

**INTELLIGENCE APPLICATIONS
IN THE SUPPLY CHAIN-TO-MARKET CONTINUUM: A MODEL**

by

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Abstract

Purpose – The application of Market Intelligence (MI) is presented to provide assessment for the supply chain-to-market (SCTM) continuum. The purpose of this paper is to examine the Supply Chain-to-Market (SCTM) process and the implications of market intelligence (market research and competitive intelligence) to assess and formulate competitive SCTM processes.

Design/methodology/approach – From examination of the involved issues, a six-stage model of the SCTM process emerged and the impact of both market research and competitive intelligence is assessed. The model aids in determining customer satisfaction expectations and formulating satisfaction metrics (by which one can measure the achievement of those expectations by the firm, suppliers, competitors, and customers).

Findings – A model is proposed consisting of six distinct stages for SCTM process formulation. Additionally, the direction contribution of both components of market intelligence are identified and examined in depth.

Research limitations/implications –Further research is identified to propose hypotheses and provide empirical evidence supporting the model.

Practical Implications - A comprehensive conceptual model is presented which aids marketing managers in applying marketing intelligence processes in order to understand and improve their SCTM and go-to-market strategies. As satisfaction metrics are established, a constant evaluation process can be defined which then can re-assess customer satisfaction expectations in order to maintain the firm's SCTM competitiveness.

Originality/value – This paper proposes unique theory in an effort to better understand how market intelligence efforts help devise and refine successful SCTM competitive strategies.

KEYWORDS: Market Intelligence, Competitive intelligence, Marketing Strategy, Supply Chain

Paper type Conceptual paper

INTELLIGENCE APPLICATIONS IN THE SUPPLY CHAIN-TO-MARKET CONTINUUM: A MODEL

Overall, 20% of today's companies are doing most things right; another 30% are stumbling along; and the other 50% are destined to fold their tents during the 21st century.

Roger D. Blackwell

Today's pressures of globalization, technological change, and demanding customers contribute to make corporate mediocrity an endangered species. Additionally, customer expectations insist that company performance be raised all along the supply chain to market (SCTM) continuum. Thus, managers must find ways to meet the real needs of customers more efficiently and effectively than their (global) competitors. In this quest, many managers have turned to supply-chain management as a potential competitive weapon (Sheremetov and Rocha-Mier, 2008). The essence of SCTM is to align objectives and integrate resources across company boundaries so that an organization collaborates with both suppliers and customers in order to deliver superior value to the supply chain's end customer (Ballou *et al*, 2000; Lambert *et al*, 1998; Poirier, 1999). Fugate *et al* (2008) point out that logistics and supply chain are crucial contributors to a firm's market orientation. Supply chain mastery is critical for the success of all ebusiness and ecommerce ventures (Rowley, 2002).

SCTM emerged as a realistic competitive option when managers realized that their companies often lacked the resources and competencies needed to beat the competition and satisfy key customers (Fine, 1998; Tyndall *et al*, 1998). This led them to look as to how the resources of suppliers and customers could be used to create exceptional value (Blackwell, 1997; Christopher and Ryals, 1999; Dell and Fredman, 1999). Management's vision of SCTM integration leverages strategic alliances to bridge the gaps between companies so that they can work together as if they were a single, seamless organization. In such a world, competition is no longer company versus company but supply chain versus supply chain.

Two distinct issues must be managed well for a SCTM process to attain world-class performance. One, the SCTM must be designed so that participants fulfill the right roles and responsibilities and, two, collaboration among the partners must be enhanced to assure efficient and synchronized value creation. To accomplish these two tasks, a rather radical shift in mindset is required and a new set of managerial skills must be developed. To facilitate this learning and to enable excellent execution of strategic and operational decisions, managers must collect and analyze a

vast amount of information, much of which has not traditionally been viewed as critical to organizational success (Lau *et al*, 2009). When the appropriate and applicable information is collected and analyzed, the challenges inherent in designing and integrating the SCTM process are greatly mitigated. This is the role and opportunity of Market Intelligence (Market Research and Competitive Intelligence)- to collect and make sense of disparate information so that a SCTM process can be designed and managed for customer satisfaction and competitive success.

