A FRAMEWORK OF PERFORMANCE ASSESSMENT IN SUPPLY CHAIN PARTNERSHIP

This paper proposes a framework to assess performance of supply chain partnership. The proposed framework is focused on assessing two dimensions of SCP, efforts and results, by using the self-assessment criteria and logics of the European Foundation for Quality Management business excellence model. This study contributes to the literature by providing assessment guidelines and appropriate measures of outcome that could be applied in a supply chain environment.

Introduction

In an era of supply chain management, a growing number of companies are struggling to build a strong supply chain partnership (SCP) with their business partners, such as manufacturers, distributors, suppliers, and customers. It is widely accepted that a well-structured SCP ensures competitive products for customers and enhances the effectiveness of the supply chain (Lau et al., 2002). Managing SCP is the starting point to sustain a robust supply chain and achieve mutual benefits by leveraging the unique expertise and know-how of partners (Lemke et al., 2003; Lambert et al., 1996). This assertion is supported by the findings of an empirical study conducted by Wynarczyk and Watson (2005). Through a sample of 211 subcontractors in the UK from 1993 to 1999, the study reveals that companies managing SCP have experienced a significant growth rate that is more rapid and sustained than single companies. The management of SCP should be one of the core efforts for companies not only to improve the advantages of the supply chain, but also to accomplish sustainable growth.

Existing literature on SCP has explored a wide variety of SCP aspects. Some researchers have tested the relationship between SCP and business performance (Stuart, 1997; Wynarczyk and Watson, 2005; Benton and Maloni, 2005; Yu and Cheng, 2001) or examined success factors for an effective SCP (Wong, 2001; Suh and Kwon, 2006; Hoyt and Huq, 2000). Others have unveiled ways that SCP is formed and implemented (Motwani et al., 1998; Maheshwari et al., 2006; Corbett et al., 1999; Palmer, 1996) or addressed key processes and approaches of SCP assessment (Brinkerhoff, 2002; Lambert et al., 1996, 2004; Gunasekaran et al., 2004; Chin et al., 2006). Further, the study on the assessment of SCP is considered to be a very promising research topic because the performance of SCP is significantly associated with the use of appropriate indicators and assessment frameworks (Lorentz et al., 2007).

Although researchers have made an effort to develop frameworks to assess SCP performance, our literature review indicates that there has been little effort to answer the
following questions: (1) What assessment dimensions should be considered to produce an objective judgment? and (2) What aspects of SCP should be evaluated? First of all, no attempt has been made to explore assessment dimensions that influence an evaluator’s conclusion (e.g., Brinkerhoff, 2002; Beach et al., 2005; Lambert et al., 1996). The examples of dimensions are to evaluate whether organizational approaches have a clear rationale, whether the approaches are deployed soundly, and whether output is analyzed and monitored for further improvement. We believe that it is essential to adopt the assessment dimensions. Using a guideline to the dimensions, an assessor can test sequential steps, or interactions, of organizational performance and then determine the level of SCP. Unfortunately, most frameworks have relied on a questionnaire based on a five-point scale to measure the level of SCP. For instance, Lambert et al. (1996, p. 6) suggested a list of questions along with the five-point scale. A sample of these questions: “What is the probability that this relationship will substantially reduce channel costs or improve asset utilization?” That study did not fully explore the ways that in-depth evaluations considered multiple assessment dimensions, such as approaches used and improvement efforts. Similarly, Brinkerhoff (2002) explored ways to assess and improve partnership relationships and output. This study concludes that an assessment methodology should include the partner survey, partner interviews, and observation. There is little suggestion about the dimensions of assessment. We argue that such a narrow approach might miss some important point when evaluating and interpreting various aspects of SCP performance.

