A drama theory analysis of supply chain collaboration

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Abstract: Collaboration often involves the interaction of multiple participants whose interests differ and hence are vulnerable to conflicts. The participants should explore new strategies for examining underlying assumptions during the interaction in order to reach a trustworthy agreement. However, there is a lack of understanding of how both emotive and rational behaviours of the chain members play a key role in dealing with different perceptions and preferences. The purpose of this paper is to explore the potential of drama theory in the analysis of interactive decision making which often involves conflicts amongst multiple participants for process improvements in supply chain collaboration. Drama theory provides the analysis of strategic interaction to identify dilemmas, whereas a framework for collaboration is used as a tool to find initiatives for resolving dilemmas. An illustrative case study outlined in this paper is able to structurally expose and resolve different perceptions of the chain members.

Keywords: collaboration; decision making; supply chain management; drama theory.


Biographical notes: Togar M. Simatupang is a Professor of Operations and Supply Chain Management. He holds a PhD from Massey University in New Zealand. His research focuses on the development and management of collaborative relationships such as how to design and manage supply chain collaboration, how to equalise their risks and rewards, and how to share the benefits of collaboration. The results of his research have been published in a variety of journals, including the International Journal of Logistics Management, Total Quality Management, Management Decision, Business

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1 Introduction

Supply chain collaboration has recently received increasing attention from academics and practitioners for its substantial benefits for all participants. Supply chain collaboration occurs when multiple parties agree to take part in working together to create mutual gains. Collaboration enables the chain members to combine capabilities that cannot be generated in isolation in order to gain relational rents from competitive advantage (Dyer and Singh, 1988). The solution is to create a seamless supply chain that satisfies customer requirements with greater responsiveness and at a lower inventory, through the pooling of resources, economies of scale, and the sharing of ideas and talent across boundaries. Dell, for instance, collaborates with its suppliers and transporters to create a direct model which is successfully to assemble and deliver finished products based on consumer specifications. Dell and its partners develop specific capability that is difficult for their competitors to imitate in the short time.

The development of supply chain collaboration is a difficult task since different members still retain their strategic autonomy and their own private information, though it is uncommon that they have different perceptions toward goals, requirements, and areas of collaboration. The chain members often confront each other to ensure and assure that the collaborative efforts may create and capture potential value of collaboration. Sharing views before and during collaboration to synchronise expectations and commitment becomes increasingly important. Lambert et al. (2004) argue that the success of supply chain collaboration depends on the compatibility between key members in corporate culture, managerial philosophy, mutuality, and symmetry. Empirical research shows that failures in supply chain collaboration are partly due to poorly articulated expectations which are not well understood and satisfied by at least one of the chain members (Boddy et al., 2000; Fawcett and Magnan, 2002; Lambert et al., 1996).

Previous research provides methods and instruments designed to encourage the chain members to share ideas and concerns for structuring and resolving differences based on
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rationality (Lambert et al., 2004; Lee et al., 1997). The chain members are assumed to declare substantive issues and technically concentrate on choosing effective solutions leaving out interpersonal feelings. In real life, participants do not only rely on rationalities in debates in resolving different views, but also resort to emotions, hidden agendas, and irrationality (Howard, 1971, 1999). The role of emotions cannot be ignored in resolving complex issues and disputes (Lawler and Thye, 1999). Lambert and Knemeyer (2004) has noted the importance of emotions when the chain members interact with one another to exchange views and influence aspirations. They might express either positive emotions (e.g., enthusiasm, empathy, sincerity, passion, integrity, humility, etc.) or negative emotions (e.g., apathy, blame, regret, resentment, anger, hostility, etc.) as different kinds of strategies to explore and influence preferences of other members. A participant might, for instance, view an initiative of streamlining delivery processes as a threat which can easily agitate negative emotions. As a consequence, there is a need to further understand how to incorporate emotions when the chain members engage in building effective integrated processes and high levels of information sharing in order to create mutually beneficial outcomes which benefit all participants.

Interactive decision making in supply chain collaboration implies that participants can influence outcomes of negotiation. It is important that they interact with one another to exchange views rather than directly take actions to avoid premature failure. Drama theory, a new problem structuring method that has emerged over the last decade and a half, can be used to investigate the possibility that the participants might not only engage in strategic interaction but also emotionally attempt to change situations at some stages of the interaction (Howard et al., 1992). Drama theory pays attention to the interest of key participants and the analysis of the pressures on the participants and likely responses in the future (Howard, 1999). This method helps decision makers identify dilemmas, anticipate possible resolutions, and reconfigure participants that best capture the situation in the unfolding events (Bryant, 2003). Participants are encouraged to explore possibilities for conflict resolution by means of dialogue and to send a message before each participant enacts its choices.