A Conceptual Framework

Supply Chain to Marketing (SCTM) management is the collaborative effort of multiple channel members to design, implement, and manage seamless value-added processes to satisfy and anticipate the needs of the end customer. The development and integration of people and technological resources as well as the coordinated management of materials, information, and product flows underlie successful SCTM integration.

SCTM is enabled by advanced information technologies as well as rapid and responsive logistics and it is generally associated with supplier partnerships and customer relationship management. Managers often quote the familiar mantra of “suppliers’ suppliers to customers’ customer” as their definition of (Elliff, 1996). Even so, few companies are actually engaged in such extensive SCTM integration (Akkermans *et al*, 1999; Kilpatrick and Factor, 2000; Whipple *et al*, 1999), have adopted and disseminated a formal definition (Fawcett and Magnan, 2001), or have carefully mapped out their SCTM so that they know or understand their suppliers’ suppliers or customers’ customers.

From Fawcett and Magnan (2001) a six-stage process by which managers can formulate the entire SCTM process has been adapted. When implementing a supply-chain strategy, managers tend to rely either on compartmentalized integration programs (ERP, CPFR, VMR, etc.) or on *ad hoc* approaches to achieving the conceptual ideal of seamless value-added processes. Such approaches fail to provide the vision and understanding needed to build an integrated SCTM process that is focused on meeting customers’ real needs. The proposed framework provides guidance for managers to use during SCTM leadership while highlighting the informational needs of a competitive process.

Take in Table 1. about here
Supply Chain Integration Framework

Stage 1: Develop an Overall Understanding of the SCTM

The first step in building a cohesive SCTM team is to create a visual image of a company's most important SCTM linkages via "supplier to customer" mapping (Koh and Tan, 2006). Managers need to know who the major players are in the chain, what role they play, and the actual and perceived value they add. Once the supply chain is mapped in some detail, three critical questions need to be addressed. One is "What is the overall value proposition of the SCTM chain?" That is, the sets of satisfactions delivered to the ultimate customer. The second is "What are the value propositions and critical success factors for each SCTM level/player?" And the third is, "Where are leverage and profitability located within the SCTM process?"

Stage 2: Position the Organization within the SCTM

Having mapped the SCTM linkages, managers are prepared to re-evaluate their organization's value proposition from a SCTM perspective (Day, 1993). Simply stated, is there a good fit between the value the company promises to deliver and the value that is actually required by the supply chain? If the fit is questionable, a serious evaluation of the company's participation in the supply chain should be undertaken. This will aid in determining whether the company really can deliver on the required value proposition by the customer. This will reveal whether the company is trying to participate in the wrong SCTM process or if there are more appropriate SCTM linkages. The critical issue at this stage is to clearly identify and define the organization's core competencies that support the chosen value proposition. Likewise, the specific value-added processes needed to support and augment the core competencies must be defined and designed for maximum effectiveness. When this is done, outsourcing decisions and role-shifting strategies can be more accurately assessed.

Stage 3: Build the Supply Chain Infrastructure needed for Success

SCTM success depends on the infrastructure that is put in place. Building a customer success infrastructure is vital, and is done by classifying customers based on their relative importance to the company's current and long-term success. Aligning the company's core competencies with its most important customers' critical success factors is vital to achieving meaningful supply chain integration. An important caveat arises from the experience of the past several years. In their quest to become "suppliers of choice" and create a lock in customer loyalty, some companies have delivered outstanding product/service packages at incredibly low prices only to find out later that they were doing so at a loss. For this reason, it is important to measure customer profitability. If a company has an outstanding value

proposition and is operationally excellent, it will be able to convince its customers to pay a fair, profitable price.