Another missing factor is that many researchers have made little attempt to develop important indicators to assess the SCP outcome (Beach et al., 2005). Even a few studies exploring indicators failed to maintain a balanced view between organizational efforts and performance, because the studies have concentrated on result-oriented evaluation (Brinkerhoff, 2002; Beach et al., 2005). Sharma and Bhagwat (2007), for example, pointed out that many companies fail to develop effective measures and metrics for maintaining an integrated supply chain management system. Similarly, Parung and Bititci (2006) proposed an assessment model concentrated on measuring participants’ contributions (e.g., physical, financial, organizational, and relational capital). Although this model contributes to identifying partner contributions, it pays little attention to assessing organizational outcomes. Similarly, Lambert et al. (1996) suggested a partnership model composed of drivers, facilitators, components, outcomes, and feedback. They contended that outcomes include profit enhancement, process improvements, increased competitive advantage, and outcomes specific to organizations’ motivations. They, however, rarely mentioned detail indicators to measure outcome. These missing points might result in achieving limited success against huge investments and efforts in supply chain companies. To add value to this research field, the research on the assessment framework should suggest guidelines to assess multiple aspects of SCP, to balance between efforts and performance, and to provide practical indicators to measure outcome. The main reason for this is that SCP is dynamic and related to all managerial aspects of participants.

The objective of this paper is to develop a framework for assessing the comprehensive performance of SCP. The framework is based on the self-assessment principles and approaches of the European Foundation for Quality Management (EFQM) business excellence model. This is because one of the important features of the EFQM model is to balance the view between management practices and performance. Unlike the EFQM model, it is difficult to find the feature in other quality models such as the Malcolm Baldrige National Quality Award (MBNQA) model and ISO 9000 quality management system standard (Oger and Platt, 2002). The EFQM model also provides three assessment dimensions for management practices (approach, deployment, and assessment/review) and three assessment dimensions for the results (targets, comparisons, and causes). Consistent with the views of Castka and colleagues (2003), we assert that implementing the EFQM model will help to improve missing information in the literature and provide...
Section 2 presents a literature review on the concept of SCP and the EFQM model. From the literature review, Section 3 describes features and components of our conceptual assessment framework. The final section offers conclusions and recommendations for further research.

**Literature Review**

This section briefly describes the two concepts germane to this study: SCP and the EFQM business excellence model.

**Supply Chain Partnership (SCP)**

Despite the important issues related to partnerships in the supply chain, there is no general agreement about how to define SCP (Lemke et al., 2003). Two streams of research draw on the interpretation of SCP: the relationship-oriented view and the objective-centered view. The relationship-oriented view defines SCP as the relationship itself without considering critical variables or drivers. Gunasekaran et al. (2004), for example, identified SCP as co-operative and more exclusive relationships among companies and their upstream suppliers and downstream customers. Similarly, Walton (1996, p. 57) described SCP in terms of “an area on the continuum of possible relationship styles between firms.” In a similar vein, Maloni and Benton (1997) identified SCP as a relationship formed between two independent companies in supply channels to accomplish specific objectives and benefits. Liu et al. (2006) defined SCP as a relationship formed among independent companies in the supply chain to accomplish specific goals and advantages as well as share potential risks. Underhill (1996, p 1) addressed SCP as “a joint effort by two or more companies linked together in the supply chain to reduce the total cost of acquisition, possession, and disposal of goods and services for the benefits of all parties”. We, however, contend that such a narrow definition has a limitation when managing the important impacts and factors of SCP. We believe that defining SCP should cover not only attributes but also the key objectives and results of SCP.

The objective-centered view stresses basic objectives and critical variables of SCP in terms of the management perspective. This definition addresses the following questions: (1) What performance could be realized through SCP? and (2) How do participants build SCP? Maheshwari et al. (2006), for example, defined SCP as a strategic alliance of participants in a supply chain to encourage joint effort and collaboration in core values. This definition has as its objective to increase mutual benefits by reducing the total cost of products and services. Similarly, Lambert et al. (2004) described SCP as a tailored business relationship based on mutual trust, openness, shared risk, and rewards to create business performance. Fiala (2005) identified SCP as cooperation and coordination of actions by changing the material, financial, and information flows among partners in the supply chain. Teece (1992) emphasized organizational commitment to the success of SCP by defining SCP as a collection of agreements typified by a commitment between two or more partner companies to reach a common objective that involves a pooling of resources and activities.

