ACHIEVING SUPPLY CHAIN INTEGRATION

CONNECTING THE SUPPLY CHAIN INSIDE AND OUT FOR COMPETITIVE ADVANTAGE

CHAD W. AUTRY, PhD  |  MARK A. MOON, PhD
Achieving Supply Chain Integration
Connecting the Supply Chain Inside and Out for Competitive Advantage

Chad W. Autry, PhD
Mark A. Moon, PhD
This book is dedicated to those, both past and present, who have been a part of the family that we call the Department of Marketing and Supply Chain Management at the University of Tennessee, Knoxville’s Haslam College of Business. This turns out to be a pretty large family, and it consists of several categories:

- **The faculty.** Throughout the 50+ years that Marketing and Supply Chain Management have resided in the same department at UT, a parade of smart, insightful, and dedicated scholars have passed through and contributed to the ideas articulated here. Particular dedication to Dr. John T. (Tom) Mentzer, who encouraged us to think about integration.

- **The students.** Our undergraduate, master’s, and PhD students want to know how they can be successful, as businesspeople or as scholars. They have pushed us to get deeper into the concept of integration and help prepare them to overcome the negative consequences of functional silos.

- **Our industry partners.** At the time of this writing, there are 65 companies who belong to our Supply Chain Forum. They support us financially, but even more important, they talk to us about the challenges they face every day in a dynamic global business environment. Many of those challenges turn out to be challenges surrounding integration, and they have pushed us to find useful, actionable solutions.

So we dedicate this book to this UT family. We also personally dedicate this book to our own families—the Autry and Moon families—who support and love us, and who are ultimately the reason we get up and come to work every day.

Chad Autry and Mark Moon
October 2015
Knoxville, TN
# Contents

Preface .................................................. viii

Chapter 1  Integration: What It Is, What It Isn’t, and Why You Should Care ...................................................... 1

Integration and Supply Chain Management ......................... 4
What Factors Lead to Integration? .................................. 6
What Are Integration’s Performance Implications? ............... 7
Solidifying Our Understanding of Integration .................... 8
Toward Consensus on Cross-Functional Integration ............ 10
Extending Previous Definitional Work on Integration .......... 15
Planting the Seeds for Integration .................................. 18
Tools Available to Managers ........................................ 21
Conclusion .................................................................... 24
Endnotes ....................................................................... 25

Chapter 2  Bridging the Integration Gap ............................ 27

The Difficulty in Integrating .......................................... 30
Interfunctional Bias ..................................................... 31
General Methods for Overcoming Conflict Within Integration ................................................................. 32
Interest-Based Problem Solving and Collaborative Communication .......................................................... 35
Conclusion .................................................................... 45
Endnotes ....................................................................... 46

Chapter 3  Maximizing Organizational Value Creation Across the Great Divide .................................................... 47

The Demand and Supply Integration Journey .................... 50
Four Examples of the DSI Journey .................................. 53
Managerial Implications ................................................ 68
Conclusions .................................................................... 75
About the Research ........................................................ 75
Endnotes ....................................................................... 77
Chapter 4  The Role of Information in Internal and External Integration ........................................ 79
   The Importance of IT Infrastructure Integration to Supply Chain Effectiveness .................. 80
   The Role of Operating Models in Relation to Integration ................................................. 82
   Conclusions .............................................. 85
   Endnotes .................................................. 88

Chapter 5  Bending the Chain: Deriving Value from Purchasing-Logistics Integration ............ 89
   The Surprising Challenge: Purchasing and Logistics Integration .................................... 93
   Supply and Demand Disconnects ......................... 96
   The Research: Linking Purchasing and Logistics Integration (PLi) to Improved Functional and Financial Performance ........................................ 98
   Best Practices ........................................... 107
   Seven Actions a Supply Chain Leader Can Take Today .............................................. 118
   How High Is Your PLi? ............................... 120
   Endnotes .................................................. 122

Chapter 6  Getting Aligned: The Benefits of Integrating Market, Environmental, Social, and Political Strategies Within the Organization .................................................... 123
   How Do Executives Engage in Strategic Management? .................................................. 125
   The Alignment Framework ......................... 127
   Applying the Alignment Framework .................. 129
   Integrating Market and Nonmarket Strategies ..................................................... 136
   Conclusion .............................................. 144
   Endnotes .................................................. 144

Chapter 7  Achieving Demand and Supply Integration ..................................................... 147
   The Idea Behind DSI ........................................ 148
   How DSI Is Different from S&OP .......................... 149
   Signals That Demand and Supply Are Not Effectively Integrated ..................................... 151
   The Ideal Picture of Demand and Supply Integration .................................................. 152
Chapter 11  Integrating Ideas and Environments: Blending Marketing Strategy with Context for Organizational Success 267

The Study: Integrating Marketing Strategy with a Firm’s Internal and External Conditions 273

Conclusion 293

Endnotes 294

Chapter 12  External Barriers to Integration: Tearing Down the Walls 297

Conceptualizing Integration 300

Defining the Types of Barriers 302

Concluding Thoughts 311

Endnotes 312

Index 313
Preface

It was about 50 years ago, in the mid-1960s, that the dean at what is now the Haslam College of Business at the University of Tennessee decided that he had too many direct reports and that there was too much money being spent on administration in the College. His answer was to take two of the College’s academic departments and combine them into a single department. Thus, the Department of Transportation and the Department of Marketing joined together to become the Department of Marketing and Transportation. In the ensuing 50 years, the name of the department morphed into Marketing, Logistics, and Transportation, then again to Marketing and Logistics, and finally to Marketing and Supply Chain Management, which is what we call ourselves today. The organizational restructuring achieved what the Dean hoped—it made the College a little more streamlined and saved some cost in administrator salaries. What he didn’t foresee was the strategic “aha” that has evolved over the past half-century in which the faculty of that department have come to embrace the concept of “integration” across functional boundaries.

That strategic “aha” was really inspired by Dr. John T. (Tom) Mentzer, who joined the faculty as Harry J. and Vivienne R. Bruce Chair of Excellence in Business in 1994. Tom Mentzer was a unique scholar in that he was extremely prominent in two separate fields: Marketing and Logistics (later Supply Chain Management). He was at various times in his career the president of both the Council for Logistics Management (now the Council for Supply Chain Management Professionals) and the Academy of Marketing Science. His larger-than-life personality, and the force of his convictions, helped our department to see the synergy between Marketing and Supply Chain Management, and thanks to his leadership, we developed a vision of business practice that we refer to as demand and supply integration (DSI). Tom helped us get started developing this vision, and
since his untimely passing in 2010, those of us who remain at Haslam have continued to develop and refine this DSI vision. We’ve written articles, both academic and practitioner-oriented, that articulate our thoughts about how demand (sales and marketing) and supply (supply chain) need to be integrated through culture, processes, and tools, for the betterment of the enterprise as a whole.