Managers should consider the lifetime profit potential of customers as it performs this analysis (Fugate *et al*, 2008).

Stage 4: Create and Communicate a Common Supply-Chain Vision

SCTM alignment begins with the creation of a common vision and a shared mission. To be effective, vision statements should directly influence the company's most important supply-chain policies and procedures. This linkage to day-to-day decisions creates tangibility and understanding. A senior-level steering committee should help develop the vision and promote it within the organization. Management and employees at all levels should understand the supply-chain vision as well as what it means for them. Only then can they comfortably support the SCTM strategy. After garnering internal support, the challenge is to share the vision with key SCTM partners (Handfield *et al*, 2009).

Stage 5: Cultivate Integrative Mechanisms

The first four stages of the SCTM framework focus on the design of a competitive supply chain. Stage five shifts the emphasis to managing for effective collaboration and begins with an effort to identify internal and external barriers to cooperation. Steering committees and advisory boards play a crucial and invaluable role in this effort since a consensus is required. Once problem areas have been discovered and opportunities for improvement defined, specific programs or initiatives must be prioritized. Pilot projects can be carried out in any of the six integrative areas; however, a balanced approach should be pursued (Handfield *et al*, 2009)..

Stage 6: Evaluate and Continuously Improve

To keep pace with a rapidly changing global marketplace where competition promises to intensify from already fierce levels, SCTM processes must be dynamic and flexible. Benchmarking efforts should also be used to keep the company at the cutting edge of supply-chain practice (Lau *et al*, 2005; Sahay and Ranjan, 2008). Serious benchmarking companies compare themselves against leading competitors, best-in-class performers, and the needs of demanding customers. Successful companies use the scanning and benchmarking process to help managers 1) grasp the ramifications of constantly changing consumer and supply environments, 2) recognize channel alternatives, 3) assess a wide range of tradeoffs, and 4) balance both the short- and long-term requirements of the organization. With the understanding that comes from these rigorous learning efforts, companies can position

themselves for success even as the supply chain in which they compete evolves. They are also well positioned to avoid the threat of disintermediation while leveraging opportunities to insinuate themselves more fully into the chain's critical value-added processes.

To summarize, the integrative supply-chain framework discussed above emphasizes supply-chain level planning and constant scanning. Planning begins with mapping, continues with positioning, and culminates with communicating the vision and the direction. Planning creates understanding, gets everyone on the same page, and directs resource utilization in a way that mitigates threats and capitalizes on opportunities. Scanning identifies the barriers and the opportunities for improved integration. Scanning likewise is vital for supply chain managers to understand evolving competitive, industry, and market environments. In short, companies must plan and scan in order to continuously select and build the right competitive capabilities and establish the most creative and productive relationships. Because this endeavor is the essence of strategy—and strategic SCTM can help an organization survive and prosper in an ever-changing world—obtaining and making sense of the information needed at each step of the supply-chain process is a critical activity. Developing a strong and supportive competitive intelligence capability is a prerequisite to delivering customer satisfaction via SCTM.

Within each of the stages, there is a need for managerial decision support information. Traditional market research provides much of the understanding about the customers and their expectations of quality. Through surveys, focus groups and personal interview techniques, researchers provide management with critical insight into customer expectations concerning product quality, delivery quality, “met-needs” levels, and potential relationships.

What is a Market Intelligence Capability?

Market Intelligence (MI) is the coordinated and complimentary usage of both Market Research (MR) and Competitive Intelligence (CI) resources. The application of market research to assess customer satisfaction is well documented and is an accepted practice. It is believed that MR is necessary but not sufficient to provide all the information and intelligence that is required for supply chain decisions regarding improving satisfaction (Dishman and Calof, 2008). However, traditional market research techniques may be somewhat myopic in their approach to provide actionable intelligence. It has been proposed by Dutka (1998) that integrating customer satisfaction research and competitive intelligence maximizes the benefits of the two methodologies.

