Process chain: A new paradigm of collaborative commerce and synchronized supply chain

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Abstract Despite much improvement in supply chain visibility and collaboration, even supply chain masters have not yet fully grasped the maximum performance potential in this era of the Internet. Now is the time for corporate America to rethink managing business and the supply chain. Future success in business competition relies on harnessing the power of process chain, a new paradigm toward achieving global optimization of a common performance goal for a total supply chain. It is imperative that corporate executives embrace this new vision of collaborative commerce and synchronized supply chain.

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1. Rethinking the supply chain

Over the last decade, we have witnessed the emergence and migration of different electronic business models, collaborative commerce, and integrated supply chain management. At the end of the last century, AMR Research (2000) predicted that companies would focus on improving supply chain visibility and collaboration in the 2000s and move toward optimizing supply chain performance by 2010. According to Copacino, Lee, and Starr (2003) and AMR Research (2004), high supply chain performance firms (e.g., Dell, Procter and Gamble, 7-Eleven Japan, Toyota, Wal-Mart) that successfully embrace supply chain best practices and technologies yield excellent financial performance, indicating a highly positive correlation between supply chain and financial performance.

As we are well into the 21st century and the Internet era, it is time to rethink managing businesses and supply chains and to explore some fundamental questions. Are leading companies fully achieving globally optimal performance? Are their current e-business and supply chain models right and effective? The answer to these questions is “Not yet.” What is causing the problem, then, and what needs to be done? This study diagnoses causes of myopic firm performance and suggests a new paradigm that corporate America needs to embrace. This paradigm, a new vision of managing the business and supply chain of the future, involves building a “process chain” for achieving global optimization of the profitability of the total supply...
chain. Finally, the study provides a detailed road-
map for process chain excellence.

2. Make way for process chain!

Competition today is not just between firms, but
between supply chains. As such, many leading firms
have emphasized improving supply chain collabo-
rarion to enhance bottom-line financial perform-
ance. Due to the lack of the right paradigm,
however, true collaboration has yet to be seen,
even from supply chain masters such as Dell,
General Electric, and Wal-Mart.

What, then, is the right paradigm to win future
business competition? A concept I call process
chain. Process chain is a flexible and efficient
chain, network, or web of related firms that work
together to achieve global optimization of a
common performance goal for a total supply chain.
This concept expands upon Hammer’s (2001) notion
of process and process enterprise. In detail, the
process chain is flexible, because a non-linear chain
or networked web structure enables it to adapt
quickly to dynamically changing and volatile envi-
rornents for total customer satisfaction. At the
same time, the chain is efficient, since its process-
es are seamlessly synchronized through managed
links in the supply chain, which consist of key
related firms or partners that work together
through joint planning and execution. Its objective
is to achieve globally optimal performance of a
common goal for the total supply chain, not a local
optimum from an enterprise (firm) focus, while
avoiding and effectively managing inherent con-
licts. Table 1 summarizes the characteristics of the
process chain paradigm.

The underpinning of collaborative commerce lies
in seamless process synchronization and trust
relationships based on equitable win—win thinking
among member firms. Key resources are shared for
core competence for the total supply chain; outsourcing is a part of the process chain, as well.
For these relationships to be managed effectively,
the focal or nodal company needs to have clear
accountability with a total supply chain stakeholder
focus. The Internet serves as the primary enabler
and tool for information sharing and collaborative
commerce, along with solution systems connected
and compatible among member firms. Global
optimization of total process chain performance
requires process spanning measures or key perfor-
ance indicators (KPIs) that facilitate the achieve-
ment of common goals. Finally, excess profits
achieved through this new paradigm are reallo-
cated back to member firms, such that all members
in the process chain benefit. Next, we examine
what is lacking in today’s practices from a process
chain perspective.