There have been a number of papers recently in interactive decision making, building on previous work in drama theory, on how the participants interact to express emotions in resolving conflicting interests. This paper attempts to extend the use of drama theory in the area of supply chain collaboration. The central aim of this research is thus to represent and resolve different perceptions in collaborative relationships on the basis of drama theory. Specifically, a framework is proposed to combine drama theory, as a problem structuring method to espouse different views of participants in their strategic interactions (Bennett et al., 2001), with an analysis of architectural elements of collaboration (Simatupang and Sridharan, 2005) to find effective initiatives to resolve differences in order to eventually reach a mutually stable solution. The architectural elements of collaboration include information sharing, collaborative decision making, integrated process capability, performance accountability, and incentive alignment.

The paper is structured as follows. First, the general concept and contributions of drama theory to the study are discussed. The next section contains a framework of drama theory for supply chain collaboration, which describes key concepts to encounter different perceptions of collaboration. After the framework has been developed, a case study on just-in-time distribution (JITD) is provided. The main conclusions derived from the analysis are presented in the last section.
2 Drama theory

The literature provides different definitions of drama theory, but they all share the importance of irrationality, preference change, and emotion. The earliest definition was it is “a theory incorporating non rational aspects in decision making such as crisis, emotion, and self-realization” (Howard et al., 1992). This definition emphasised that drama theory was a way of analysing emotional and political aspects of choice in interdependent decision making situations. Before the actual use of the term ‘drama theory’ appeared in 1992, Howard (1990) called it ‘soft game theory’ and defined it as “a theory of emotions, irrational behaviour, deceit, disbelief, and rational arguments in the common interest”. He intended to distinguish drama theory which requires negotiation of positions from game theory which deals with players who behave rationally in a fixed strategy context. Bennett and Howard (1996) argue that drama theory is concerned with the nature of interactive decisions which relates to rationality, emotion, and preference change. Bryant (1997) succinctly defined drama theory as “a theory of human interaction”. Furthermore, Howard (1999) contends that drama theory uses dilemmas to analyse, predict, and understand the pressure on characters to change their positions, preferences, and common reference frame. Bryant (1998) then asserts that drama theory “finds a specific role for the emotions which characters experience and express as they encounter the dilemmas posed by rational choice at a confrontational impasse”. Taking into consideration the aforementioned views, we can summarise that drama theory is concerned with the analysis of strategies for overcoming dilemmas when multiple characters interact with each other to use reason and emotion to change their assumptions, alter their own and others’ preferences, and achieve self realisation of mutual outcomes through a sequence of episodes.

Drama theory is presented as having originated from game theory. The theory was first devised by Howard (1971) after finding that game theory, which is based on rationality, fails to include human emotions in the conflict. He asserted that in some cases decisions based on rationality can be wrong while an irrational decision could be more effective. Rationality assumes that rational behaviour lies at the core of any conflict. However, at times rational decisions can lead to paradoxical situations, particularly in the context of interactive decision making. Hence, Howard (1999) developed a method called the resolution of confrontations to deal with paradoxes of rationality or dilemmas of interactive decision making. Solutions for resolving dilemmas can include changes of preferences, changes of mind, deliberate deceit, anger, and love. Other groundwork methods for describing and analysing conflict resolution prior to the creation of drama theory include metagame analysis (Howard, 1971) and hypergame analysis (Bennett, 1977, 1980), which attempt to take misperceptions into account. Howard et al. (1992) ultimately proposed the name ‘drama theory’ which gives a role to emotions in conflict resolution. Further contributions were made by Howard (1994, 1996, 1998), Bennett and Howard (1996), Bryant (1997, 2003), Bennett (1998), and others [see Bryant (2007) for a complete exposure].

The use of drama as a metaphor indicates that participants not only capture rational choice and arguments but also take into account emotional communication (Howard et al., 1992). A participant is an organisation or individual involved in an interaction. Since one’s choice depends on the intention others, each participant should anticipate and influence other’s choices. They need to communicate positions (what they say they will
do) and fallback strategies (a threatened future) to each other so they can either find their positions compatible or incompatible. In either case, they still face dilemmas due to differences in preferences and beliefs. Both positive and negative emotions are expressed as responses to a set of dilemmas. Dilemmas cause emotional pressure to the participants to change their own and others’ preferences and beliefs in ways that eliminate the dilemma (Bennett, 1998; Hermawan et al., 2008). Emotions activate rationalisations that change the patterns of the interaction at some stages as the participants redefine the scenario and a new ‘scene’ in the ‘drama’ is created. This structure repeats with a new scenario as the participants change their perceptions and preferences into a new set of choices.