The CI component of Market Intelligence has its roots in environmental scanning (Aguilar, 1967; Fahey and King, 1977; Hambrick, 1982, Saxby *et al.*, 2002), market and competitive signaling (Ansoff, 1979; Eliashberg and Robertson, 1988; Smith *et al.*, 1989; Heil and Robertson, 1991; Smith and Grimm, 1991), market intelligence (Guyton, 1962; Pinkerton, 1969; Chonko *et al.*, 1991), and strategic planning (Ansoff, 1979; Porter, 1980). CI is also the process of acquiring intelligence about all the various environments in which the firm operates as well as about customers, suppliers, and potential business relationship partners (Guyton, 1962; Fair, 1966; Grabowski, 1987; Gilad 1989). Thus, CI has many applications in the management of the firm's SCTM process. In an industry study assessing how firms utilize CI, the top seven applications had to do with some aspect of SCTM management (Sawka *et al.*, 1995).

Traditional market research techniques tend to focus on the assessment of customer preferences or desires regarding products, services, or corollary offerings. Assessing actual or anticipated satisfaction is one part of this process. Customer focus groups or surveys might be administered to ascertain opinions about how satisfied customers are regarding product quality, delivery, installation, customer support, dealer relations, financing, advertising, marketing materials, sell-through support, etc. Customers may even be asked to rank the firm's offerings vis-à-vis other competitors' offerings. These studies provide a wealth of intelligence concerning the customers' attitude about the offerings of the firm.

However, what is missing is critical information concerning the actions (and possible potential actions) of competitors in the market place, apart from the customers' opinion of them. In addition to which, it is vital that firms have intelligence on the actions of the suppliers to the firm. (This is especially true when the industry structure provides for only a few suppliers.) Therefore, CI is a critical component of the information process of the firm. Only through the techniques provided by CI can the firm fully understand what your suppliers are capable of, what you are capable of, and what your competitors are capable of accomplishing.

Take in Figure 2. about here
Contribution of CI and MR in SCTM

Because CI is an important part of gathering and analyzing information concerning the competitive nature of SCTM, we are proposing a model that defines the contribution of MI to the assessment of SCTM.

Contribution of CI to SCTM

Management can utilize MR to determine customer expectations of the Supply Chain value proposition (Day, 1993). MR is used to determine the Key Success Factors required to meet those customer expectations. These might include issues related to the product-service continuum, delivery of products or services, necessary corollary support functions, brand image, channel management, or the sales structure. MR also provides an assessment of customer expectations concerning important criteria related to the relationship that they desire with the SCTM firm. This assessment is functionally dependent on the role that the customer plays within the SCTM process, either as end-use customer or as intermediary. End-use customers will possess an expectation set which is different than that of an intermediary customer.

Management uses MR findings to determine their customers of choice. These are determined by measures of sales levels, expectation levels, or availability levels. From the MR findings, the firm determines appropriate target segments for the SCTM value proposition. The MR process provides much of the needed understanding of customer expectations of quality, but it is not sufficient in providing all the information that is needed to understand the entire quality construct in the SCTM process. Information concerning the competitive environment and how well customer needs are being satisfied are also required if the firm is to fully comprehend their service and competitive challenges (Day, 1993).

CI contributes where MR ends. Whereas, MR traditionally utilizes collection techniques such as surveys, focus groups, and personal interviews, CI typically collects information from open source documentation, secondary research, observation, and human intelligence. MR surveys customers to determine satisfaction with a product or uncover unknown benefits that the product may provide. On the other hand, CI performs reverse engineering on that product to determine cost structure and provides insight into competitors' manufacturing capabilities and processes. CI provides assessment as to the competitors' marketing, sales, and distribution strengths and weaknesses. Thus, MR and CI are both required (and neither alone sufficient) to provide management with the entire scope of the satisfaction and expectation construct within the SCTM process (Sahay and Ranjan, 2008).

