here.

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Table 5. Classification of suggestions by participants using the EC on SmartKey

Classification of recommendation	Specific inclusions from participant comments
Invalid	Change model to work at home, hire people at remote places; Move out to other cities; find other clients, do not work with GH2U; comments and suggestions for GoodHealth2U; generic comment to consolidate
Valid, but already done	Forecast number required based on reducing trend in volumes
Valid, but generic	Improve governance structure to manage larger vendors, allocate work based on performance to vendors
Valid, but one sided	Reduce the vendors to a handful by performance managing poor ones out (generic)
Valid, short term	Bring the vendors under one roof; change business model with GoodHeath2U to add performance-based element, take price cut with client; increase communication with vendors - daily meetings and briefings; create a performance management system for vendors with specific performance indicators; create a workflow to track volumes between vendors; position the change in number of vendors as a positive; showcase change as a strong step to commitment; modularize training and automate reporting; increase communication with vendors
Valid, long term	Hire from social institutes; bring the vendors under one SmartKey roof; ask for other type of business from GoodHealth2U; change from full outsourcing to staff augmentation; Spread SmartKey business across multiple clients

Based on this, we were able to compare the suggestions provided by the group before the use of EC and after the use of EC. A comparative chart is given here.

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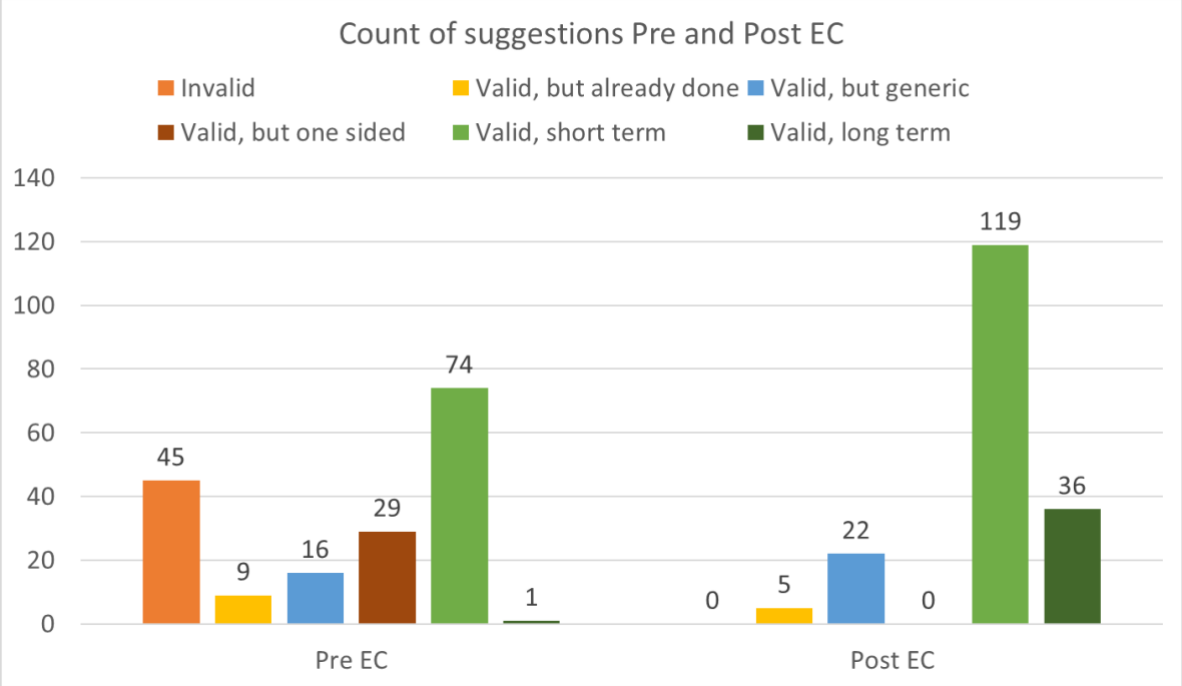
Figure 6. The Pre EC and Post EC count of suggestions