3. Why do we need it?

The last decade observed the telecommunication
revolution, with advances in information and
telecommunication technologies such as the Inter-
net, the worldwide web (WWW), web-EDI (elec-
tronic data interchange), intranets, extranets,
mobile communication devices, and radio freque-
cy identification (RFID: next-generation bar coding
technology with great supply chain management
benefit implications). These technologies became
primary drivers for new e-business and supply chain
models.

3.1. Business models and practices of supply
chain masters

Based on their level of integration maturity,
electronic businesses have generally gone through
three migration waves: e-commerce, e-business,
and e-chain/web, all of which are present today.
E-commerce suppliers such as Land’s End (cloth-
ing) and W.W. Grainger (industry supply) establish
web storefronts, through which customers search
product and service information and make trans-
actions, typically without human intervention. The
web server is a stand-alone server, usually not
directly linked to any existing business systems/
applications. Unlike bricks-and-clicks like Land’s

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End and W.W. Grainger, pure dot.com firms such as Travelocity.com and Ariba.com provide infomedia-
tion; that is, they consolidate information made available from a number of external web sources
to provide a single site from which customers may retrieve information from many suppliers. When
customers access infomediary sites, they obtain one-size-fits-all information with generally no
scope for personalization (Moakley, 1999). Overall, e-commerce models generally suffer from lack of
supply chain visibility and execution capabilities due to limited inter-business data sharing and
collaboration.

In e-business, the value proposition shifts to data sharing and collaboration between trading partners in
the linear supply chain, with Internet-enabled electronic support systems completing various
tasks. For example, companies like Dell and Cisco focus on meeting customer requirements by deliv-
ering personalized data directly to customers and allowing them to configure the products and
services they want. The success of this customer-centric supply chain depends on seamless process
integration and bi-directional data flow between the decision-making systems of suppliers and
customers. These integrated data and information create an exceptional level of service experience
for customers, as well as successful suppliers when they deliver information that helps customers
improve their business processes and decision-
making (Moakley, 1999). Dell’s direct sales and
shipping effort is supported by its plant in Austin,
TX, which aims to keep an efficient order cycle
time of 48 hours from order receipt to delivery.
This lofty goal is attempted through working closely
with suppliers via extranet. Other notable e-
business best practices include collaborative plan-
ing, forecasting, and replenishment (CPFR: jointly
making business plans, sales and order forecasts,
and inventory replenishment) between manufactur-
ers and retailers, collaborative product lifecycle
management (CPLM) with customers and suppliers in
product design, source/make, sell and service/sup-
port, and collaborative transportation manage-
ment (CTM) between shippers and carriers. An
interesting variation of e-business is in-house
online reverse auctions (e.g., GE’s SourceBid
Event). Unlike traditional multiple competitive
bidding, in-house online reverse auctions involve
developing and sharing material specifications,
selecting and prequalifying vendors, and running
bidding events. In the process, prequalified suppli-
ers interact dynamically with product specifi-
cations from a customer’s request for quote (RFQ)
and suggest specification modifications that can
change cost and/or production processes. In turn,
the customer can immediately evaluate the pro-
posal and provide an appropriate response. While
the goal is to accomplish many of the tasks of the
RFQ through the assistance of middleware decision
support tools, most firms are still far from this
target.

In e-chain/web, a supply chain takes a nonlinear
chain or network form, often with a new set of
intermediaries or e-marketplaces that facilitate
growing business-to-business (B2B) commerce by
providing better information and demand—supply
matching or reducing information search, transfer,
and transaction costs. These intermediaries serve
as e-hubs operating in different markets, generally
focusing on specific industry verticals (vertical
hub) or specific business processes across indus-
tries (horizontal hub), providing specific function-
ality of aggregation (e.g., Amazon.com, Buy.com),
auction (e.g., uBid.com, AdAuction.com), or ex-
change (e.g., newview.com, 1-800-flowers.com,
Employease.com) services (Jennings, 2000; Kaplan
& Sawhney, 2000). Examples of variations include
Covisint.com, which provides both auction and
exchange functions in automotive and healthcare
service industries, and 1SYNC (consolidated by
Transora and UCCnet), which provides synchro-
nized supply chain data and solution expertise in
aggregation and exchange to suppliers, manufac-
turers, and retailers within the Global Data Syn-
chronization Network in such industries as
consumer packaged goods, automotive, grocery,
and healthcare. Within the enterprise resource
planning (ERP) framework, software providers such
as SAP are providing bundles of aggregation,
auction, and exchange services that take advantage
of the standardized data structures evolving within
and between firms (Mabert, Soni, & Venkatara-
manan, 2001). Further, although rare in practice, a
so-called supply web or supply network is emerging
in the construction industry, in which supply chain
members have direct electronic linkages with one
another. According to Kemppainen and Vepsalainen
(2003), this structure will be employed by more
industries in the future, including the electronics,
mechanics, and paper industries.