But we’ve also come to realize that cross-function integration extends beyond DSI. It includes integration between demand-side functions, such as sales and marketing. It includes integration between supply-side functions, such as procurement and logistics. It includes integration among various supply chain partners in an inter-enterprise context. And it includes a variety of other instances where multiple entities can—and should—behave as a single entity in the pursuit of a common goal. Various UT faculty members, their colleagues at other universities, and their doctoral students have examined elements of integration in the form of articles, books, and even doctoral dissertations. Indeed, “integration” has become a theme of our research over the past several years. As a group, we’ve uncovered a lot of interesting and useful insights about what integration actually is, how integration can be achieved in complex business organizations, and what the benefits of integration can include.

This focus on integration at the Haslam College of Business, then, is the impetus for this book. We sat back and watched our colleagues do some highly impactful work in this area, and we’ve done some impactful work ourselves. We came to realize that it was time to bring this work together into a single volume that can help guide practicing business executives through some of the challenges they face in business integration. We approached our departmental colleagues, both on the Marketing and the Supply Chain sides of the department, and asked them to contribute chapters that addressed various aspects of business integration. The result is the 12 chapters found in this volume. These 12 chapters are divided into three subsections: The Foundations of Integration, Internal Integration, and
External Integration. Contributors include faculty from the Department of Marketing and Supply Chain Management at Haslam, faculty from other departments in the College who are also interested in issues surrounding integration, and current and former students who have embraced elements of integration as the focus of their work. We hope that the reader, whether that reader be a practicing business manager who struggles with functional silos and lack of integration, an academic who is interested in pursuing related issues surrounding integration, or a student who would like to learn about the benefits of creating and maintaining an integrative enterprise, will find nuggets of insight and value in these chapters.

So with all that said, let’s get into it. We hope you enjoy this exploration through the world of business integration. If you find things you don’t like, or don’t agree with, or are simply wrong, let us know. Or if you find yourself shouting “Amen!” at anything written here, let us know that too! And Go Vols!

Chad Autry and Mark Moon
October 2015
Knoxville, TN
About the Authors

**Dr. Chad W. Autry** is the William J. Taylor Professor of Supply Chain Management in the Haslam College of Business at the University of Tennessee. Dr. Autry’s professional background includes several years’ experience in retail and restaurant operations management. He has worked with and for numerous professional, civic, and governmental organizations related to supply chain process improvement, and has served in leadership positions for the Council of Supply Chain Management Professionals (CSCMP), on the national Board of Directors of the Warehouse Education and Research Council (WERC), and on the local board of the National Association of Purchasing Managers (NAPM).


Dr. Autry is Editor in Chief of the *Journal of Supply Chain Management* and serves as Associate Editor for the *Journal of Business Logistics, Decision Sciences Journal,* and *Logistique’ Management,* in addition to editorial board responsibilities for several other academic and managerial publications.
Dr. Mark A. Moon is an Associate Professor of Marketing at the University of Tennessee’s Haslam College of Business and former Head of the Department of Marketing and Supply Chain Management. Prior to joining the Haslam faculty in 1993, Dr. Moon earned his PhD from the University of North Carolina at Chapel Hill. He also holds MBA and BA degrees from the University of Michigan in Ann Arbor. Dr. Moon’s professional experience includes positions in sales and marketing with IBM and Xerox. He teaches at the undergraduate, MBA, and Executive MBA levels, and teaches demand planning, forecasting, and marketing strategy in numerous executive programs offered at the Haslam College of Business. Dr. Moon’s primary research interests are in Sales and Operations Planning (S&OP), demand forecasting, and buyer/seller relationships. He has published in many of the field’s leading journals and conference proceedings. He authored *Demand and Supply Integration: The Key to World Class Demand Forecasting*, and *Sales Forecasting Management: A Demand Management Approach* with Dr. John T. (Tom) Mentzer. His consulting clients have included Honeywell, Goodyear, Corning, Walgreens, Whirlpool, Lockheed-Martin, and many other firms.
Integration: What It Is, What It Isn’t, and Why You Should Care

By Mark A. Moon, Chad W. Autry, and Daniel A. Pellathy

Prior to the Industrial Revolution, business organizations were far smaller and simpler than they are today. Most businesses, such as family farms, merchant trading rooms, and artisan workshops, were owned and operated by a close-knit group of individuals who sold their goods and services to others within a local community. People specialized in a single trade or craft, exchanged their outputs with others who lived and worked nearby, and sought mainly to provide for family necessities. However, three key innovations that together characterized the Industrial Revolution shifted this model of economic behavior dramatically. The simultaneous emergence of mass manufacturing, long-distance communications, and mechanized transportation threw open the doors to larger and more geographically dispersed consumer markets, providing entrepreneurs who were able to scale up their operations the opportunity to vastly increase their wealth. Business leaders quickly grew their small shops into large, diversified organizations aimed at capturing new demand on national, and later international, markets. The sky was the limit.

To accommodate these revolutionary market shifts, businesses added assets, people, and capital, creating complex multifunctional organizations. Whereas before a few people performed all the tasks required of a business, now entire workgroups were formed to handle
the various activities involved with purchasing raw materials, manufacturing and shipping goods, and selling products. The best thinking at the time, exemplified by Adam Smith’s widely read treatise on the division of labor, held that organizational performance was maximized by increasing specialization around different activities in the firm. Consistent with this logic, business leaders pushed different functional areas to focus on their particular part of the process, reasoning that by optimizing each set of activities in isolation they could maximize the performance of the organization as a whole. In short, the era of specialization was upon us. Moving from a scenario in which everyone did everything to one in which people specialized in different functional activities unleashed massive efficiency gains for early industrial organizations.

The problem is that the times have changed, but the thinking has not. The notion that if each division does its part to the very fullest, the entire organization is sure to succeed still dominates business thinking to this day. We find it in nearly every organization: sales should be the exclusive domain of the sales force; nobody but the accounting group needs to review or understand the financials; manufacturing should worry only about producing finished goods as efficiently as possible. Hire the best talent for each group and focus them on executing just those tasks assigned to their unit. The logic is simple but deeply flawed in today’s dynamic market environment.

Research by business scholars in the fields of operations, marketing, and supply chain management points to the conclusion that greater specialization is no longer the engine of growth it once was. Indeed, time and again over the past 30 years, researchers have found tremendous costs associated with the strict specialization paradigm. This “dark side” of overspecialization emerges (a) when activities and priorities in one area become disconnected from activities and priorities in other areas, and (b) when different functional areas lose visibility on the unique value they contribute to their end customer.
The results are wasted resources, internal conflicts, and dissatisfied consumers.

Everyday examples abound. Take, for instance, the all too common practice of salespeople overstating their demand forecasts to ensure product is available for their customers. The result: increased inventories that tie up working capital. Salespeople might be happy, but chances are the enterprise as a whole suffers. Or consider the example of a firm’s operations group deciding to source low-cost components halfway around the world. Good for keeping costs down, maybe. But what happens when the firm needs to respond quickly to changes in the marketplace? The operations group may be optimizing on their goal of low unit cost production, but achieving that functional goal may not be in the best interest of the enterprise as a whole. The list of examples goes on. Yet an overemphasis on specialization persists, rooted in people’s tendencies to focus on the work at hand and management’s tendency to incentivize them on the same. Over time, attending to functional metrics creates the mindset that anything happening outside the business unit is an interference or potential threat. Managers’ willingness and ability to cross functional boundaries to maximize organizational performance disappears. And the efficiency gains produced by specialization are quickly outweighed by the loss in effectiveness produced by the disconnect among functions and with customers.