On the basis of the literature, we assert that a definition of SCP must include its objective and success factors for maintaining strong relationships among partners. In this paper, SCP is identified as a cooperative relationship to achieve business advantage and exclusive goals by paying attention to organizational commitment, coordination, senior manager leadership, trust, opened communication, conflict resolution techniques, and tangible or intangible resources in supply chains. In terms of the development stages of SCP, researchers have used different terms
For example, although many researchers agree that identifying strategic needs is the first stage, they have used different names for this stage, such as creating awareness and commitment (Motwani et al., 1998), laying a foundation (Maheshwari et al., 2006), preparation (Corbett et al., 1999), forming a list of potential suppliers (Lau et al., 2002), establishing strategic needs for partnership (Maloni and Benton, 1997), and investigating strategic needs for partnership (Liu et al., 2006). On the basis of the literature review, we define the lifecycle of SCP as the four stages: identifying strategic needs, assessing and selecting a partner, implementing a partnership, and reassessing and reshaping the partnership. Depending on partner objectives, mutual benefits, or other factors, the partnership could be maintained for a short time or on a permanent basis (see Figure 1).

**Figure 1**

Lifecycle of Supply Chain Partnership

The EFQM Business Excellence Model

The European Foundation for Quality Management (EFQM) business excellence model is a framework used to assess organizations for the European Quality Award. Its aim is to be the driving force for sustainable excellence through continuous improvement and deployment of processes (Evans and Lindsay, 2005). It is broadly acknowledged that the EFQM model could be effectively employed as a self-assessment tool for various purposes, such as performance management, teamwork development, and change management (Tari, 2006; Castka et al., 2003; Leonard, 1997). The EFQM model defines self-assessment as an organization’s comprehensive, systematic, and regular review of its activities and results (EFQM, 2003). The main advantage of using the EFQM model for self-assessment is to identify a comprehensive status by providing information on organizational strengths and areas for improvement (EFQM, 2003). Under senior manager support and systematic processes, the results of the self-assessment can drive organizations to continuously improve their weaknesses.

The EFQM model has several advantages for self-assessment that are different from traditional assessment models. It should be emphasized that these benefits allowed us to select this EFQM model in our paper. First, the EFQM model suggests critical management areas, namely nine criteria that increase organizational effectiveness and efficiency in terms of resources, activities, and performance (Figure 2). The usefulness of the nine criteria (e.g.,
leadership, people, and processes) has been verified by many private or public sector organizations since the 1980s (EFQM, 2003). Assessing the nine criteria covers main aspects of managing an organization. The organization can concentrate on capability in the key areas to improve their strategic goals and performance. Although the criteria are useful for general organizations, the nine criteria should be tailored to meet the specific goals and contexts of user companies. The second benefit is that the EFQM model is a non-prescriptive assessment tool. Using a few rules of the EFQM model, organizations can freely describe their activities, efforts, and performance. It means that the model enables the organizations to consider their own specific business circumstances and success criteria. Based on the non-prescriptive attribute, the EFQM model can be employed in various organizations to assess tangible and intangible performance. This feature also leads organizations to handle the self-assessment tool more effectively and practically. Third, the EFQM model enables organizations to balance their enablers and results. The model has a premise: excellent results (e.g., people results, customer results, society results, and key performance results) are accomplished through five enablers (leadership, people, policy and strategy, partnerships and resources, and processes). In this vein, the model allocates balanced scores of 50-50 to the two areas. This stimulates organizations to assign their efforts in the areas of the five enablers. The balanced notion of the EFQM model provides us with a wide view about performance that was rarely mentioned in existing SCP models.

The fourth advantage is that this model offers a practical assessment approach, namely RADAR, which is the heart of the EFQM model. RADAR consists of five elements: results, approach, deployment, assessment, and review. Assessors determine the percentages scores (e.g., 75 percent, 95 percent, and 100 percent) by evaluating the following dimensions of the elements (EFQM, 2003):

- **Results (R):** Organizations establish clear targets, assure the cause and effect link between approaches employed and the targets achieved, compare their results with those of competitors, and maintain positive trends in the good performance.
- **Approach (A):** Organizations employ sound approaches that have a clear rationale and that are delivered through defined processes. The approaches meet stakeholders’ needs and expectations. The approaches should be integrated with each other based on organizational policy and strategy.
- **Deployment (D):** The approaches should be implemented in a systematic way. The systematic implementation includes ways that organizations plan and employ approaches.
- **Assessment and Review (AR):** Organizations measure the performance on a regular basis. In terms of learning activities, they identify and share best practices and improvement opportunities. Output is analyzed to adapt to improvement activities.