A basic tenet of drama theory is the identification and treatment of characteristic dilemmas for participants. Dilemmas represent psychological contentions faced by the participants and have to be resolved during their engagement in an interaction. Howard (1994, 1998, 1999) identifies six dilemmas which consist of two categories: agreement and disagreement. If their positions are compatible, then they reach an agreement, yet they face trust or cooperation dilemmas as they do not trust each other to carry out their agreement. If the participants disagree, then they face a number of confrontational dilemmas such as deterrence, inducement, positioning, and threat dilemmas. The six dilemmas are outlined as follows as defined by Howard (1994), Bennett (1998), and Bryant (1997). The first two dilemmas relate to agreement dilemmas and the last four dilemmas are associated with confrontational dilemmas that character A may face with respect to character B at a moment of truth.

- **Cooperation dilemma.** If A has the potential to unilaterally improve her position, she may be tempted to defect from her original position. So why should B think that A would implement it?
- **Trust dilemma.** A faces this dilemma when she might not be able to trust B to implement their mutual solution, even after they agree to it. So why should A trust B to achieve this solution?
- **Deterrence (also known as persuasion) dilemma.** If A finds B certainly prefers the threatened future to A’s position. So how can A deter B?
- **Inducement (also known as rejection) dilemma.** A will face this dilemma when A prefers B’s position to the threatened future. So how can A persuade B to her view?
- **Positioning dilemma.** A may find B’s position preferable to her own. So how can A attract B to her solution?
- **Threat dilemma.** B does not believe that A would carry out her threat not to implement B’s position. So how can A use her threat to pressure B?

Dilemmas can be eliminated following certain predictable patterns. Dilemmas faced by characters cause emotions. Emotional responses can provoke irrational reactions and lead the participants to debate and choose a course of action as a way to eliminate a dilemma. Finding courses of action requires the characters to emotionally consider the real-world environment from which they build their current position. The current position may not satisfy the conditions of a strong equilibrium solution. As there is no equilibrium, some characters may change their preferences or may take a new action. This action could
possibly eliminate some of the dilemmas. As they build a new frame (a configuration of positions of different characters), a redefined position evolves to the next episode until these dilemmas are resolved to provide a mutually beneficial solution. When a solution of strong equilibrium (Howard, 1994) is achieved, the characters reach an agreement to fully trust each other to carry out stated intentions that suit every position. When they have such a stable solution, their confrontation becomes collaboration.

Drama theory advocates a structured process involving different stages:

1. Exposure of positions by different characters
2. Resolution of dilemmas
3. The ultimate achievement of mutually beneficial outcomes.

This approach is naturally suitable for a number of situations of interactive decision making where confrontation between characters can be resolved to achieve a mutually stable solution. Drama theory thus has potential applications in many different areas of human interaction and has been applied to different contexts in organisation and business (Bryant, 2002; Tait and Richardson, 2008), conflict analysis in international relations (Howard, 1996, 1999), health services (Bryant and Darwin, 2003, 2004) and natural resource management (Obeidi and Hipel, 2005; Hermawan and Kijima, 2009). A number of papers have been written to develop guides for applying drama theory, such as five phases of dramatic resolution (Howard, 1994; Bryant, 1997), confrontation analysis (Bennett, 1998; Howard, 1999), immersive drama (Bryant, 2003), interactive decision support system (Bennett et al., 1994), security systems (Bryant, 2009; Levy and Howard, 2009), and negotiation (Hermawan et al., 2008; Bryant, 2010). This paper is an attempt at exploring the potential of drama theory in the analysis of interactive decision making which often involves conflicts amongst multiple participants in supply chain collaboration.

3 Drama theory and supply chain collaboration

The fascinating idea of drama theory is to allow participants to use reasons and emotions to influence their own and others preferences about the present situation and the next situation which is likely to happen in the future. The assumption is that the balance of what participants think and feel when they interact with one another exposes conflicting situations and provides the analysis of resolution in different stages of the interaction. When participants face dilemmas or paradoxes of rationally, they assume to possess the knowledge of supply chain collaboration to find remedies. The knowledge of collaboration requires the understanding of the continuum of collaboration which fits to their business imperatives (Simchi-Levi et al., 2007). Several continuums of collaboration that have been well known in the literature are quick response, vendor managed inventory, efficient consumer response, and collaborative planning, forecasting, and replenishment (Holweg et al., 2005). Continuum of supply chain collaboration rests on a typical architecture that can be categorised into five elements: information sharing, collaborative decision making, process capability, performance accountability, and incentive alignment (Simatupang and Sridharan, 2005).
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The architectural view of supply chain collaboration suggests that the five elements of collaboration affect the behaviour of the chain members in achieving mutual benefits. Information sharing aims to provide the decision makers with required information to have a bigger picture of supply chain in the process of making effective decisions. Collaborative decision making advocates the chain members to jointly make decisions and assign decision rights to a particular member who has intimate knowledge of a task. Process capability relates to the level of integrated processes to source and deliver products to end customers. Performance accountability encourages the chain members to focus on overall performance of collaboration as a whole. Finally, incentive alignment ensures that the chain members arrange a consistent arrangement to share risks, costs, and benefits of collaboration. Any discontent that prevents the chain members from maximising mutual benefits can be traced back to the five architectural elements of collaboration. These architectural elements serve as instruments for the chain members to trace sources of dilemmas and find ideas or initiatives to change their perceptions of collaborative efforts under different parameters as shown in Table 1.