The point is this: if a company is going to succeed in today’s dynamic environment, specialization can be only part of the equation. All the parts of the organization that were originally segmented for the sake of efficiency have to be put back together in a way that maximizes customer outcomes and increases profitability. In short, the internal and external functions of a business must become integrated for the enterprise to stand a chance. But what does integration entail? The rest of this chapter aims at unpacking this sometimes ambiguous term and pointing the way toward achieving its benefits.
Integration and Supply Chain Management

Integration is at the core of supply chain management. Foundational research in business management had established that optimizing decisions locally within functional areas could—and most likely would—result in suboptimal outcomes for the organization as a whole. Scholars applied this insight in the fields of purchasing, manufacturing operations, and logistics management, spawning what today is recognized as the supply chain field. The centrality of integration is apparent in the earliest definitions of supply chain management, such as the one offered by Oliver and Webber.

[SCM] views the supply chain as a single entity rather than relegating fragmented responsibilities for various segments in the supply chain to functional areas such as purchasing, manufacturing, distribution, and sales...Supply chain management require[s] a new approach to systems: Integration, not simply interface, is the key.2

Likewise, highly influential frameworks offered by Cooper and Mentzer emphasize the importance of integration. Cooper, for example, defined SCM as the “integration of business processes” across key functional areas,3 whereas Mentzer saw SCM as “the systemic, strategic coordination of the traditional business functions and the tactics across these business functions.”4 More recent reviews of the literature have found that integration both within and across organizations is common to nearly all definitions of supply chain management. This emphasis on integration is also reflected in the practitioner community, where the Council of Supply Chain Management Professionals defines SCM as “an integrating function with primary responsibility for linking major business functions and business processes within and across companies.” Investigations into the ways in which integration could be exploited for competitive advantage have also played a significant role in supply chain research. The centrality of integration
to supply chain management has even prompted some scholars to suggest it as the field’s defining concept.

Given its theoretical and practical importance, it is not surprising that integration has received a great deal of scholarly attention, with the majority of the research seeking to establish its performance benefits. Indeed, empirical evidence gathered over many years suggests that positive associations between integration and various types of business performance do exist. Anecdotal evidence from practitioners has validated these findings over time.

Yet, despite the importance of integration, researchers and practitioners continue to report that companies find it very difficult to achieve. Business practitioners are, if anything, more keenly aware than ever of the benefits of integration, but at the same time, they report that their ability to integrate across key functional areas has not improved meaningfully as knowledge about the subject has grown. This is plausibly due to conceptual issues regarding what scholars and practitioners mean when they use the term “cross-functional integration.”

Supply chain management researchers have adopted a variety of perspectives when defining integration and its dimensions. Some researchers have emphasized and studied singular aspects of integration, such as collaboration, interaction/communication, or coordination, whereas others have tried to combine more than one of these terms when conceptualizing integration, such as blending interaction/communication and collaboration, or communication and coordination, within a single concept. Still others have used the term integration without specifying integration’s “ingredients,” creating a catchall phrase that does little to illuminate the more basic concepts that underlie it. As a result, although a key role of scholars within an applied field is to “separate truth from hype,” the truth is that scholars have tended to characterize integration in wildly inconsistent ways that are often incompatible with the activities that occur in practice. This lack of a unitary understanding of integration, and the related
inability to reliably measure and study it, has served to undermine the best efforts of practitioners and scholars to study the concept or put it into practice. Thus, there remains a compelling need to (1) better define and operationalize the integration concept and (2) advance understanding of the factors that enable companies to successfully develop and maintain integration.

Accordingly, an initial step is to develop a complete understanding of what integration entails. By clearly defining integration and its underlying dimensions, and articulating their relationship to other concepts that serve as antecedents and outcomes, this chapter seeks to provide a solid foundation for scholars and practitioners seeking clarity on this important topic.

**What Factors Lead to Integration?**

Although rigorous research on integration has not been lacking, the majority of it has focused on the influences of environmental factors that precede or predict integration. Such predictive factors have included environmental variables such as uncertainty, as well as several internal organizational facilitators, such as firm strategies and structures. From the perspective of most managers, however, environmental and/or organizational factors represent institutional constraints rather than decision variables; they impact the firm’s ability to integrate, but are largely uncontrollable by managers even in the long run. Thus, the existing research on environmental/organizational antecedents has provided little guidance to managers as to actionable steps that are under their control and that would promote integration in the context of day-to-day operations. This failure on the part of the academy to identify more prescriptive models (to date) has placed managers in the unenviable position of being tasked with developing and maintaining integration with little or no guidance on how to achieve it.
As a result, a young but growing stream of research has begun to focus more intently on how managers can achieve integration across the supply chain by exploring its behavioral antecedents. Behavioral antecedents include the attitudes, behaviors, and decisions exhibited by managers and other employees within the context of day-to-day business operations. Behaviors that appear to enable integration include, for example, demonstrating a cooperative attitude, engaging in informal communication across functional boundaries, gaining an understanding of other functions’ activities, and being flexible in decision making. Such behavioral antecedents capture the basic attitudes and actions of individual supply chain professionals and reflect their impacts on the difficult task of achieving integration in a given context. In this sense, behaviors can be thought of as a form of the “soft skills” that have often been identified in the practitioner literature as a critical component for supply chain success, but how they impact the integration of the supply chain remains poorly understood.

What Are Integration’s Performance Implications?

The preponderance of the integration literature has sought to establish its performance benefits. Flynn succinctly paraphrased the basic theoretical argument underlying these studies:

[I]nternal integration recognizes that different departments and functional areas within a firm should operate as part of an integrated process. Because internal integration breaks down functional barriers and engenders cooperation in order to meet the requirements of customers, rather than operating within the functional silos associated with traditional departmentalization and specialization, it is expected to be related to performance.6
Scholars have related different forms of integration to improvements in operational effectiveness and efficiency, financial performance (particularly return on assets), successful new product development, customer satisfaction, and market share. Additionally, a growing stream of research also looks at the role of integration in achieving social, environmental, and ethical goals.

Studies on integration have been carried out in a variety of interfunctional contexts. For instance, studies have assessed the integration of purchasing and operations, operations and marketing, and logistics and marketing. These studies have also been carried out across different industries and countries. Positive outcomes discovered across these different contexts bolster the view that integration is indeed linked to performance, and Leuschner’s and Mackelprang’s recent meta-analytic reviews of the empirical evidence support a transcendent linkage.