Based on the four elements of RADAR, and their sub-dimensions, the EFQM model enables assessors to evaluate the performance objectively and scientifically. To reflect the features and relevant positive impacts, we use the EFQM model and the RADAR scoring dimensions in our assessment framework. The application of the EFQM model is customized in terms of the nature and context of partnerships in supply chains.
This section describes the proposed framework to assess the performance of SCP. It presents important features of the framework and ten criteria (seven enablers and three results) for assessing SCP.

Features of the Framework

First of all, based on assessment principles and approaches of the EFQM model, the framework has the following premise: higher levels of results in SCP are accomplished by organizational efforts. To assess performance of SCP, it is essential for companies to evaluate two areas – enablers and results – especially when it comes to reshaping their SCP in the sense of dissolving or strengthening it. The same scores of 50-50 are allocated to the enabler and result areas. Assessors evaluate evidence of organizational efforts or performance and then determine scores.

Second, the criteria of enablers are developed by considering specific natures of the supply chain: mutuality (Brinkerhoff, 2002), dynamic relations (Stuart, 1997), and joint planning and problem solving efforts (Maloni and Benton, 1997). For instance, the criteria (e.g., commitment, conflict resolution techniques, and coordination) are specific to the supply chain. Lambert et al. (1996) contended that the self-assessment of SCP should regard success factors as critical criteria. As a result, the criteria of the enablers include top management support, commitment, coordination, trust, communication, conflict resolution techniques, and resources. A list of the critical success factors, discussed in the literature, is presented in Table 1.
Third, the result criteria of the framework are divided into three sub-criteria (cost efficiency, output, and flexibility) that are representative of performance in supply chain management (Beamon, 1999). Consistent with the views of Beamon (1999), we believe that output (cost efficiency) in supply chains can moderate organizational outcomes (flexibility). Although most of the outcomes are intangible and difficult to measure, companies should measure and enhance the outcomes systematically. This argument is supported by Pike et al. (2005), who found that intangible outcomes are being considered as a key driver of innovation and a core value in a new economy. Despite the importance and impacts of the intangible outcomes, we found that the literature on SCP has rarely explored these. Figure 3 presents our assessment framework.

Table 1

Critical Success Factors in Supply Chain Partnership

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Assessment Framework

Figure 3
Critical Factors for Assessing SCP

**Leadership** at the senior level plays a significant role in improving the performance of SCP (Brinkerhoff, 2002; Lambert *et al*., 2004; Riggin *et al*., 1992; Archer and Cameron, 2005; Maloni and Benton, 1997; Maheshwari *et al*., 2006; Wong, 2001). Leadership is a driver to invest physical or financial capital; to change employee mindsets, organizational culture, and systems; to check evidences of effectiveness with partners; and to inspire effective partnerships. Much of the work on SCP supports the idea that leadership triggers other drivers and performance of SCP. Brinkerhoff (2002), for example, argued that senior management leadership influences partnership performance, both directly and indirectly. While the direct impact allocates financial or personnel resources and develops similar processes with partners, the indirect support symbolizes a company commitment that stimulates trust among partners. Similarly, Maheshwari *et al*. (2006) addressed the factors that leadership contributes to changing employee skepticism for closing the gaps in SCP. They contend that if leadership is absent, even strong or long-term partnerships could fail. Through the empirical study of 139 supplier managers, Wong (2001) discovered that leaders who have a cooperative view encourage their supply chain manager to pursue cooperative interactions with supply partners. The study also emphasized that leaders can change organizational culture by modifying organizational goals, values, and policies to enhance a firm’s partnerships. Based on the literature review and an assessment of the logic of the EFQM model, the criterion of leadership assesses how the managerial capabilities and commitment improve the quality and performance of partnerships. The leadership is assessed by responses to the following statements: (1) Our leaders support the strategy and values to support SCP, (2) Our leaders are personally involved in ensuring that the organization’s management system for SCP is developed, implemented, and continuously improved, and (3) The leaders of partner companies help to meet our expectations and are actively involved in strengthening partnerships. In particular, an assessor should check evidence (e.g., relevant policy, strategy, and activities) through a peer-review process and a screening process, such as a site visit.