Notes:

- This is based on a total of 61 participants in the study, with 174 Pre-EC suggestions and 182 Post-EC suggestions (one participant can provide multiple suggestions in both Pre-EC and Post-EC conditions)
- The chart indicates that the number of "valid, short-term" and "valid, long-term" suggestions went up post use of ECs. There are many more long-term valid suggestions (a total of 36 of them) in Post EC compared to Pre EC (which was only 1)
- In Pre EC, there are only 75 valid suggestions (short-term as well as well long-term) out of the total 174 suggestions. This is only 43% of the total pre-EC suggestions. However, in Post EC, this number is significantly higher, with 155 valid suggestions (short-term and long-term) out of a total of 182 post-EC suggestions, which is 85%. So there is a 42 percent point jump in valid suggestions.
- The distribution is also closer to more valid solutions as per "Table 4 SmartKey Actual Solution Steps"
- The invalid suggestions (like SmartKey severing the business relationship with GoodHealth2U, which is not really part of SmartKey's viable solution space) are reduced to almost null from an earlier 26% rate (45 out of 174) after using EC.

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- The generic, one-sided solutions are reduced from 29 to zero, demonstrating clarity of thought and a holistic nature of conflict-resolution post-EC

Broadly, the comparison suggests that there were more valid and long-term suggestions as potential solutions for SmartKey case post the use of Evaporating Clouds. We also found that distribution is closer to more valid solutions (as per ideal solution). There are several more long-term solutions compared to short-term suggestions.

It was also seen that the invalid suggestions (like SmartKey severing the business relationship with GoodHealth2U, which is not really part of SmartKey's viable solution space) are reduced to almost null after working out a structured thinking using EC. And finally, we also find that generic, one-sided solutions are reduced showing more clarity of thought and a more holistic nature of decision-making process.

CONCLUSION AND IMPLICATIONS

This paper describes a generic, TOC-based systems approach for conflict-resolution using Evaporating Clouds (ECs), with specific example of supplier network management for an IT-enabled healthcare claims business process that can be applied in various situations by practicing managers. We find that most managers do not realize how conflicts occurs, are often not even consciously aware of conflicts, and that managers as well as their employees are rarely trained to resolve conflicts constructively. Use of ECs helps in building 'Shared Frames' in inter-organization conflict-resolution. This approach can be used to teach the process of decision-making and conflict-resolution to practicing managers and consultants.

The paper attempts to add to the rich literature of application of TOC-based approaches in service organizations (Chawla & Kant, 2017; Aguilar-Escobar, Garrido-Vega, & Gonzales-Zamora, 2016), and especially the application of TOC Evaporating Cloud to service outsourcing.

This paper also considers and sheds light on several under-examined aspects of the global offshore outsourcing of services, like the multiplicity of players and stakeholders, the need for ongoing decision-making process, over and beyond the initial decision of when and what to outsource, and personnel-related matters in the case of managing a network of physically distant vendor partners in several levels of outsourcing.

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While this paper describes a specific offshore outsourcing case in the form of SmartKey, it also validates, more broadly, several aspects and critical success factors of offshore outsourcing based on a dynamic capability-based model (Karimi-Alaghehband & Rivard, 2020), including timely information exchange among the relevant parties, as well as openness, trust and flexibility, which forms the essence of an outsourcing relationship.

However, while we have described a successful application of Goldratt's Evaporating Clouds for conflict-resolution here, further directions for research could include a validation of the integration of Change Matrix and Evaporating Clouds as a structured approach for managerial decision-making, especially during the stage of surfacing assumptions (Youngman, 2013). We suggest that empirical research should be done to demonstrate effectiveness of the Evaporating Clouds as a conflict-resolution tool, and of Evaporating Cloud along with Change Matrix as an evolved framework for managerial decision-making.

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