**Solidifying Our Understanding of Integration**

Still, despite these seemingly positive results, research on integration remains challenged in two fundamental areas: first, despite the consistency in results, the literature exhibits a stunning lack of cohesion in deriving a consensus definition of integration. This situation has yielded a plethora of operational measures of the concept, which constrains the ability of studies to offer truly generalizable results for practitioners and scholars to rely on. Authors have used several related (yet nevertheless distinct) terms to encapsulate integration, including coordination, collaboration, cooperation, “working together,” interaction, and information exchange/dissemination. However, a noticeable lack of attention to the similarities and differences across these terms has led researchers to define and operationalize integration in ways that are generally inconsistent.
For instance, some authors have defined integration in terms of coordinating activities across functional areas, and others have placed greater emphasis on the collaborative efforts needed to maintain common goals toward which activities are directed. Still others have used the terms “coordination” and “collaboration” interchangeably to define integration. Likewise, researchers have used terms such as “information exchange,” “information dissemination,” and “interaction” to describe integration. Researchers have used these terms generally to cover aspects of both formal information exchange processes and informal communications across functional areas. However, specific definition of variables has ranged from the extent to which information systems are integrated, to whether information is generally shared across functions, to the frequency or amount of communication, to the extent to which there is a common understanding of information. Moreover, there are indications in the literature that at least some of the more formal aspects of basic information exchange, such as having an integrated information management system, may play an antecedent or moderating role in relation to integration rather than constituting one of its dimensions.

The lack of a comprehensive definition of integration and the consequent lack of a reliable operational measure of the concept constrain studies on integration from offering broad-based and generalizable results for both practitioners and scholars. Researchers Frankel and Mollenkopf describe the situation in this way:

Cross-functional integration (CFI) seems to be one of those notions that we all ‘know it when we see it,’ but there does not appear to be a consensus about what integration really is... [T]he construct must be clearly defined in order for research results to be meaningfully interpreted across the many streams of literature that include notions of CFI... [A]lthough the concept of CFI has been around for decades, scholars are still in the early stages of genuine construct development.
Toward Consensus on Cross-Functional Integration

Strong conceptual definitions, particularly of established concepts, must be grounded in research. Thus, a comprehensive definition of integration would have to include elements of the multiple perspectives outlined earlier. As such, we propose the following definition of integration:

Integration is an ongoing process in which functionally diverse areas of an organization collaborate, coordinate, and communicate to arrive at mutually acceptable outcomes for their organization.

According to this definition, integration is conceived as a multidimensional concept that combines elements of collaboration, coordination, and communication. Functional diversification is conceptualized as antecedent to integration; that is, diversification represents the assumed state in which the integration of goals, activities, and knowledge occurs. Likewise, “mutually acceptable outcomes for the organization” are seen as the result of integration, rather than as a dimension of the concept. Definitions of the concept’s three dimensions—cross-functional collaboration, cross-functional coordination, and cross-functional communication—are important for completely understanding the phenomenon of integration as it exists in modern business organizations.

Cross-Functional Collaboration

Collaboration generally refers to the mutual establishment of the goals and processes that govern a joint effort. Collaboration represents a special case of the more general concept of cooperation. Cooperation can be said to occur in a multi-agent system when (1) agents have a goal in common that no agent could achieve in isolation, (2) agents act to achieve that goal, and (3) agents perform actions that
enable or achieve not only their own goals, but also the goals of other agents. Thus, cooperation is centrally concerned with how agents prioritize their own actions with reference to individual and joint goals. It entails not taking advantage of other agents who behave cooperatively. Cooperative agents are therefore willing to make decisions that may suboptimize individual goals in furtherance of a joint goal on the understanding that other agents in the system will behave likewise.

Cooperation incorporates more general ideas found in the integration literature, such as “working together.” Note, however, that cooperation does not imply coordination (discussed later), insofar as agents can act toward a common goal without any explicit sequencing of decisions or actions. Yan and Dooley make this distinction in arguing that “integration encompasses coordination (alignment of actions) and cooperation (alignment of interests).”

Integration, however, goes beyond simple cooperation to include cross-functional collaboration. Collaboration includes working toward common goals, but also entails an ongoing process of establishing those goals and maintaining joint agreement on how best to achieve them. Thus, participants integrate individual goals by negotiating a mutual understanding of group objectives and the role each participant plays in achieving those objectives. In the supply chain context, “collaboration facilitates an assessment of the state of the supply chain, of the needs of the organization, and the determination of an approach for creating and sustaining value based on that collaborative assessment.”

Collaboration represents an often difficult process of resolving conflicting interests to establish a joint plan of action with few enforcement mechanisms beyond voluntary agreement. It therefore requires functions to develop meaningful relationships based on trust and mutual respect. It also entails an appreciation of the unique constraints faced by the participants, and may therefore include sharing resources, ideas, and/or information to overcome such constraints. Stank characterizes collaboration in the following way:
Collaboration depends on people’s ability to trust each other and to appreciate one another’s expertise. It is a voluntary process where two or more departments work together, share resources, and seek to achieve collective goals. It is fundamentally a process that cannot be mandated, programmed, or formalized. Collaboration emphasizes cooperation and is very much ‘contingent upon the ability of individuals, scattered within and across organizations to build meaningful relationships.’

At its best, collaboration allows functions to continuously align individual and common goals as they seek to meet the demands of dynamic environments. Based on this understanding, the following definition of cross-functional collaboration is proposed:

*Cross-functional collaboration* is an ongoing process of jointly defining, adjusting, and working toward common goals while maintaining mutual agreement on how best to achieve them.

**Cross-Functional Coordination**

Coordination represents a distinct but related concept to collaboration. Whereas collaboration defines common goals, *coordination* refers to the process of bringing together the contributions of constituent members in a way that attempts to consciously optimize a given goal. More colloquially, coordination is determining “what happens when” in achieving some objective. Thus, the central aspect of coordination is the integration of interdependent activities. But, in the context of integration, coordination specifically refers to the process of ordering functional activities—in terms of both substance and timing—so that process inputs and outputs are matched with maximal efficiency. The concept encompasses terms such as “synchronization” and “seamless supply chain operations” insofar as they also relate to inventory control and waste reduction. Germain and Iyer, for
example, emphasized coordination in defining integration as the “uni-
ified control” of successive supply chain processes aimed at stream-
lining operations, reducing bullwhip effects, and efficiently matching
supply to demand.  

Coordination is based on a systems view of the supply chain that
sees functional activities as part of ongoing process flows. It may
entail, for example, the use of advanced planning systems that employ
optimization and metaheuristic approaches to find systemwide solu-
tions or liaison personnel whose specific job it is to coordinate the
efforts of several departments. It is important to stress that the con-
cept of coordination presumes a predefined goal. As Oliva and Wat-
son point out: “Coordination...should be considered different from
integration in that where coordination takes the target for granted,
integration often involves determining this target simultaneously with
the aligning of allocation decisions.” Based on this understanding,
the following definition of cross-functional coordination is proposed:

*Cross-functional coordination* is an ongoing process of order-
ing supply chain activities across functional areas based on a
systemwide approach that attempts to consciously optimize a
given goal.