**Commitment** is described as a partner’s willingness to continue their partnership (Mohr and Spekman, 1994; Cullen *et al*., 2000). Commitment is regarded as one of the key factors in SCP, because partnerships generally do not have any degree of shared ownership that is different from a joint venture (Lambert *et al*., 1996). Commitment also helps to avoid potential conflicts among partners. Partners struggle to improve mutual commitment to endure unanticipated problems and gain goals without raising skepticism in employees (Mohr and Spekman, 1994). According to Cullen and his colleagues (2000), commitment is built on either an instrumental or an attitudinal base. While the instrumental base aims to achieve economic rewards (e.g., improved benefits and reduced costs), the attitudinal form has an emotional or affective perspective because it assumes a position of status and importance. In terms of a symbol of commitment strength, higher levels of commitment are frequently expressed through different types of financial investments, the number of limited partners, or the number of projects. Whereas commitment commonly accompanies physical or financial investments, leadership is expressed by both intangible activities and physical investments. Many studies have found that there is a strong positive relationship between the commitment and performance of SCP (Perry and Sohal, 2001; Maheshwari *et al*., 2006; Archer and Cameron, 2005). Fuller and Vassie (2002), for instance, contend that effective partnerships depend on strong commitment to realize complementary but unique goals. Consistent with the findings of Corbett *et al*. (1999), we argue that long-term commitment enables partners to improve the confidence of their investment and the mutual advantages of SCP. Based on the literature review just cited, the criterion of commitment assesses how companies sustain partnerships. The level of commitment should be assessed by responses to the following statements: (1) Our organization wants to continue
working with the partner, (2) Our organization’s commitment is fully supported by partner strategic goals and values, and (3) Both partners are committed to building a strong partnership.

Coordination refers to a range of task definitions that a partner expects the other to perform (Mohr and Spekman, 1994). Identifying clear goals and tasks helps participants not only to concentrate on their own responsibility, but also to be more actively involved in the partnership. Moreover, coordination includes organizational efforts for partner compatibility by changing their processes, culture, and systems. Maloni and Benton (1997) argued that suppliers can achieve cost efficiency and high quality products through organizational coordination. Similarly, Fiala (2005) proposed that coordination and cooperation are the main components of the strategic partnership that change the physical, financial, and information flows among partners. In the same vein, Brinkerhoff (2002) argued that it is important to share clear goals and visions for the partnership in order to motivate partners. Lambert et al. (1996) noted that successful partnerships share compatible values because unmatched culture, systems, and business objectives could be obstacles to success. On the basis of the previous studies (e.g., Mohr and Speckman, 1994), the criterion of coordination assesses how a company clearly identifies its goals and tasks and modifies its systems, culture, and processes to be compatible with partners. The criterion of coordination could be assessed by responses to the following statements: (1) Our organization’s activities with partners are well coordinated, (2) Our organization’s goals and tasks are clearly identified, and (3) Both parties ensure that the changes of organizational systems, processes, and culture are compatible with partners.

It would be impossible to create excellent partnerships in a supply chain without trust that is composed of loyalty to each other, loyalty to the partnership, and a long-term focus on the benefits of the partnership (Lambert et al., 1996). According to Cullen and his colleagues (2000), trust refers to a belief that each partner will contribute equally to the SCP. Trust is also divided into credibility trust and benevolent trust. While the credibility trust is focused on practical confidence about whether a partner can really meet their obligations, the benevolent trust is a subjective belief that a partner will bring goodwill toward the partnership. The level of trust is built by analyzing partners’ current and potential capabilities (Brinkerhoff, 2002). Much of the work on SCP argues that trust is one of the most critical factors for the success of a partnership and just to make partnerships feasible (Mohr and Speckman, 1994). Fuller and Vassie (2002) suggested that effective partnerships can be established with high trust in order to harmonize the activities and goals of partnerships. Similarly, Suh and Kwon (2006) argued that trust is the activity for risk-taking since partners’ trust is highly related to specific asset investments. Wong et al. (2005) noted that trust, when focusing on continuous improvement, plays a crucial role in making SCP effective. It is widely acknowledged that a lack of mutual trust is a fatal factor that may dissolve an SCP (Hoyt and Huq, 2000; Liu et al., 2006). The criterion of trust assesses how a company effectively builds and maintains a trusting relationship with its partners. Trust is assessed by responses to the following statements: (1) Our organization believe that partners’ activities will be helpful to our business, (2) Our cooperative goals and activities are appropriate to improve trust, and (3) Both partners agree that the partnership will be beneficial to their business.