The constructs, which MI can provide an assessment of, include competitors' capabilities, profitability, processes, technologies, and strategies. MI determine who the competitors are, both close competitors as well as distant competitors, that might provide the highest probability of business disruption. MR provides an assessment of customer and prospects' perception of how well a firm's competitors are executing their SCTM value proposition.

CI is utilized to determine competitors' Key Success Factors in offering their SCTM value proposition. Through product and cost analysis, CI determines the competitors' cost and profitability at each level of the SCTM process. Additionally, this analysis should also aid in identifying competitors' value-added processes and technologies that provide competitive advantage. Through competitive analysis, the firm can determine and possibly predict competitors' future strategy, thereby formulating their own strategy. CI also aids in identifying competitors core competencies that would be leveraged for future strategy formulation (Dishman and Calof 2008).

Using the same techniques that are utilized in collecting and analyzing information about competitors, MI can assess suppliers, customers and firms that they desire to have a relationship. Thus, MI can measure customer and supplier costs and profitability. It can determine and assess technologies and processes. MI may determine "up-chain" effects and issues with suppliers as well as "down-chain" effects with customers and prospects. Additionally, MI may uncover a potential partner or acquisition target and be also used to assess the benefits of a licensing or venture relationship. Lastly, MI is used to identify benchmarking metrics by which the firm can improve its processes. Thus, MR and CI join together for market and customer segmentation as well as customer classification.

From a complete understanding of the existing or potential SCTM process and the competitive environment in which it must exist, one can establish a competitive SCTM process that will, in turn, achieve the desired customer satisfaction end-state. Because satisfaction metrics were established, a constant evaluation process can be defined which then can re-assess customer satisfaction expectations in order to maintain the firm's SCTM competitiveness with improved customer satisfaction.

It is imperative for the firm to understand customer expectations and establish satisfaction metrics. With customer "expectation creep" a significant factor in today's market, a firm must not only meet, and now exceed, customer expectations, but also identify and anticipate them before their competitors do. The firm that aligns their intelligence capabilities toward an organization that learns this expectation anticipation process better than their rivals will master the marketing and supply chain delivery system of the future (Raisinghani and Meade 2005).

Suggested Further Research

The authors have proposed a model whereby assessment in supply chain management consists of two, complimentary and required, components: traditional market research and the newer application of competitive intelligence. Needed now are descriptive studies documenting the usage of MI in SCTM and further illuminating the proposed model. We are suggesting that the anecdotal evidence about the use of MI in SCTM be revisited and descriptive factors might be determined through further study. There may be factors that are unique to SCTM with regard to customer and intermediary satisfaction. These need to be studied in light of general satisfaction models. Additionally, further studies are required, which assess the contribution of satisfaction factors within initiation of the SCTM process. Such studies may further determine factors that may be unique to SCTM with regard to customer satisfaction as well as establish any limitations of MI to satisfaction research within SCTM. Already there are indications that there are limitations to applying MI to satisfaction research within SCTM including bounded information sourcing (Fuld 1995) and blind spots to internal analysis (Gilad 1994). Further limitation may be uncovered through more extensive and various research methodologies.

Finally, a general proposed model that incorporates the application of MI into SCTM strategy formulation is required as well as refining the understanding of the contribution of satisfaction to the success of a SCTM process is called for.