In sum, the level of supply chain integration
maturity increases as e-business models move
from e-commerce to e-business to e-chain/web. The
level of supply chain integration or collabo-
ration, however, should be determined by busi-
ness needs related to supplier development,
strategic sourcing, outsourcing, customer compli-
ance, product development, and supply chain
efficiency and responsiveness. Supply chain mas-
ters such as Dell, Cisco, Hewlett-Packard, IBM,
General Electric, Toyota, Procter and Gamble,
Wal-Mart, 7-Eleven Japan, and Zara focus more on supply chain collaboration and relationships for total customer satisfaction. Their management scope extends beyond the enterprise boundary, with an emphasis on collaboration. These companies employ the supply chain as the driver of shareholder value and competitive differentiator, incorporate supply chain strategy into business strategy planning, and execute rigorously (Copacino et al., 2003). Further, they employ various supply chain and e-business best practices or initiatives including lean/just-in-time, total quality or six sigma, digitization, and collaborative planning and execution.

One company that deserves special attention is North American Parts Operations (NAPO), the parts and accessories distribution arm of Toyota Motor Sales, USA, Inc. NAPO aligns its action goals with business objectives. Its business culture is based on a collaborative and synchronized just-in-time/lean philosophy, and a vertical—horizontal—vertical planning process ensures different departments’ plans are working toward total firm performance. The company recently created a two-tier distribution system to handle global demand requirements (Oxnard, 2004) and is also working closely with not only distributors and OEMs, but also Japanese and North American suppliers.

Despite NAPO’s great accomplishments, have they achieved globally optimal supply chain performance? Not yet. What, then, are the causes of myopic performance, to which even supply chain masters are vulnerable?

3.2. Causes of myopic performance
Regardless of the business model employed, two fundamental root causes of sub-optimal performance exist. One is related to issues of internal (within-firm) focus, and the other is associated with issues of external (across-firm) focus.

3.2.1. Cause 1: Internal (within-firm) focus
The first root cause of sub-optimal performance, one that is experienced even by supply chain masters, is lack of a firm-wide common goal. Even when working in conjunction, many functions within a firm still try to optimize their own goals, rather than the goal of the entire firm. For example, relevant cost minimization and improving inventory turns are typical goals of purchasing, production, and logistics. Marketing and sales departments, however, strive for sales revenue maximization and improving product availability. As these goals are in conflict with one another, they thereby yield myopic performance outcomes for the entire firm. Furthermore, too much emphasis on short-term financial performance often results in the bullwhip effect; i.e., increasing order variability toward upstream value chain activities or supply chain due to information distortion (Lee, Padmanabhan, & Whang, 1997). Consider, for example, a manufacturer with a goal of meeting a sales quota, hence maximizing sales revenue. This creates a well-known hockey stick phenomenon; i.e., an unpredictable increase in sales at the end of each quarter, leading to increased variability toward upstream value chain activities such as logistics/shipping, production, and purchasing.

3.2.2. Cause 2: External (across-firm) focus
Although the business and supply chain models show increasing supply chain integration and collaboration maturity from e-commerce to e-business to e-chain/web, they are still enterprise-focused, not supply chain-focused, in that collaboration is limited to maximizing enterprise (firm) profitability, not total supply chain profitability. This enterprise focus leads to a local optimum of profit not only for the total supply chain but for the firms in the chain, as is the case for internal (within-firm) focus.