Table 1  The five architectural elements of collaboration

<table>
<thead>
<tr>
<th>Architectural elements of collaboration</th>
<th>Generic sources of dilemmas</th>
<th>Variety of initiatives for proposed options</th>
<th>Different contexts for consideration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information sharing for improving visibility and accuracy</td>
<td>Information distortion: Poor quality data, underreporting, data overloading, etc.</td>
<td>Information sharing: Share private information with other parties, Transmit required information for taking actions, Exchange demand information and action plans, Build standards for information exchange, etc.</td>
<td>Data confidentiality, Tacit versus explicit knowledge</td>
</tr>
<tr>
<td>Decision synchronisation for making available recommendations and policies to the stakeholders</td>
<td>Misrepresentation in decision making: poor decision making, infrequent data use, unclear roles and responsibilities, wrong decisions, etc.</td>
<td>Collaborative decision making: Assign decision rights to the best informed party, Form joint demand planning, Build collaborative forecasting, Team up joint replenishment, Give the vendor responsibility for replenishment, etc.</td>
<td>Knowledge transfer costs versus agency costs, Tacit versus explicit knowledge, The nature of trade-off, Multi-criteria decision making, Geographical location</td>
</tr>
<tr>
<td>Architectural elements of collaboration</td>
<td>Generic sources of dilemmas</td>
<td>Variety of initiatives for proposed options</td>
<td>Different contexts for consideration</td>
</tr>
<tr>
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</tr>
<tr>
<td>Integrated process for implementation (doing a set of interdependent activities and utilising required resources)</td>
<td>Fragmented supply chain processes: Long lead times, overlapping routines, costly delivery, inefficient processes, high level of inventory, etc.</td>
<td>Integrated process capability: Warrant responsiveness, Secure just-in-time delivery, Guarantee flexibility, Perform postponement, Build lean capability, Build product innovations, Remove wastes, etc.</td>
<td>The nature of supply and demand uncertainty, Product characteristics, Basis for competition (price, time, quality, service), Economies of scale and scope, Technology, Cost structure</td>
</tr>
<tr>
<td>Collaborative performance system for maintaining accountability</td>
<td>Disintegrated performance: Irrelevant, misleading, and conflicting performance measures for improving contribution for value creation; measuring the wrong things, measuring too much, etc.</td>
<td>Performance accountability: Operate and maintain a collaborative performance system to evaluate the performance of both individual member and the supply chain, Monitor contribution and capability, customer oriented metrics, etc.</td>
<td>Basis for competition (price, time, quality, service), Cost structure, Customer requirements, Financial versus non-financial metrics</td>
</tr>
<tr>
<td>Incentive alignment for motivating actions and inducing efforts</td>
<td>Incentive misalignment: Lack of equitable incentive instruments made available across the supply chain for (re)allocating the costs, risks, and rewards of offering goods and services to consumers, trade promotions, discounts, penalties, cost shifting, etc.</td>
<td>Incentive alignment: Distribute risks, costs, and rewards based on value creation, Provide incentives to the best-informed party to make the right decisions, etc.</td>
<td>Basis for competition (price, time, quality, service), Economies of scale and scope, The nature of demand and supply uncertainty, Cost structure</td>
</tr>
</tbody>
</table>

Based on this discussion, the representation of interaction between the chain members and the resolution process of dilemmas are two separate issues in supply chain collaboration. The advantage of drama theory in exposing dynamics of interactive
decisions is proposed to be complemented with the architectural view of collaboration in order to understand sources of their dilemmas and finding initiatives for resolving them. The application of drama theory in supply chain collaboration is thus defined as using drama theory to expose the strategic interactions of chain members to identify their dilemmas and finding effective solutions by analysing the architecture of collaboration.