**Cross-Functional Communication**

In general, any definition of communication needs to specify (1)
what constitutes a communicative act, (2) whether the intention of the
sender is considered, and (3) whether the evaluation of the communi-
cative act by the receiver is considered. In the context of integration,
communicative acts can take the form of both structured informa-
tion exchange processes and informal interactions across functions.
More importantly, however, the content of these communicative acts
represents some tacit and/or explicit knowledge that resides within
the sender function. For instance, Mollenkopf refers to information
dissemination across marketing and logistics in terms of information regarding products and target customer segments (from marketing to logistics) and warehousing and transportation issues (from logistics to marketing). Other authors have likewise specified the content of communicative acts in terms that indicate the transference of knowledge from one functional area to another. Thus, in the context of integration, a communicative act is not simply the exchange of data or even face-to-face discussions by cross-functional teams; rather, a communicative act is the transfer of knowledge housed in one functional area to other areas of the firm.

Within a supply chain context, moreover, arriving at a shared interpretation of transmitted knowledge is critical to planning and implementing a collective response to the business environment. Thus, the intention of the sender (what the communicative act was meant to communicate) and the evaluation of the receiver (how the communicative act was interpreted) also play an important role in defining cross-functional communication. Indeed, researchers have specifically considered the importance of sender intention and receiver interpretation to integration. More broadly, several research papers have highlighted the need for mutual understanding as a critical element in cross-functional communication. Based on this understanding, the following definition of cross-functional communication is proposed:

*Cross-functional communication* is an ongoing process of transferring knowledge from one functional area to other areas of the firm so that a mutual understanding of the relevance of the knowledge is achieved.
Extending Previous Definitional Work on Integration

The definitions offered here seek to synthesize previous theoretical work aimed at conceptualizing integration while adding clarity to the terminology employed in the literature. The goal has been to specify the target conceptual domains in a manner that is consistent with prior research. In particular, the definitions offered here clearly build on previous work by Kahn, and Kahn and Mentzer.

In a 1996 article, Kahn provided an influential synthesis of the early literature on cross-functional communication and collaboration:

Some literature has characterized interdepartmental integration as interaction or communication-related activities, whereas other literature has associated interdepartmental integration with collaboration...There is also a third group of literature, which has implied a multidimensional characterization of integration. This latter perspective conceives interdepartmental integration as subsuming both interaction and collaboration processes.\(^{16}\)

Building on this later view, Kahn and Mentzer proposed a formal definition of integration as “a process of interdepartmental interaction and interdepartmental collaboration that brings departments together into a cohesive organization.”\(^{17}\) A number of subsequent supply chain management scholars have used this conceptualization as their theoretical basis.

Interaction refers to the set of structured activities between functions that regulate the flow of information between these functions. Kahn operationalized the concept through survey items that ask whether respondents “interact” with other functional areas via meetings, committees, exchange of reports, and so on.\(^{18}\) Interaction in this sense represents a broad definition of communication that does not specify the content of what is communicated, whether the intention
of the sender is considered, or whether the evaluation of the communication by the receiver is considered.

As argued earlier, a more restrictive definition that specifies the transference of operationally relevant knowledge so that mutual understanding is achieved more appropriately captures the underlying concept of cross-functional communication. Indeed, although Kahn operationalizes interaction/communication in broad terms, the author’s discussion of the concept suggests a more restrictive understanding:

Whereas communication should be considered a key component of interdepartmental relationships, viewing integration as ‘interaction’ prescribes that more meetings and greater information flows should be used to improved product development success. A concern is that more meetings and information flows are not necessarily the answer to improved product development success.19

The concern expressed in the preceding passage mirrors the point made by other authors that the central aspect of cross-functional communication is not the exchange of information per se, but rather the exchange of operationally relevant functional knowledge. Thus, the definition of cross-functional communication offered in this chapter seeks to build on the concept of interaction established by Kahn but adds specificity in a manner that is consistent with the original conceptualization and the broader literature on integration.

Likewise, our definition of cross-functional collaboration draws on the literature to add specificity to the conceptualization offered by Kahn and Mentzer. Kahn and Mentzer, for example, defined and operationalized collaboration as follows:

[Collaboration is] an affective and volitional process where departments work together with mutual understanding, common vision, and shared resources to achieve collective goals.
During the past three months, to what degree did your department pursue the following activities with other departments? (Never, Seldom, Occasionally, Often, Quite Frequently)

- Achieve goals collectively
- Have a mutual understanding
- Informally work together
- Share ideas, information, and/or resources
- Share the same vision for the company
- Work together as a team

First, the definition offered here clearly distinguishes collaboration from the more general concept of cooperation. This distinction indicates that collaboration goes beyond achieving goals collectively (cooperation) to include defining goals collectively. Second, “maintaining mutual agreement on priorities in reference to achieving those goals” more clearly specifies the conceptual content of having a “mutual understanding” and “common vision.” Third, this notion provides a context for understanding how and why information, ideas, and/or resources might be shared through a collaborative process by focusing attention on the constraints faced by participants. Refining the definition of cross-functional collaboration in these ways is to expect to have implications for its operationalization.

Finally, the definition of integration offered in this chapter adds the dimension of cross-functional coordination to the communication and collaboration elements identified by Kahn. The notion that integration entails the coordination of activities across functions has deep conceptual roots in the supply chain literature. Incorporating this dimension therefore adds an important element to the overall conceptualization of integration.
Planting the Seeds for Integration

It’s clear from our interactions with managers and executives that integration is a positive state of being. In managerial practice, programs such as sales and operations planning (S&OP) have been implemented at hundreds of companies in an effort to achieve this integration, yet many of those companies would not describe themselves as truly integrated. The question remains, under what conditions can a company achieve this worthy goal, especially in a complex, potentially global enterprise? We propose that three conditions exist that provide the best environment for business integration to flourish: organizational structure, process, and culture. To illustrate our examples, we use S&OP as the specific context for presenting our ideas about the ideal conditions for fostering organizational integration. However, we would expect the same conditions to exist in many other integration-related settings as well.

Organizational Structure

By organizational structure, we refer to the reporting relationships that exist in a firm. In the internal supply chain of a company, organizational structure can encourage integration if a process is organizationally aligned with other functions of the enterprise. The most valuable integration opportunities tend to come when a function that is “upstream facing” integration with others that are “downstream facing,” that is, when operations or logistics integrate with sales or marketing. However, these types of integration often present the biggest challenges. Such is the case of S&OP, which is often perceived, at least by sales and marketing people, as “supply chain planning” when it should be perceived as integrated business planning. By organizationally aligning the S&OP process with sales or marketing, such misperception can be addressed. Similar considerations can be made in the case of the organizational “home” of the forecasting, or demand
planning, function in a firm. Many firms house demand planning in the supply chain group, for reasons such as “we don’t trust sales and marketing to prepare accurate forecasts.” Organizationally aligning demand planning in the sales or marketing group, where demand actually occurs, can potentially contribute to integration.