To illustrate the point of global optimization of the total supply chain, consider a generic supply chain of supplier—manufacturer—retailer—consumer. For the simplicity of discussion, suppose the consumer demand is determined as a linearly or exponentially decreasing function of the retailer’s price, although there are many other factors influencing the demand. The retailer, manufacturer, and supplier incur relevant costs of purchasing, producing, selling, and/or delivering products, depending on their value chain activities. Now examine two scenarios regarding making decisions on maximizing the profit (i.e., revenue—cost), one in which decisions are made independently (enterprise focus) and one in which decisions are made jointly (supply chain focus). To facilitate the discussion, let subscripts S, M, and R denote supplier, manufacturer, and retailer, and $P_S$, $C$, and $F$ represent unit price, cost, and profit margin. As an example, $P_S$ stands for the price the supplier charges to the manufacturer.

3.2.2.1. Scenario 1: Independent decision-making: Enterprise (firm) focus. In this case, the supplier decides on the profit-maximizing price ($P_S = C_S + F_S$) to charge the manufacturer. The manufacturer then determines its profit-maximizing price ($P_M = P_S + C_M + F_M$), given the purchase cost (i.e., the supplier’s price) and other relevant costs. In turn, the retailer sets its profit-maximizing price
(\(P_R = P_M + C_R + F_R\)), which determines the final consumer demand. Consequently, the price charged to the next customer includes not only its own markup, but also all the upstream supply chain members' profit margins, as depicted in the price equation (\(P_R = [P_M] + C_R + F_R = ([P_S] + C_M + F_M) + C_R + F_R = ([C_S + F_S] + C_M + F_M) + C_R + F_R = [C_S + C_M + C_R] + [F_S + F_M + F_R]\)). This over-stated price, given the demand as a linearly decreasing function of price, then lowers the final consumer demand, thereby yielding suboptimal supply chain members' profits as well as total supply chain profit.

3.2.2.2. Scenario 2: Joint decision-making: Supply chain focus. When supply chain members truly collaborate, retailers, manufacturers, and suppliers jointly plan to maximize total supply chain profits, not just their own individual profits (as in the previous enterprise-focus scenario). This global optimization is achieved by considering the so-called “cost to serve” (\(CST = C_S + C_M + C_R\)); i.e., the true cost of serving the customer or market without any profit margins of the supply chain members. The concept of cost to serve cannot be realized unless the supply chain members are engaged in joint planning and execution, similar to collaborative planning, forecasting, and replenishment in the consumer packaged goods (CPG) or grocery industries. The joint decision-making does not limit or constrain the consumer demand by not including unnecessary profit margins (\(F_S + F_M\)) of the upstream supply chain members in the final price (\(P_R = [C_S + C_M + C_R] + F_R = [CST] + F_R\)), thereby resulting in the globally optimal profit for the total supply chain. This increased supply chain profitability, in turn, increases the profit of every member in the supply chain through proper reallocation of the excess profit generated from the joint decision.

4. Roadmap to process chain building and implementation

As evidenced, external inter-firm collaboration in the supply chain for total supply chain performance optimization (i.e., building a process chain) is very powerful. It first requires a paradigm shift from functional focus to total firm focus with a common goal, as the power of internal inter-function (cross-functional, within-firm) collaboration for total firm value chain optimization was proven by Kim and Lee (1998). Once all functions in the firm are working together toward a common goal (e.g., total firm profit maximization), the firm needs to go through another paradigm shift from enterprise focus to supply chain focus, in which key members of the supply chain work together toward a common goal (e.g., total supply chain profit maximization) for the total supply chain. Although the internal focus shift needs to precede the external focus shift, there is not much time luxury in perfecting the former before tackling the latter.