Communication is an essential component in successful partnerships, since it can assist participants in establishing the requirements of performance, adapt to changes in partners’ expectations, avoid potential conflicts, and reduce the level of uncertainty (Tuten and Urban, 2001; Kwon and Suh, 2005). In this aspect, many companies are trying to build an appropriate environment for opening communication. The environment, for example, can be created by installing an information system (Lau et al., 2002), adjusting cultural differences (Maheshwari et al., 2006), and providing a feedback process among participants (Motwani et al., 1998). Along
these lines, communication is assessed by multiple perspectives systematically. Mohr and Spekman (1994), for instance, argued that communication behavior should be evaluated by three aspects: the communication quality (e.g., accuracy, timeliness, and credibility), the extent of information sharing, and the participation in planning and goal setting. Lambert et al. (1996) considered communication to be a key component for successful partnerships; they also suggested that participants strongly emphasize communication on a day-to-day and a non-routine basis. The criterion of communication assesses how a company designs and manages its activities to improve communication with partners. Communication is assessed by responses to the following statements: (1) Our organization has systems or channels to improve communication with partners; (2) Our organization has integrative and reliable processes to communicate with partners; and (3) Both partners agree that communication will be helpful to improve the quality of partnerships.

Conflict is frequently observed in partnerships because partnerships are built among distinct companies that maintain their own characteristics. Although resolution techniques have been proposed to handle conflicts, one of the best ways to prevent conflicts is to understand the potential for conflicts and share information with partners periodically. The literature recommends that companies review whether a partner’s culture (Fuller and Vassie, 2002), history (Brinkerhoff, 2002), and strategy (Lau et al., 2002) is compatible with theirs. Some studies regard conflict as an ingrained power play: how power can be shaped among partners (Brinkerhoff, 2002). Much of the work on SCP, however, has focused on resolution techniques for potential and current conflicts. One possible approach is to depend on coercion, domination (Mohr and Spekman, 1994), and hierarchies (Maheshwari et al., 2006). This traditional approach, however, enables partners to have a negative impact, such as a decreased level of trust, communication, and commitment in the supply chain. On the other hand, the other approach engages in joint problem solving or mutual adjustment programs, creating integrated outcomes. This approach is made up of internal and external resolution (Mohr and Spekman, 1994). For long-term partnerships, it is desirable for companies to employ internal resolution, because this approach is more durable and effective than the external resolution approach. The criterion of conflict resolution techniques assesses how a company effectively manages and utilizes resolution techniques for conflicts. The criterion is assessed by responses to the following statements: (1) Our organization has techniques to solve conflicts with partners; (2) Our organization has integrative and reliable processes for implementing resolution techniques; and (3) Both partners agree that their resolution techniques will be helpful in solving conflicts.

Partner resource-oriented capabilities are regarded as a fundamental component for maintaining partnerships. Liu et al., (2006), for instance, argued that a partner’s resources and capabilities should be included in a set of selection criteria. Similarly, Lemke et al. (2003) suggested that, to maintain partnerships, participants in supply chains should ensure that they deliver their specialized roles, an excellent innovation capability, and sociability. In a similar vein, Stuart (1997) stated that many single companies try to make partnerships because they are aware of the limitations of technological complexity and uncertainty. Partner capabilities consist of physical or personnel investment, financial investment, and intangible investment (e.g., human capital, structural capital, and relational capital). The criterion of resources assesses how a company effectively invests and manages its resources. The criterion is assessed by responses to the following statements: (1) Our organization invests and shares resources with partners; (2) Our organization has integrative and reliable processes for managing resources; and (3) Both partners agree that their resources will be helpful in solving conflicts.