One way that companies often use organizational structure in an attempt to drive integration is through a matrix organizational structure. For example, an S&OP process owner could find him or herself in a matrixed role, reporting to both a sales leader and a supply chain leader simultaneously. Or, in a variation on that theme, that individual could be “solid line” to the sales leader and “dotted line” to a supply chain leader. Although simple to execute, such a strategy often creates the illusion of integration, rather than true integration. Although such matrix approaches can encourage individuals to be cognizant of the needs of multiple functions, it can also lead to significant role conflict or role ambiguity in the individuals involved. Without attention to the other two drivers of integration—integrative processes and a culture that facilitates integration—such organizational structure strategies are unlikely to lead to true integration.

**Process**

Processes are formal, disciplined mechanisms that bring together relevant pieces of information, from different points of view, delivered by different people, in a regularly scheduled forum, to help the organization make decisions that will help it achieve its goals. Such processes are referred to as S&OP, SIOP, IBP, DSI, or other labels. A good example is the well-documented integrated business planning process that is normally associated with the consulting firm Oliver Wight. From a high-level view, it typically consists of five separate steps: Product and Portfolio Planning, Demand Planning, Supply Planning, Financial Reconciliation, and Executive Review. Each step is often documented with detailed flowcharts that describe the
sequence of events that must occur, the analyses that need to be completed, and the timing of those analyses. Such a process is often repeated on a regular, monthly drumbeat. Information is brought together from multiple functions in the firm, including sales, marketing, supply chain, finance, and senior management. Customers and suppliers are often represented in the different stages of the process. Companies frequently spend large amounts of time and effort to construct and document these processes, and they are often elegantly designed and comprehensive. Unfortunately, it is our contention that these processes, by themselves, often fail to achieve true integration. Both organizational structure and integrative processes are necessary but not sufficient to the goal of true integration. The final mechanism, culture, must be addressed.

**Culture**

Defining culture is difficult. John Mello has published articles in this and other outlets in which he has commented upon the effect that culture has on effective forecasting and business integration. Merriam-Webster defines culture as “a way of thinking, behaving, or working that exists in a place or organization (such as a business).” An organization’s culture can be observed in the norms of behavior and attitude that are present in a firm. How people think; how they interact with others; what they find important; how hard they work; how they dress—all these and countless others define an organization’s culture.

Some organizational cultures are supportive of integration, and some are resistant. Those that are resistant to integration are characterized by each functional group having its own unique culture, and the people are distrustful, or even disdainful, of other functional groups’ cultures. In a business integration context, this can be manifested in the following types of statements:
“I don’t believe any of the forecasts coming out of sales. They’re way too optimistic.”

“All the supply chain people care about is minimizing inventory. They don’t care about serving our customers.”

“Finance is living in dreamland. We’ll never make that Annual Operating Plan number.”

On the other hand, a culture that promotes integration is one where people are pursuing common goals, regardless of the functional area in which they work. So what can a company do to create that integration-friendly culture? Or, what can a company do to transform an integration-unfriendly culture into one where integration can thrive? It is our assertion that there are two approaches to addressing these problems, both of which must be addressed: top-down and bottom-up.

**Tools Available to Managers**

**Top-Down Culture Change**

The signals that people receive from those who are above them in an organization influence their behaviors and their attitudes. This means that enterprise leaders must send very clear, consistent signals that integration is a business imperative and that everyone must behave in this way. In any enterprise, the C-suite executives—CEO, Chief Demand Officer (whether that be the head of sales, the head of marketing, or both), Chief Supply Officer (which might be a combination of head of supply chain and head of manufacturing), and the CFO—must say, and more importantly do, everything possible to communicate that integrative behavior is expected.
The most important piece of top-down culture change is what senior leaders do, not what senior leaders say (although what they say is important, too). They have to be willing to expend resources to get the right tools and people in place to support the integrative business processes. They have to be willing to look at measurement and incentive systems that are in place, to be sure that integrative behaviors are in fact rewarded. And they have to model those behaviors; they have to regularly attend and engage in the executive S&OP meetings and show willingness to sometimes sacrifice their own functional objectives to reach common objectives.

Importantly, the one individual that must play this leadership role is the Chief Demand Officer. Consistent with our previous comments, one of the most common causes of S&OP failure is lack of engagement from the demand side of the enterprise—sales, marketing, or both. Several companies have described their S&OP processes as being “&OP—sales is nowhere to be found.” The Chief Supply Officer is usually the driver of these integrative processes, so he or she is usually a believer. So the greatest challenge to creating this top-down culture change is to convince both the CEO and the Chief Demand Officer that these integrative processes must be put in place and supported with committed behaviors from those involved.

**Bottom-Up Culture Change**

Although the impetus for the culture change needed to achieve true business integration must start at the top of the organization, integration is unlikely to occur just because the CEO wants it to happen. So what can be done to drive these integrative behaviors on the part of the people actually doing the work? Focus should be placed in two areas: incentive and measurement strategies and education and training.

A useful piece of folk wisdom can be found in the phrase “what gets measured gets rewarded, and what gets rewarded gets done.”
In this context, this folk wisdom suggests that if you want individuals to engage in integrative behaviors, encourage such behaviors through their compensation structures or their performance plans. For example, most organizations benefit from receiving demand-forecasting input from their sales teams. This would be an example of a valuable integrative behavior. However, in many companies this behavior is neither measured nor rewarded. Without measuring this contribution, and acknowledging that contribution in either the compensation structure or individual performance plans, it is not surprising if salespeople either spend very little time on the task, or even worse, if they intentionally provide bad information in order to advance a different agenda. Thus, the measurement and reward strategy can incentivize integrative behaviors. So bottom-up cultural change can be initiated and reinforced by closely examining the way all people are measured and rewarded. Senior leaders need to look carefully at what drives individual decision making, and finding ways to measure and reward integrative action must be a priority.

The second way that culture change can take place is through education and training. The training that is most impactful for driving organizational change is when individuals from multiple functional silos sit in a classroom together to learn about the benefits of integration, and how they can individually contribute to that integration. Many times, “aha” moments take place when individuals from sales first hear what happens to the forecasts that they submit. “I had no idea that my forecast had that impact,” they say. “I thought I was just gaming my future quota numbers. You mean you actually take that forecast and make supply chain decisions based on those numbers? Are you kidding me?” Extremely useful classroom experiences can occur when people from sales, marketing, logistics, procurement, operations, finance, and demand planning are all in the same training class. One useful mechanism is to run a simulation and assign salespeople to logistics roles, or procurement people to marketing roles, or finance people to sales roles. Real moments of insight occur when
people experience the effects that their nonintegrative behaviors have on the company.

Clearly, bottom-up culture change must be planned and managed. It doesn’t happen on its own.

**Conclusion**

In summary, then, important points to remember from this chapter are the following:

- S&OP, or other similarly named processes, often fail to achieve true integration.
- Integration should be thought of as multiple entities *behaving as if they were a single entity* to achieve common organizational goals.
- Integration can be achieved through multiple mechanisms: organizational structure, integrative processes, and organizational culture. Culture is, by far, the most important, yet the most difficult, to put into effect.
- Efforts to achieve true business integration must be driven both from the top down and from the bottom up. Top-down change is driven by senior leadership commitment to an organizational structure that will not impede integration, formal disciplined processes that create a forum for integration, and a culture that will facilitate integration. Bottom-up efforts to achieve integration should be driven by measurement and reward structures that incentivize integrative behaviors, and education and training opportunities that demonstrate to individual people the benefits that can derive from true business integration.
Endnotes

1. Mark A. Moon is the Department Head of Marketing and Supply Chain Management at the University of Tennessee’s Haslam College of Business. Chad W. Autry is the W.J. Taylor Professor of Supply Chain Management, and Daniel J. Pellathy is a Supply Chain Management doctoral candidate in the same department.