The framework for combining the five phase process of dramatic resolution (Howard, 1994) and the architectural view of collaboration (Simatupang and Sridharan, 2005) is shown in Figure 1. A drama unfolds as a series of episodes which allows the participants to identify dilemmas. Each episode begins with a scene setting and moves through interaction to climax, resolution, and dénouement. The episodic nature of negotiation allows characters to influence or change perceptions, views, and preferences of others in a way to increase the chances of a positive resolution. The architectural view of collaboration is used to track sources of dilemmas and find alternative options. Participants interact and share information through a blackboard as shown in Figure 1 when using the architectural view in analysing dilemmas and find a mutually beneficial agreement. We outline the five phase process of dramatic resolution below.

**Figure 1** The five phase process of dramatic resolution

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Scene setting</td>
<td>Negotiating interactions</td>
</tr>
<tr>
<td>2. Build-up</td>
<td>Deciding positions in a common reference frame</td>
</tr>
<tr>
<td>Consistency?</td>
<td>If not</td>
</tr>
<tr>
<td>3. Climax</td>
<td>Pressing positions and stating fallbacks</td>
</tr>
<tr>
<td>4. Resolution</td>
<td>Parties formulate a plan for the future</td>
</tr>
<tr>
<td>5. Dénouement</td>
<td>Parties reflect on implementing agreements</td>
</tr>
</tbody>
</table>

Phase 1 Scene setting. A scene-setting is established to show relevant stakeholders or characters who interact to deal with certain issues. Each character controls certain options and has stated intentions.
Phase 2 Build-up. Characters begin to assess the situation and then take actions accordingly. The build-up takes place when characters communicate and learn about each other. The interaction should lead characters to have a common reference frame in which each character has a sense of what is going on. The frame is a common perception of a set of characters, what options or intended actions they can take, and their preferences between different possible futures. In the build-up phase, characters interact to expose positions and threats, learn about each other’s options, and thereby generate potential futures. If all characters come out with a single aspiration where no one has any improvements, then the situation reaches a strict strong equilibrium and thereby is dramatically resolved. If not, a moment of truth has been reached when characters face dilemmas or paradoxes of rationality and the situation moves to the climax of an episode.

Phase 3 Climax. In the climax phase, characters interact to encounter various kinds of paradoxes or dilemmas accompanying with the expression of emotion by characters. At the moment of truth, characters encounter different types of dilemmas and need to seek an understanding of why these dilemmas occurred and what inhibits them to improve the future. Table 1 displays generic sources of dilemmas of supply chain collaboration. For example, a character might not want to share truthful information because she does not have a compensation for the extra effort to share the requested information. A resolution can be obtained such as how to organise and adjust the incentive levels for information sharing. A character may also find an incentive which is counter productive to overall performance and therefore might propose an alternative incentive based on performance factors such as customer-focused metrics which can help determine how efficiently a player creates value for its customers. Furthermore, the chain member may have different processes that lead to a lack of agility or a lack of adaptability. A distributor may have different products with different units of pallets, cartons, shipments, and cans. A conflict occurs when the distributor sits together with its suppliers to negotiate the purchase of dozens of sizes of cans, requiring different procedures, and manufacturing processes. One resolution is to build disciplined processes to redesign and simplify critical supply processes. A character can make promises credible by expressing positive emotion which is useful in overcoming cooperation dilemma. A character who expresses negative emotion will signal a credible threat to others which is effective in overcoming inducement dilemma. Emotions, which shape attention, beliefs, and actions, impose characters to change the frame until they reach agreement on a common future. When the interaction achieves some agreement, the situation reaches a resolution.

Phase 4 Resolution. The resolution phase represents the release of emotional tension when characters willingly formulate a plan for the future. Resolution occurs when characters agree on what should be done and trust each other to carry out their parts. The indication is that no character faces the cooperation, persuasion, or inducement dilemmas (Howard, 1994). All members take and will not move away from the common position in a future plan. A future plan is a stable solution if it is genuine and trustworthy which is free from suspicions. Not every resolution is positive to encourage the potential of collaboration. The resolution
might be the worst aspect of confrontation or tragedy when characters mostly prefer the threatened future. The interaction now proceeds to implement what has been resolved.

Phase 5 Dénouement. The final phase is the point when characters implement the resolution. As the interaction proceeds, a new situation may appear to suggest a continuation to the next scene-setting in a new episode. Some characters devise new strategies whilst others withdraw and have no further relevance in the new scene setting. It is also possible for new characters to appear. Nevertheless, a logical continuity between episodes needs to be preserved to craft the future development of resolution.