The last criterion, performance (results), assesses the results that have been achieved through an organization’s efforts (enablers). It is widely agreed that the results of SCP are
different from other types of partnerships since multiple players (e.g., supplier, manufacturer, distributor, and customer) stand to achieve mutual benefits and special goals. It is difficult to measure the multifaceted performance of SCP only from a single organization’s point of view (Parung and Bititci, 2006). Our framework employs a set of three sub-criteria (cost efficiency, output, and flexibility) proposed by Beamon (1999) to cover the characteristics of supply chains. According to Beamon (1999), the cost efficiency (e.g., total cost, distribution cost, and inventory cost) aims to minimize the resources, whereas output is related to customer responsiveness (e.g., customer satisfaction and product quality). Flexibility refers to the ability to react to a shifting environment. Consistent with the views of Duclos et al. (2003), the importance of flexibility is increased in an international, dynamic, and customer-driven environment. Customer demands, for example, include more variety, high quality, and lower price. The flexibility of supply chains should be assessed by using six components: operations system flexibility, market flexibility, logistics flexibility, supply flexibility, organizational flexibility, and information systems flexibility (Duclos et al., 2003). Examples of measures of results are described in Table 2. Selecting indicators depends on each partner’s strategic goals and contexts. The criterion is assessed by responses to the following statements: (1) Our organization’s key financial and non-financial outcomes show in meeting targets; (2) Our organization’s key financial and non-financial outcomes have results that are comparable with competitors; (3) Both partners significantly contribute to key financial and non-financial outcomes.

Table 2

Example Measures for Assessing Results

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<td>Operations system flexibility (the ability to</td>
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<td>(total revenue less expenses), Full</td>
<td>configure assets and operations), Market</td>
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<td>inventory obsolescence, work-in-process, finished</td>
<td>rate (target fill rate achievement,</td>
<td>flexibility (the ability to mass customize and</td>
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<td>build close relationship with customers), Logistics flexibility (the ability to cost</td>
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<td>deliveries (product lateness,</td>
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<td>average lateness, average earliness of orders, percent of on-time deliveries),</td>
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<td></td>
<td>Backorder/stockout (stockout</td>
<td></td>
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<tr>
<td></td>
<td>probability, number of backorders,</td>
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<tr>
<td></td>
<td>number of stockouts, average</td>
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</tr>
<tr>
<td></td>
<td>backorder level), Customer response time,</td>
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<tr>
<td></td>
<td>Manufacturing lead time, Shipping</td>
<td></td>
</tr>
<tr>
<td></td>
<td>errors, and Customer complaints</td>
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</tbody>
</table>

Adapted from Beamon (1999) and Duclos et al. (2003)

Assessment Dimensions

Figures 4 and 5 depict assessment dimensions for enablers and results. The enabler part is, for example, assessed with three dimensions: approach (sound and integrated), deployment (implemented and systematic), and assessment and review (measurement, learning, and improvement). The result part is, on the other hand, evaluated with three dimensions: target, comparisons, and causes. On the basis of the dimensions and observed facts, assessors determine scores for the enabler area: no evidence or temporary case (0, 5, or 10 marks), some evidence (15, 20, 25, 30, or 35 marks), evidence (40, 45, 50, 55, or 60 marks), clear evidence (65, 70, 75, 80, or 85 marks), and comprehensive evidence (90, 95, or 100 marks). The result area is scored by the
following criteria: no results or temporary information (0, 5, or 10 marks), achieved and appropriate for about a quarter of the results (15, 20, 25, 30, or 35 marks), achieved and appropriate for about half of the results (40, 45, 50, 55, or 60 marks), achieved and appropriate for about three-quarters of the results (65, 70, 75, 80, or 85 marks), and achieved and appropriate for all results (90, 95, or 100 marks). Although the EFQM model encourages companies to use a weight structure, we argue that the deciding weights of each criterion (e.g., leadership and commitment) should be based on an organization’s specific objectives or contexts. This is because building or terminating a partnership is significantly related to partner objectives or contexts. It will be beneficial for trained assessors to use the dimensions because the dimensions offer standardized information about the aspects that should be evaluated and help to begin assessing a level of SCP. The dimensions also provide companies with a guideline about how to identify strengths and opportunities for improvement and how to successfully develop a well-structured partnership.