How, then, can firms make this happen for the total supply chain, hence creating and sustaining their competitive capabilities or core competence for long-term competitive advantage? Building and implementing a process chain, a new paradigm of collaborative commerce and synchronized supply chain, consists of four steps: preparation, engagement, planning, and execution/assessment (PEPE). This four-step procedure is generally applicable to any firm with any business models (e-commerce, e-business, e-chain/web), since process chain management (PCM) is not merely about a new technique or program, but rather about a new vision, perspective, paradigm, or philosophy.

4.1. Preparation: Analyze the industry and business model

Building sound business and supply chain strategies requires thorough assessment of industry trends (customer/market, product/service, process/technology, organization/people), environment and industry competition characteristics (hostility, uncertainty, dynamism, opportunities, threats), and the firm’s external (financial, customer/market) and internal (operations/supply chain, organization/people) capabilities and resources (Barney, 2002; Kalakota & Robinson, 2001; Kim, 2003; Porter, 1980).

Once industry analysis and trend spotting is complete, the business model needs to be assessed. This requires mapping lifecycles of market (introduction, growth, maturity, decline), product (modular, integral), supply chain (responsive, efficient), and technology (diffusion process) to a firm’s vision based on a balanced scorecard comprising financial, customer/market, business/supply chain process, and organization/people dimensions (Kim, 2004). The mapping then yields a business model, such as a differentiation advantage-based service excellence model focusing on excelling at customer contact, service, and relationship management (e.g., Nordstrom, Charles Schwab), a cost advantage-based operational excellence model emphasizing seamless process management and efficient asset utilization (e.g., Dell, Wal-Mart), or an innovation excellence model built on change, risk-taking, and innovation culture.
Consider the strategic analysis issues cited above using the case of Dell. Dell’s business model focuses primarily on operational excellence (cost advantage) in the fairly hostile, uncertain, and dynamic computer systems industry (mature market), where competition is fierce, demands are unpredictable, and customers have diverse, sophisticated, and rapidly changing tastes. The company fully exploits its core capabilities and resources (seamless operations and supply chain process integration, precise execution ability of employees) through its well-known direct model, whereby customers directly order what they want (configure-to-order, mass customization) through the Internet. This model enables Dell to not only reduce demand variability and response time to customer preference changes (rapid technology diffusion), but also improve operating efficiency and reduce costs by postponing final assemblies (modular products) until orders are received directly from customers. Moreover, seamless process integration (efficient supply chain) via information technology and systems linked with suppliers and 3PLs (third-party logistics service providers) enables further reduction of costs through minimal inventory holding and efficient shipping. In sum, Dell’s highly successful business model illustrates excellent fit among environment, capabilities, and resources, and among market, product, supply chain, and technology lifecycles.

Following the preparation phase, the focal company needs to develop a business case for building a process chain. This can be achieved through clearly stating strategic, operational, technological, cultural, and financial (cost-benefit) justification.

4.2. Engagement: Form a process chain council

Once the business case for process chain building is developed, a process chain council must be formed, consisting of senior business and supply chain executives from key member firms in the supply chain. The process chain council ensures quality control, overlooking activities of different functions for the entire firm. It serves as a governing body, but with a scope extending beyond the enterprise to the total supply chain. The process chain council determines the scope of process, system, and technology integration, and details of joint planning, execution, and assessment. The council should meet every quarter, at least, although key reports need to be shared every month, at a minimum. This shortened planning horizon has become a norm for leading companies, as evidenced by various collaborative planning and execution practices.