4 A case study illustration

Barilla SpA (Hammond, 1994), an Italian pasta manufacturer, was chosen as a case study of the application of drama theory to analyse the impetus for the JITD proposal. The classical problems faced by Barilla before implementing JITD are well known amongst students, practitioners, and academicians for its typical hurdles to promote the concept of JITD to various stakeholders. JITD extends the concept of just in time manufacturing which means producing what is need, when it is needed. JITD often involves a set of chain members either a producer and a distributor or a supplier and a retailer. The distributor has a better position to know demand information, whereas the producer has a better knowledge about production capacity and distribution lead time. The chain members need to share information in order to make effective decisions in producing and delivering products. JITD suggests that delivery is only made when the inventory is required. The producer sends products just-in-time to replenish the inventory sufficient for the distributor to fulfill consumer demand. The basic principle of JITD is to eliminate sources of variability by producing the right quantity of products and distributing the right quantity of products in the right place at the right time. The focus is not merely on minimising production and distribution variability but also includes the process of eliminating demand variability at different stages of a supply chain. JITD decreases the required on-hand safety stock inventory, reduces lead times through the supply chain, and improves the customer service level.

Barilla has a multi-echelon network which sells its products to a wide range of Italian retailers via independent third party distributors. Barilla experienced increasing operational inefficiencies and rising costs of inventory and distribution due to large amounts of week-to-week variations in order patterns from its distributors. Giorgio Maggiali, the director of logistics, suggested the implementation of JITD with Barilla’s distributors to gain control over the fluctuating demand and eliminate wastes of high inventory levels. The proposal of JITD requires the distributors to share their sales data and inventory levels with Barilla. A distributor is also required to transfer the authority of shipping decision to Barilla. Barilla then uses data about its distributor’s demand to forecast and deliver appropriate amounts of products to the distributor’s warehouse at the right time. The proposal was deemed as a radical change from the existing transactional relationship, where the distributors did not share any data and exclusively determined the amounts of orders, to a new relationship of information sharing and decision right reallocation. Maggiali not only received criticism from Barilla’s distributors but also
Barilla’s own sales and marketing department for an array of reasons. A challenge for Maggiali is to increase the acceptability of the JITD idea.

4.1 Setting the scene

The idea of JITD originally came from Brando Vitali, a former director of logistics, to address increasing operational inefficiencies resulted from order fluctuations placed by its distributors. Rather than reacting to fulfill orders placed by its distributors, Barilla’s logistics organisation would determine quantity and timing for delivery to meet the end customer’s demand. The workload of demand requirements could be more evenly distributed on Barilla’s production and logistics systems as it had a bigger picture of customer demand. Barilla would decrease unused inventory levels, reduce manufacturing costs, and improve delivery service level to its distributors. The distributors would also enjoy decreased levels of inventory and will be free from stocking administration. However, Maggiali, a newly appointed director of logistics, noticed that little progress had been made to implement the idea. Barilla’s distributors were unwilling to relinquish their decision rights to place orders according to their needs. They were also hesitant to share sales and inventory data. There was also internal resistance from Barilla’s own sales and marketing which perceived that the JITD idea was not feasible for both parties. Barilla’s sales and marketing used trade promotions and volume discounts to entice its distributors to place more orders to meet their current and future needs. Achieving the sales target to its distributors served as a basis of incentive for Barilla sales representatives. They felt that the implementation of JITD would diminish their responsibilities.

The concept of JITD was relatively new in Italy and the relationships with Barilla’s distributors were transactional with minimum sharing of information. Although they used computer ordering system, few distributors had forecasting systems or sophisticated analytical tools for determining order quantities. Most distributors used simple periodic review inventory systems to trigger orders as well as taking into account trade promotions and volume discounts periodically provided by Barilla’s sales and marketing. The distributors exclusively decided the amounts and timings of orders. Barilla then often received wildly fluctuating week-to-week orders for its dry products. As a consequence, Barilla’s production and logistics systems had difficulty in managing its capacity and lead times to chase this extreme demand variability. It was also very expensive to hold sufficient finished goods inventories to meet fluctuating and unpredictable order requirements of its distributors. Although the distributors had high levels of inventory, they had poor service levels to the retailers. The distributors also had limited room in their warehouses to carry extra inventories and Barilla’s new products. All parties in the supply chain felt the same pressure to reduce unnecessary costs from their distribution systems without sacrificing service levels.