18. Kahn, Interdepartmental Integration, 137–151.

19. Ibid., 138.


Index

Numbers
3TG, 187

A
aberrations, DSI (demand and supply integration), 160-163
plan-driven forecasting, 161
Accenture, 219-220
accountability, 74
DSI (demand and supply integration), 173
ownership, returns management, 197
accounting, returns management, 183
Action Appliance, 179
action plans, IBCPS (interest-based collaborative problem solving), 43-44
active listening, 39
affinity exercise, 43
aha moments, 23
aligning
operational execution with value focus, DSI (demand and supply integration), 74
PLi, surveys, 106
alignment, 191
lack of alignment, DSI (demand and supply integration) aberrations, 163
market and nonmarket strategies, Walmart, 140-141
returns management, 193-198
alignment framework, 126-130
company analysis, 129, 135-136
competitor analysis, 128, 134
country analysis, 128, 134-135
industry analysis, 128, 130
buyer power, 131-132
competitive rivalry, 130-131
new entrants, 133
substitutes, 132-133
supplier power, 132
market strategy alignment, 128
nonmarket strategy, 128
stakeholder analysis, 128, 135
alignment of purchasing and logistics, 120
Amazon Prime Day, 270
market turbulence, 282
apparel industry, demand and supply integration (DSI), 147-148
Apple
barriers to integration, 304
Songs of Innocence (U2), 283
approved provider transaction model, sourcing continuum, 213-215
Approved Supplier List (ASL), 216
Arrow Electronics, 251
asking back, 39
ASL (Approved Supplier List), 216
ATMI Inc., 251
automotive assembly, DSI (demand and supply integration), 55-57
automotive industry
resource scarcity, 239
Toyota, relational barriers, 306
autonomy, marketing strategy innovation, 276-277, 290

B
BAAS (business as a service), 87
balanced scorecards, 63
barriers to integration, 85-88, 302
external barriers to integration, 297-300
information barriers, 302-304
overcoming, 309-311
overview, 311-312
process barriers, 304-306
relational barriers, 306-308
summary of, 308-309
basic provider model, sourcing continuum, 212-213
behavioral antecedents, 7
behaviors, 7
Bell Canada, 222-223
best practices
best-in-class organizations, 91-92
PLi, 107-108
effective systems and processes that enable superior results, 116-118
fully integrated end-to-end supply chain organization with common metrics, 108-112
networks with operating decision frameworks based on TVO, 114-116
talented supply chain organizations that reward leadership, 112-114
best-in-class organizations, best practices, 91-92
best-in-class supply chains, 111
book publishing industry returns management, 192-193
total cost analysis, 194-195
bottom-up culture change, 22-24
BPI (business process integration), 83
BPS (business process standardization), 83
April 2010 oil spill, 138
Bridgestone, 143
building, inventory, 154
business as a service (BAAS), 87
business model map, 128
business plans, DSI (demand and supply integration), 156
business process integration (BPI), 83
business process standardization (BPS), 83
business scorecards, 119
business success, aligning (PLi), 106
buy or outsource, 207-208
buyer power, industry analysis, 131-132

C
capacity, increasing, 154
capacity and demand balance, DSI (demand and supply integration), 71
capacity forecast, 153
supply review, 169
capitalism, 208
Center for Information Systems Research (MIT), 83
centralized distribution, 86
CEP (corporate environmental performance), 142
CFI (cross functional integration). See cross functional integration, 7-9
CFP (corporate financial performance), 142
challenging work, marketing strategy innovation, 277-278, 290-291
change
bottom-up culture change, 22-24
top-down culture change, 21-22
characteristics of successful implementation, DSI (demand and supply integration), 172-175
Chick, Gerard, 204
China, rare earth metals, 240
climate change, 200
cloud, 87
Coca-Cola, 134
knowledge of marketing environments, 281
market turbulence, 281
Share A Coke, 268
water supply, 240
cocoa, scarcity, 241
Coleman, John, 234
collaboration, 9, 16-17, 204
cross-functional collaboration, 10-12
DSI (demand and supply integration), 164-165
collaborative communication, training, 41
Collaborative Planning, Forecasting, and Replenishment (CPFR), 159
Comcast, 140
commoditization, 209
communication
cross-functional communication, 13-14
IBCPS (interest-based collaborative problem solving)
  focusing, 40-41
  listening, 39
  questioning, 38-39
  sharing functional information, 41-42
  thinking, 40
  training in collaborative communications, 41
PLI, surveys, 104-106
communication processes, IBCPS (interest-based collaborative problem solving), 38-42
communicative supply chain relationships, 310
company analysis, alignment framework, 128, 135-136
competition
outsourcing, 209
for raw materials, 261
competitive rivalry, industry analysis, alignment framework, 130-131
competitor analysis, alignment framework, 128, 134
components of
DSI (demand and supply integration), 166-167
demand review, 168
executive DSI review, 171-172
portfolio and product review, 167-168
reconciliation review, 170-171
supply review, 169-170
conceptualizing, integration, 300-302
conflict, overcoming, within integration, 32-35
conflict minerals, 187
Conflict Minerals legislation, 243
constructive communication
IBCPS (interest-based collaborative problem solving), 38-42
  focusing, 40-41
  listening, 39
questioning, 38-39
sharing functional information, 41-42
thinking, 40
training in collaborative communications, 41

consumer electronics manufacturing, capacity and demand balance, 71
DSI (demand and supply integration), 64-67
integrated behaviors, 70
integrated knowledge sharing, 69
performance, 72
resource allocation, 69-70
value focus, 68

consumer goods manufacturing, fast-moving consumer goods manufacturing, DSI (demand and supply integration), 61-64
consumer packaged goods firms, 47
consumption of raw materials, 261
continuity
GE aircraft manufacturing, 250-251
integration, 248-249
Mitsubishi Electronics Corporation, 251

Cook, Tim, 283
doctor, Michael, 140
discharges, 154
DCM (Demand Chain Management), 50
decision makers, providing action plans to, 44
decision making, DSI (demand and supply integration), 73
decision rules, 37
Dell, vested sourcing business model, 233-234