In the engagement phase, it is absolutely critical for the focal company to emphasize the power of the process chain, and establish the accountability of the inter-business process chain and nonlinear process network integration. Moreover, trust is essential in this stage and moving forward, as it is the cornerstone of true collaboration and joint decision-making, the power of which has already been addressed. Trust, not a formal contract, is the glue that holds key members in the supply chain together as partners. For example, Dell is well known for managing trust-based, win–win supplier relationships through its lean/just-in-time (JIT) philosophy, the effectiveness of which has been proven by the company’s performance. GE has also been focusing recently on lean six sigma supply chain management. Following Toyota’s lean/JIT principles, GE has made an effort to synchronize its procurement process with suppliers by promising to order a certain amount on a fairly constant basis, over time. By keeping this promise, GE’s supplier have been able to know how much and when to produce and deliver. Based not on a formal contract but on trust relationships, this synchronized process has enabled both GE and its suppliers not only to reduce the bullwhip effect and related costs, but also to improve product availability.

4.3. Planning: Develop joint strategies and performance measurement

Once the collaborative culture is built, process chain members need to jointly develop detailed supply chain strategies (efficiency- or responsiveness-based) that are consistent with the business model, competitive strategies (cost- or differentiation-based, with broad or narrow market coverage), and a vision for the total supply chain/network (Chopra & Meindl, 2004; Porter, 1980). They should also decide upon collaborative planning and execution goals, and action strategies among partners (e.g., the CPFR process between Wal-Mart and Procter & Gamble), understanding that competition is not between firms, but between supply chains or networks. The goal is to build a foundation for seamless process chain synchronization.

As depicted in Fig. 1, process chain synchronization first requires the joint alignment of process chain strategies (efficiency- or responsiveness-based) around new business models and paradigms that will optimize total process chain profitability.
Next, given the value proposition, process chain members need to, through process mapping and value stream analysis, reengineer key processes (e.g., product realization, order capture, order fulfillment) and networks for efficiency or responsiveness based on competition-strategy dynamics. Finally, internal and external processes, systems, and technologies should be synchronized with performance measurement linked to actionable goals for structural migration.

E-business and supply chain solution systems include enterprise resource planning (ERP: backbone of e-business, linking various business functions), product lifecycle management (PLM: managing a product lifecycle of design, source/make, sell and service/support), customer relationship management (CRM: managing customer service, relationships, and sales), supply chain management (SCM: consisting of supply chain planning (SCP: including demand content management, sales and operations planning, materials and capacity planning, transportation planning, inventory planning, etc.) and supply chain execution (SCE: including order, warehouse, and transportation management)), and supplier relationship management (SRM: managing supplier interactions, relationships, and procurement) systems (Chopra & Meindl, 2004; Kalakota & Robinson, 2001).

In order to optimize total process chain profitability, the importance of developing process chain spanning key performance indicators (KPIs) cannot be overemphasized. Thus, a common process chain scorecard of the KPIs needs to be developed in such critical areas as responsiveness and flexibility, speed, delivery, cost and asset utilization, and quality. Among the metrics that may be utilized are level 1 metrics noted in the Supply-Chain Council’s (2001) Supply-Chain Operations Reference (SCOR) model, including perfect order fulfillment (on-time and in-full delivery performance without shipping damage or faulty documentation), supply chain response time (time between order receipt and fulfillment with source lead time), supply chain management cost, total supply chain spanning cash-to-cash cycle time, etc. The KPIs chosen, however, should depend on the strategies of the process chain.

4.4. Execution and assessment: Putting it to work

Detailed execution plans should then be developed, including process chain activity focus and prioritization, level and depth of information sharing, related technology/system investment and e-blueprint, resource sharing, equitable risk sharing, and cost-benefit reallocation mechanism. Since the future value of the process chain relationship is so uncertain, it is realistically impossible to cover all contingencies. This being the case, it is critical to design flexible contracts and effective conflict resolution mechanisms (Chopra & Meindl, 2004). Additionally, as in the engagement phase, trust and win–win thinking for mutual benefit is absolutely essential.

Once the operational plan is complete, joint execution of converting the plan into actions is crucial to success. For example, many companies have adopted and implemented six sigma programs into their practices. Few, however, have achieved success like GE. Why is this? Is it because GE’s six sigma methodology is different from others? The answer is: “No.” Rather, it is because the company executed correctly and precisely. The same is true of Toyota’s implementation of its JIT/lean philosophy, Dell’s execution of its direct model, and Spanish clothing merchandiser Zara’s operation of a quick response system with rapid new product development. It is absolutely imperative to execute the plans in an orchestrated fashion, with sharp focus on what should be done to achieve the goal. Often, thick rule books can stifle both responsiveness and efficiency; the key to execution lies with people.