4.2 Build-up

There are three participants identified in this interaction, namely Barilla’s logistics division (L), Barilla’s sales and marketing division (S&M), and Barilla’s distributors (D). The common reference frame is shown in Table 2 which consists of the three participants, their options, positions or proposals, and threats or fallbacks. Options are described as bipolar constructs. Each participant at least has one option and offers
proposals to others. The default position was the status quo of the existing transactional relationship. The L position is that each distributor would sign up on the JITD programme and S&M should not impose trade promotions and discounts. Under the JITD programme, each D would provide data about its shipments of Barilla’s products from its warehouse to retailers during the previous day and the current stock level for each Barilla stock-keeping-unit (SKU) and L had decision right to determine sizes and timings of shipments to D’s warehouses. The S&M position would maintain trade promotions and volume discount to push product into the Ds. When the JITD proposal was introduced, a number of Ds were not ready and reluctant to relinquish decision rights. They felt offended as Barilla would take over their role in replenishment decisions, so they would tend to maintain traditional buying practices. The Ds’ fallback included maintaining their decision rights with communication base on orders. Under this condition, the agreement was not stable for the three parties to unity their positions. Each party experienced negative emotions towards one another about the concept of JITD.

Table 2  Confrontation table: decision makers and options

<table>
<thead>
<tr>
<th>Character</th>
<th>Option</th>
<th>Logistics (L) position</th>
<th>S&amp;M position</th>
<th>Distributors (D) position</th>
<th>Threatened future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logistics division (L)</td>
<td>Operate the JITD programme</td>
<td>Operate the JITD programme</td>
<td>Response to the distributor’s orders</td>
<td>Response to the distributor’s orders</td>
<td>Operate the JITD programme</td>
</tr>
<tr>
<td>Sales and marketing division (S&amp;M)</td>
<td>Maintain trade promotions and discounts</td>
<td>Redefine trade promotions and discounts</td>
<td>Maintain trade promotions and discounts</td>
<td>Maintain trade promotions and discounts</td>
<td>Maintain trade promotions and discounts</td>
</tr>
<tr>
<td>Distributors (D)</td>
<td>Sign upon the JITD programme</td>
<td>Sign upon the JITD programme</td>
<td>Not sign upon the JITD programme</td>
<td>Not sign upon the JITD programme</td>
<td>Not sign upon the JITD programme</td>
</tr>
<tr>
<td>Dilemmas for the participant</td>
<td>Cooperation with S&amp;M and D, trust with D, persuasion with S&amp;M and D</td>
<td>Persuasion with logistics (L)</td>
<td>Persuasion and threat with logistics (L)</td>
<td>Persuasion and threat with logistics (L)</td>
<td>Persuasion and threat with logistics (L)</td>
</tr>
</tbody>
</table>

4.3 Climax

Each character would face different dilemmas as shown in Table 2. L would have dilemma of cooperation with S&M and D, dilemma of trust with D, and dilemma of...
persuasion with S&M and D. D faced a persuasion dilemma with L. S&M faced persuasion and threat dilemmas with L. L would face a cooperation dilemma with S&M for Barilla’s lack of production flexibility to quickly adapt with changes in selling patterns. S&M was worried if L would not able to reduce out of stocks.

L was used to maximising its own profitability subject to orders place by Ds. If D were to relinquish stocking decision right to L, then L was expected to optimise the entire system, not just what is good for its own facility. L was not a neutral party. It thus had a cooperation dilemma with D when it had an improvement to enjoy its own cost reduction. In addition, D also questioned Barilla’s ability to manage their inventories for lack of experience. L needs to project positive emotion to convince S&M and D that it will keep its promise.

The architectural view can be used to generate alternatives for L to resolve the cooperation dilemma with S&M and D. First, process capability should be acquired to ensure that L could manage its own inventory and D’s inventory. A pilot project could be carried out by L within Barilla’s own distribution system which is a distribution channel for the dry products between Barilla central distribution centre (CDC) and Barilla owned warehouses (Barilla-run depots). This distribution structure is similar with the distribution network between Barilla and its external distributors. Experience gained from this pilot project would increase L’s credibility in implementing JITD. Second, all parties must agree to collaborative performance measurement criteria both in financial and non-financial terms such as inventory costs, inventory accuracy, lead times, fill rates, and delivery reliability. Third, information sharing system must be developed for all parties to allow more visibility. Fourth, collaborative decision making should be developed such as collaborative forecasting and decision support system for inventory and transportation management. Fifth, L and D need to specify an incentive scheme for sharing decreased system inventory costs.

If D accepts L’s position to sign up on the JITD programme, L would have a trust dilemma with D about the use of additional shelf space. When Barilla’s inventories decrease at distributors’ warehouses, D may fill up additional available shelf space with Barilla’s competitors’ products. L should convince D not only to expand the line of Barilla products but also to prove that they would gain greater benefits by carrying Barilla products compared to its competitors’ products.