References

- Aguilar, F. J. (1967), *Scanning the Business Environment*, Macmillan, New York, NY.
- Akkermans, H., Bogerd, P. and Vos, B. (1999), "Virtuous and vicious cycles on the road towards international supply chain management", *International Journal of Operations & Production Management*, Vol. 19 No. 5/6, pp. 565-581.
- Ansoff, I. (1979), "Managing strategic surprise by response to weak signals", *California Management Review*, Vol. 18 No. 2, pp. 21-33.
- Ballou, R., Stephen, M. and Mukherjee, A. (2000), "New managerial challenges from supply chain opportunities", *Industrial Marketing Management*, Vol. 29 No. 1, pp. 7-18.
- Blackwell, R. D. (1997), *From Mind to Market: Reinventing the Retail Supply Chain*, HarperBusiness, New York, NY.
- Chonko, L. B., Tanner, J. F. and Smith, E. R. (1991), "Selling and sales management in action: The sales force's role in international marketing research and marketing information systems", *Journal of Personal Selling & Sales Management*, Vol. 11 No. 1, pp. 69-70.
- Christopher, M. and Ryals, L. (1999), "Supply chain strategy: Its impact on shareholder value", *International Journal of Logistics Management*, Vol. 10 No. 1, pp. 1-10.
- Dell, M. and Fredman, C. (1999), *Direct from Dell: Strategies that Revolutionized an Industry*, HarperBusiness, New York, NY.
- Day, A. (1993), "Logistics information management," *Marketing Intelligence and Planning*; Vol. 11 No. 6, pp. 16-19.
- Dishman, P. and Calof, J. (2008), "Competitive Intelligence: A multi-phasic precedent to marketing strategy," *European Journal of Marketing*, Vol. 42, No. 7/8, pp. 766-785.
- Dutka, A. (1998), *Competitive Intelligence for the Competitive Edge*, NTC Business Books, Chicago, IL.
- Eliashberg, J. and Robertson, T. S. (1998), "New product preannouncing behavior: A market signaling study", *Journal of Marketing Research*, Vol. 25, pp. 288-292.
- Elliff, S. A. (1996), "Supply chain management-new frontier", *Traffic World*, October 21, 55.
- Fahey, L. and King, W. R. (1977), "Environmental scanning for corporate planning", *Business Horizons*, Vol. 20 No. 4, pp. 61-71.
- Fair, W. (1966), "The corporate CIA – a prediction of things to come", *Management Science*, Vol. 12 No. 10, pp. B489-503.
- Fawcett, S. E. and Magnan, G. N. (2001), *Achieving World-Class Supply Chain Alignment: Benefits, Barriers, and Bridges*, Center for Advanced Purchasing Studies, Phoenix, AZ.
- Fine, C. H. *Clockspeed: Winning Industry Control in the Age of Temporary Advantage*, Perseus Publishing, Reading, MA, 1999.
- Fugate B. S, Mentzer, J.T. and Flint, D.J. (2008), "The role of logistics in market orientation," *Journal of Business Logistics*, Vol. 29 No. 2, pp. 1-26.