Figure 4

Assessment Dimensions for Enablers

Adapted from EFQM (2003)
Conclusion

Building a strong supply chain partnership (SCP) is an essential organizational activity because it helps companies overcome their restricted capabilities by leveraging the unique competitive factors of partners. Assessing the level of SCP is the starting point to identify strengths and opportunities for improvement. It is important for companies to employ an appropriate assessment framework to achieve several of the advantages of SCP (e.g., reduced cost, improved product quality, and increased information sharing). Considering this background, this paper aims to propose a framework to assess the level of SCP. On the basis of an extensive literature review, we provide the balanced framework between enablers and results. Assessing both areas will offer practitioners both balanced insights and valuable information. Furthermore, this paper discusses assessment dimensions that could help assessors to produce consistent judgments and evaluate multiple aspects of SCP. It is not our intention to provide a solid framework, but instead to use this framework as one of the management tools not only to improve the effectiveness of organizational efforts, but also to lead strategic decision-making related to SCP.

This research contributes to the literature and practices in the following ways. First, this paper sheds light on the assessment dimensions based on the EFQM model. Assessors could conduct an objective and standardized assessment with the multiple dimensions. The framework also offers a scoring structure. Although many companies keep the score confidential, we believe that scoring can be useful internally when motivating employees or partners to improve the performance of SCP. Second, this paper expands the traditional concept of SCP performance into both tangible and intangible performance by highlighting output (e.g., cost efficiency) and outcome (e.g., flexibility). Researchers have focused on output-oriented performance, such as price, delivery, and quality (Lemke et al., 2003). It is our contention that a comprehensive management of performance is one of the ways to understand the invisible roles and impacts of SCP.
We, however, admit several limitations of this research. First of all, the major limitation of this study was to structure the framework based on the literature review and our practical experiences in employing the EFQM model in organizations. Although the framework is developed through an in-depth conceptual analysis, the effectiveness of the framework should be empirically tested in different types of supply chains. Another drawback of this study is the method of selection for enabler criteria. The selected criteria are success factors that were confirmed in the literature. A number of other criteria, however, might influence the performance of SCP in different contexts and objectives. Exploring other success factors is necessary to identify a solid relationship between criteria for establishing and performance of SCP. The last limitation is a lack of consideration of relative weights among criteria in analyzing the enablers and results. The causality of the framework exists and interacts between the criteria of enablers and results. It is possible to examine the weight structure of the framework through empirical study. Although these are limitations of this paper, we hope that the proposed framework will present possible points of departure for further study leading to divergent and in-depth research.

Appendix 1

Development Stages of SCP

<table>
<thead>
<tr>
<th>Stages</th>
<th>Similar stages identified in the literature</th>
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</thead>
<tbody>
<tr>
<td>Identifying strategic needs</td>
<td>Creating awareness and commitment (Motwani et al., 1998), Laying a foundation (Maheshwari et al., 2006), Preparation (Corbett, 1999), Forming a list of potential suppliers (Lau et al., 2002), Establishing strategic needs for partnership (Maloni and Benton, 1997), and Investigating strategic needs for partnership (Liu et al., 2006)</td>
</tr>
<tr>
<td>Assessing and selecting a partner</td>
<td>Searching and selecting (Motwani et al., 1998), Selecting suppliers with similar SCP strategy (Lau et al., 2002), Developing partner criteria, evaluating suppliers, and selecting partner (Maloni and Benton, 1997), and Developing partner criteria, hunting for potential suppliers, and pre-selecting and evaluating candidate suppliers (Liu et al., 2006)</td>
</tr>
<tr>
<td>Implementing a partnership</td>
<td>Managing partnership operations (Riggin et al., 1992), Implementing (Motwani et al., 1998; Corbett, 1999), and Establishing the formal partnership (Liu et al., 2006)</td>
</tr>
<tr>
<td>Reassessing and reshaping the partnership</td>
<td>Measuring outcomes (Lambert et al., 2004), Evaluating (Motwani et al., 1998), Monitoring and evaluating (Lau et al., 2002), and Maintaining and refining partnership (Maloni and Benton, 1997)</td>
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</table>
References