Next, the rigorous assessment of total process chain performance needs to be performed regularly, at least every quarter. The goal is for total collaborative performance, not individual champion-like performance that leads to disruption of achieving global optimum. Consequently, the per-
formance assessment should be tied to proper incentive systems that can facilitate the achievement of a common goal for the total supply chain. For example, an incentive system with a common goal of maximizing total supply chain profit can be designed such that the excess profit from process chain management can be reallocated back to process chain members equitably in terms of their individual cost-to-serve structure based on each member’s contribution (e.g., cost-to-serve reduction or profit improvement investment) toward achieving the common goal.

Finally, the four steps are an ongoing process. Therefore, the business model, strategies, performance evaluation mechanisms, and infrastructure need to be revisited frequently as time goes on.

5. Critical success factors for process chain excellence

Today’s supply chain masters are putting more effort into collaboration and integration than ever. Whether current business models are e-commerce-, e-business-, or e-chain/web-based, the essence of transforming the model into the process chain is the same, as discussed in the previous four-step process. In order to achieve process chain excellence, corporate executives, leaders, and managers must first understand the so-called process chain wheel depicted in Fig. 2. The wheel depicts the order of an ongoing strategy planning and execution process from understanding to execution:

(1) Understand the environment, competition, and customer needs;
(2) Establish the vision;
(3) Build a business model based on value proposition and collaborative culture;
(4) Develop competitive strategies and priorities, given a common goal for the total supply chain;
(5) Synchronize key supply chain processes based on the business logic;
(6) Invest in systems and technologies (i.e., tools and enablers to support the processes);
(7) Get people to buy into a change process and empower them; and
(8) Execute effectively and efficiently in an orchestrated fashion for the result.

When this order is not followed, the results can be quite detrimental. For example, many dot.com and bricks-and-click firm failures of the late 1990s were largely due to reversing some steps in the wheel, such as investing in systems and technologies before establishing processes, investing in process reengineering before building a business model, and running business based on the same old business model without proper understanding of changing markets and customers. Instead, systems and technologies should support the business process logic. The processes should be designed and redesigned such that they reflect detailed strategy plans and the business model. The business model should be developed based on the vision consistent with customer needs in an industry. Thus, the wheel summarizes the order and rules of managing a process chain.

Effective process chain building and implementation requires adhering to the 10 principles of process chain collaboration and synchronization listed below:

(1) Ensure top management commitment of process chain members;
(2) Develop a collaborative culture based on open communication and shared responsibility;
(3) Share resources, capabilities, and risks based on win-win trust relationships;
(4) Link supply chain/network as a complete end-to-end synchronized process;
(5) Design processes with customer needs in mind;
(6) Carry out the work through those people in the best position;
(7) Perform only value-adding activities;
(8) Align performance metrics with goals and incentives around all processes;
(9) Achieve outcomes for a common stakeholder-centric goal; and
(10) Solve problems and resolve exceptions/conflicts jointly.
These principles reflect the scope of running the business beyond the enterprise with total supply chain focus, some key elements of lean philosophy, six sigma program, process reengineering, and integrated supply chain management, and unique process chain characteristics of achieving globally optimal performance for the total process chain. When followed, these collaboration and synchronization principles should help supply chain members work together to optimize their process chain performance.

Although academics, research firms, and systems vendors generally agree with this vision, in reality, fully grasping this new paradigm may be quite challenging. It should be remembered, however, that quantum leaps in science theory and paradigm shifts usually come from attacking well-accepted norms and questioning the fundamentals. The future will be bright once businesses grasp the power of this process chain, a new paradigm of collaborative commerce and synchronized supply chain.

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References