- Fuld, L. (1995), *The New Competitor Intelligence: The Complete Resource for Finding, Analyzing, and Using Information About Your Competitors*, John Wiley & Sons, New York, NY.
- Gilad, B. (1994), *Business Blindspots: Replacing Your Company's Entrenched and Outdated Myths, Beliefs and Assumptions with the Realities of Today's Markets*, Probus Professional Publications, Chicago, IL.
- Gilad, B. (1989), "The role of organized competitive intelligence in corporate strategy", *Columbia Journal of World Business*, Vol. 24 No. 4, pp. 29-36.
- Grabowski, D. P. (1987), "Building an effective competitive intelligence system", *Journal of Business and Industrial Marketing*, Vol. 2 No. 1, pp. 39-44.
- Guyton, W. (1962), "A guide to gathering marketing intelligence", *Industrial Marketing Management*, March, pp. 84-88.
- Hambrick, D. C. (1982), "Environmental scanning and organizational strategy", *Sloan Management Review*, Vol. 3, pp. 159-174.
- Handfield, R., Peterson, K., Cousins, P., and Lawson, B. (2009), "An organizational entrepreneurship model of supply management integration and performance outcomes," *International Journal of Operations and Production Management*, Vol. 29 No. 2, pp. 100-126.
- Heil, O. and Robertson, T. S. (1991), "Toward a theory of competitive market signaling: A research agenda", *Strategic Management Journal*, Vol. 12 No. 6, pp. 403-408.
- Kilpatrick, J. and Factor, R. (2000), "Logistics in Canada survey: Tracking year 2000 supply chain issues and trends", *Materials Management and Distribution*, Vol. 45 No. 1, pp. 16-20.
- Koh, S.C.L. and Tan, K.H. (2006), "Operational intelligence discovery and knowledge-mapping approach in a supply network with uncertainty," *Journal of Manufacturing Technology Management*, Vol. 17 No. 6, pp. 687-699.
- Lambert, D. M., Cooper, M. C. and Pagh, J. D. (1998), "Supply chain management: implementation issues and research opportunities", *International Journal of Logistics Management*, Vol. 9 No. 2, pp. 1-19.
- Lau, H.C.W., Ning, A., Pun, K.F., Chin, K.S., Ip, W.H. (2009), "A knowledge-based system to support procurement decision," *Journal of Knowledge Management*; Vol. 9 No. 1; pp. 87-100.
- Nitse, P., Parker K., and Dishman P. (2003), "Multi-class Interest Profile: Applications in the Intelligence Process," *Marketing Intelligence and Planning*, Vol. 21 No. 5, pp. 263-271.
- Pinkerton, F. (1969), "How to develop marketing intelligence system", (five articles), *Industrial Marketing*, Vol. 5 No. 4-8, various.
- Poirier, C. (1999), *Advanced Supply Chain Management: How to Build a Sustained Competitive Advantage*, Berrett-Koehler Publishers, San Francisco, CA.
- Porter, M. (1980), *Competitive Strategy*, Free Press, New York, NY.
- Raisinghani, S. and Meade, L.L. (2005), "Strategic decisions in supply-chain intelligence using knowledge management: an analytical-network-process framework," *Supply Chain Management*; Vol. 10 No. 2, pp. 114-121.
- Rowley, J. (2002), "Synergy and strategy in e-business," *Marketing Intelligence and Planning*, Vol. 20 No. 4/5, pp. 215-222.

- Sahay, B.S. and Ranjan, J. (2008), "Real time business intelligence in supply chain analytics," *Information Management and Computer Security*, Vol. 16 No. 1, pp. 28-48.
- Sawka, K., Francis, D. B. and Herring, J. (1995), "Evaluating business intelligence systems: How does your company rate?," *Competitive Intelligence Review*, Vol. 6 No. 4, pp. 22-25.
- Saxby, C., Parker, K., Nitse, P. and Dishman P. (2002), "Environmental scanning and organizational culture," *Marketing Intelligence and Planning*, Vol. 20, No. 1, pp. 28-34.
- Sheremetov, L. and Rocha-Mier, L. (2008), "Supply chain network optimization based on collective intelligence and agent technologies," *Human Systems Management*, Vol. 27, pp. 31-47.
- Smith, K. G. and Grimm, C. M. (1991), "A communication-information model of competitive response", *Journal of Management*, Vol. 17 No. 1, pp. 5-23.
- Smith, K. G., Grimm, C.M. and Gannon, M. J. (1989), "Predictors of competitive strategic actions: Theory and preliminary evidence", *Journal of Business Research*, Vol. 18, pp. 245-258.
- Tyndall, G. R., Gopal, C., Partsch, W. and Kamauff, G. W. (1998), *Supercharging Supply Chains: New Ways to Increase Value Through Global Operational Excellence*, John Wiley & Sons, New York, NY.
- Whipple, J. S., Frankel, R. and Anselmi, D. (1999), "The effect of governance structure on performance: A case study of efficient consumer response", *Journal of Business Logistics*, Vol. 20 No. 2, pp. 43-62.