In relation to S&M, L faced a persuasion dilemma when S&M did not support JITD. S&M argued that Barilla would not be able to push its products to retailers without offering trade promotions to distributors. The architectural view suggests several changes including modification of incentives for S&M since inventory levels are driven by retailers’ requirements and not trade promotions and discounts; changing performance criteria from sell-in to sell-through; and developing information sharing and coordination for new product introductions, promotions, and rising prices. These changes should persuade S&M to accept JITD. Maggiiali might also request the involvement of top management to convince S&M that JITD is not a logistics programme but a company-wide effort to sell its products.

In the ‘threatened future’, D would not sign on to the JITD programme and prefer traditional buying practices. The threatened future was particularly bad for L because it was almost impossible to implement JITD without involving D. L thus had a persuasion dilemma with D. L might assertively react to show that D’s fallback position was more damaging to them. Alternatively, L might convince D that the JITD idea could provide both parties an opportunity to decrease their inventories and improve their fill rate to
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According to the architectural view, L might classify and provide selective services by having only information sharing arrangement with some Ds and accepting stocking decision rights with other Ds in which L manages the distributor inventory (Simchi-Levi et al., 2007). The idea is to consider the degree of willingness of Barilla’s Ds to involve in the JITD programme. Finally, performance accountability should be appropriately put in place to enable the chain members to monitor the progress of implementation and to see if any corrections need to be carried out.

From the distributor’s position, D would face a persuasion dilemma with L. L preferred the threatened future to D’s position for recognising negative consequences of poor communication. D would retain its stocking decision right so that the fallback would be less attractive to L. D felt better to manage its own inventory system provided Barilla would be able to deliver its orders more quickly. D also offered to sell required data to Barilla. Alternatively, the architectural view suggests D to change its fallback with a new scenario based on the JITD programme where both parties prefer to take out costs from the distribution system. This proposal is sensible for D because it experienced thin margins and poor service levels to retailers. Finally, S&M faced persuasion and trust dilemmas with L which preferred to develop JITD. S&M would deal with these dilemmas by changing its fallback to redefine the basis of incentive for Barilla sales representatives and new promotion packages to target end customers.

4.4 Resolution

The three parties were able to reach a settlement to implement JITD. The most important resolutions included that L would require integrated process capability and share benefits of the JITD programme with D, S&M would redefine promotions and incentives and acquire new marketing skills to reach end customers, and D would sign up on the JITD programme based on different levels of readiness and maturity.

4.5 Dénouement

Maggiali might hire independent consultants to execute the pilot project and invite third party logistics provider to execute JITD between Barilla CDCs and distributors’ warehouses. This new scenario may suggest that the drama moves on to a new episode.

5 Conclusions

This paper has provided and illustrated the application of drama theory to supply chain collaboration in dealing with different perspectives of the players. Drama theory describes interactive decision making which incorporates emotions of the players to explain how and why their interactions with each other reshape their own and others’ preferences. Situations of the interaction of characters can be described in terms of subjective frames starting with certain preferences. Players restructure frames when they use emotions and irrationality to encounter dilemmas which leads to the development of new preferences and opportunities. The paper has also offered the architectural view to complement drama theory as a tool for understanding and finding alternatives to encounter dilemmas. Drama theory is to provide the analysis of strategic interactions in identifying dilemmas, whereas the architectural view is used to find initiatives for
resolving dilemmas. This hybrid approach is appropriate to advise individual participants to find alternatives for resolving their dilemmas in a creative way rather than to assess normatively the choices that should be made.

The case analysis shows that chain members change their perceptions not only because a rational analysis shifts their thinking but also because they are shown a compelling truth that influences their feelings. In this view, managers should incorporate emotions and irrationality to trigger actions and new understandings in the development of collaboration. Drama theory stresses the issue of dialogue or using conflict to achieve generally beneficial rather than destructive outcomes. Second, the framework outlined here should be complemented with in-depth empirical research on industrial cases of supply chain collaboration. The empirical study is not only to restructure interactive decision making in exposing actions of a particular participant and how other participants can be expected to respond, but also to compare the predicted consequences and the actual situation. Future study might also exhibit conflict resolution which takes place in a series of episodes not just in a single episode (Bryant, 2010).

On the theoretical side, different states of emotions could be modelled in the interaction analysis to understand the role of emotion to influence the outcome of dilemma resolution (Jiang et al., 2006). Finally, this paper assumes that stability of resolution occurs when positions are united and trustworthy in which a particular participant will not be motivated to unilaterally move away from common agreements. Further study is needed to compare different resolution concepts to examine the stability of a given scenario (Obeidi and Hipel, 2005). The intention of this paper is to stimulate the interest of practitioners and academicians to explore and apply drama theory to different contexts of supply chain collaboration.

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