Figure 1.
Supply Chain to Market (SCTM) Integration Framework

Stage

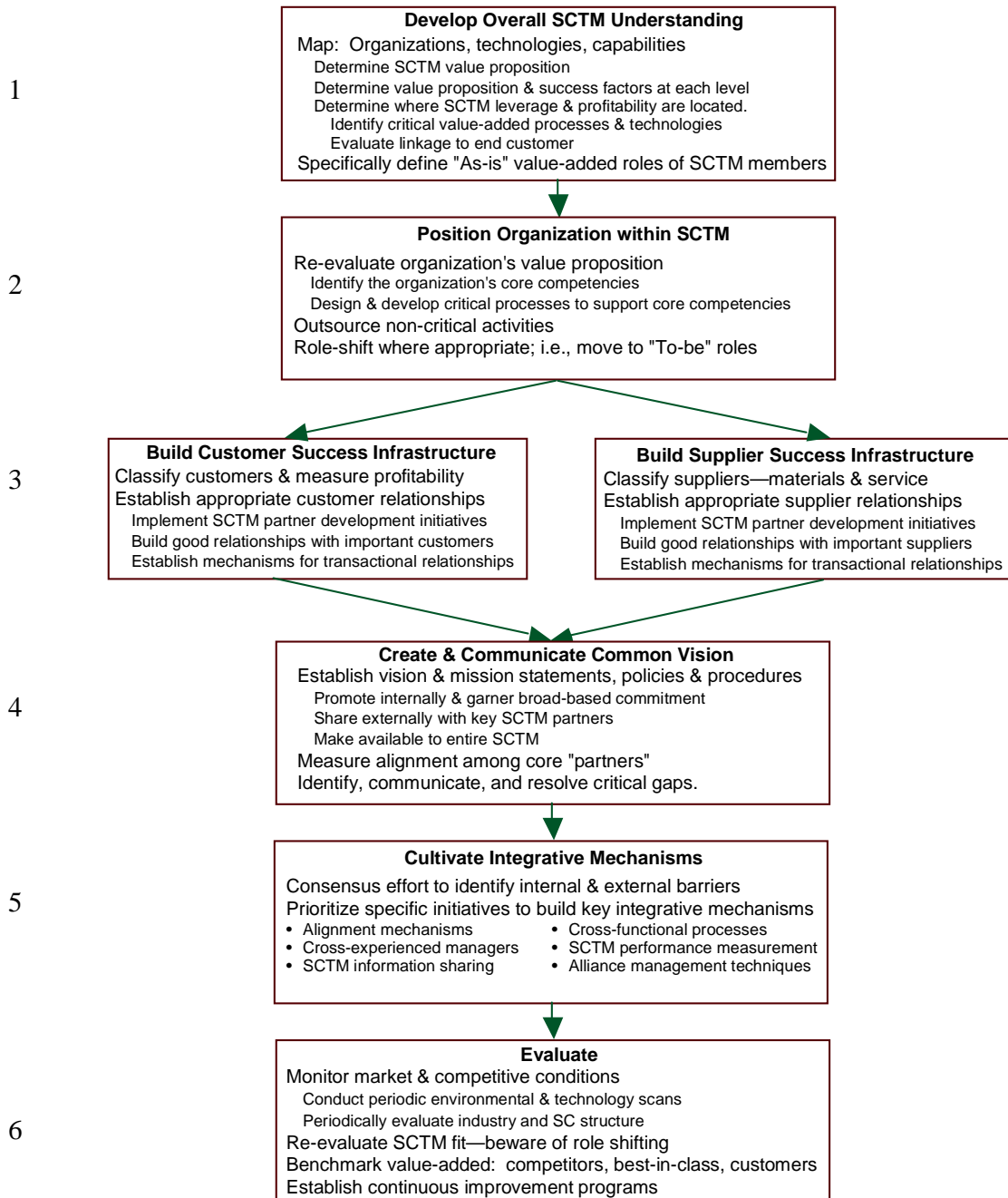


Figure 2.
Contribution of CI and MR in SCTM