Dell Computer, barriers to integration, 303
demand, dampening, 154
demand and supply integration (DSI). See DSI (demand and supply integration), 49, 147-148
aberrations, 160-163
lack of alignment, 163
plan-driven forecasting, 161
tactical processes, 161-162
accountability, 173
cross supply chains, 157-159
business plans, 156
characteristics of successful implementation, 172-175
collaboration, 164-165
collaboration, 164-165
characters of successful implementation, 172-175
collaboration, 164-165
components of, 166-167
demand review, 168
evaluation DSI review, 171-172
portfolio and product review, 167-168
reconciliation review, 170-171
supply review, 169-170
core principles, 164-166
discipline, 165-166
failure, 172
financial plans, 157
ideal state, 152-157
leadership, 173
operational plans, 157
overview, 148-149
versus S&OP, 149-150
signs that demand and supply are not integrated effectively, 151-152
sweet spots, 166
demand balance, DSI (demand and supply integration), managerial implications, 71
Demand Chain Management (DCM), 50
demand creation activities, 108
demand driven, DSI (demand and supply integration), 164
demand forecast, 133
demand fulfillment activities, 108
demand generation activities, 48
demand planning, 19
customer relationships, returns management, 190
customer service, returns management, 182

D
Dach, Leslie, 140
dampen demand, 154
demand, 154
department of demand and supply integration, 303
demand and supply integration (DSI). See DSI (demand and supply integration), 49, 147-148
aberrations, 160-163
lack of alignment, 163
plan-driven forecasting, 161
tactical processes, 161-162
accountability, 173
cross supply chains, 157-159
design plans, 156
characteristics of successful implementation, 172-175
collaboration, 164-165
collaboration, 164-165
characters of successful implementation, 172-175
collaboration, 164-165
components of, 166-167
demand review, 168
evaluation DSI review, 171-172
portfolio and product review, 167-168
reconciliation review, 170-171
supply review, 169-170
core principles, 164-166
discipline, 165-166
failure, 172
financial plans, 157
ideal state, 152-157
leadership, 173
operational plans, 157
overview, 148-149
versus S&OP, 149-150
signs that demand and supply are not integrated effectively, 151-152
sweet spots, 166
demand balance, DSI (demand and supply integration), managerial implications, 71
Demand Chain Management (DCM), 50
demand creation activities, 108
demand driven, DSI (demand and supply integration), 164
demand forecast, 133
demand fulfillment activities, 108
demand generation activities, 48
demand planning, 19
demand review, DSI (demand and supply integration), 168
demand side disconnects, 94
Deming, W. Edwards, 93
Democratic Republic of the Congo (DRC), 187
Desired Outcomes, 220, 230
detection, managing network of risk, 244-245
difficulties with, integration, 30-31
discipline, DSI (demand and supply integration), 165-166
disruptions
  managing, 253-259
  recovery, 246
  supply risk, 242-243
  upstream disruptions, 244
distributive justice, 306
diversification, operating models, 83
Dodd-Frank Bill, 187
downstream facing integration, 19
Drucker, Peter, 48, 191, 203, 305
  barriers to integration, 309
DSI (demand and supply integration), 49-52
  aberrations, 160-163
    lack of alignment, 163
    plan-driven forecasting, 161
    tactical processes, 161
  accountability, 173
  across supply chains, 157-159
  aligning operational execution with value focus, 74
  apparel industry, 147-148
  business plans, 156
  characteristics of successful implementation, 172-175
  collaboration, 164-165
  components of, 166-167
    demand review, 165
    executive DSI review, 171-172
    portfolio and product review, 167-168
    reconciliation reviews, 170-171
    supply review, 169-170
  core principles, 164-166
  decision making, 73
  demand driven, 164
  discipline, 165-166
  examples of, 53
    automotive assembly, 55-57
    consumer electronics manufacturing, 64-67
    fast-moving consumer goods manufacturing, 61-64
    health and beauty care manufacturing, 58-61
  failure, 172
  financial measure of performance, 53
  financial plans, 157
  ideal state, 152-157
  information visibility, 73
  leadership, 72-73, 173
managers, implications, 68
  capacity and demand balance, 71
  integrated behaviors, 70
  integrated knowledge sharing, 69
  performance, 72
  resource allocation, 69-70
  value focus, 68
operational plans, 157
overview, 148-149
prioritizing, 73-74
research, 75-77
versus S&OP, 149-150
shared knowledge, 73
  signs that demand and supply are not integrated effectively, 151-152
  sweet spots, 166
  as a tactical process, 161-162
DSI Maturity Matrix, 52
DuPont, marketing strategy innovation, 291
dynamic global supply network and, resource scarcity and, 260-263

E
Early Responsibility program, Procter & Gamble, 290
Edelman, 141
empowerment, 74
teams, FLI, 116-118
encouragement, 33
end-to-end supply chains, 119
entrants, industry analysis, 133
environmental concerns, reverse supply chain, 186
environmental regulations, water supply, 260
environmental scanning, marketing strategy innovation, 291-292
environmental strategy, 138
Walmart, 141
equal status, interfunctional bias, 33
Equity Partnerships, 223-225
targets of, 223-225
examples of
continuity and resiliency
  GE aircraft manufacturing, 250-251
  Mitsubishi Electronics Corporation, 251
DSI (demand and supply integration), 53
  automotive assembly, 55-57
  consumer electronics manufacturing, 64-67
  fast-moving consumer goods manufacturing, 61-64
  health and beauty care manufacturing, 58-61
equity partnerships, 224-225
sourcing business models
  approved provider transaction model, 214-215
  basic provider model, 212-213
performance-based/managed services model, 218-219
shared services model, 222-223
vested sourcing business model, 220-221
sourcing continuum, 216-217
executive DSI review, 171-172
exit management, 232
external barriers to integration, 297-300
external firm conditions, marketing strategy innovation, 271-273
external requirements, vested sourcing business model, 233-234
factors that lead to integration, 6-7
failure, of DSI, 172
fast-moving consumer goods manufacturing
capacity and demand balance, 71
DSI (demand and supply integration), 61-64
integrated behaviors, 70
integrated knowledge sharing, 69
performance, 72
resource allocation, 69-70
value focus, 68
feedback for employees, 290
FIJI, 139
finance, partnering with, 120
finances, prioritizing, DSI (demand and supply integration), 73-74
financial flow, 184, 199
financial measure of performance, DSI (demand and supply integration), 53
financial plans, DSI (demand and supply integration), 157
Firestone, 143
firm conditions, marketing strategy innovation, 271-273
firm performance, 124
firms, high-performance firms, 284
Fisher, Marshall, 48
fisheries, 263
fishing industry, 263
Five Rules, vested sourcing business model, 227-228
clearly defined and measurable outcomes, 230
focus on outcomes, 229
focus on the what, not the how, 229-230
insight versus oversight governance structure, 231-234
pricing model incentives, 231
flexibility, 67
flows concept, 184
synchronization, returns management, 198-200
focusing, IBCPS (interest-based collaborative problem solving), 40-41
forecast accuracy, consumer electronics manufacturing, 66
forward flow, 183-185
fostering, purchasing and logistics integration, 104
Friedman, Thomas, 203
functional diversification, 10
functional information, sharing, 41-42
functional integration, 90-91
functional interests, identifying, 43
functional specialization, 299

G

game theory, 209
gatekeeping, 181
GE aircraft manufacturing, continuity and resiliency, 250-251
GENCO, vested sourcing business model, 233-234
General Motors, barriers to integration, 304
governance structure, vested sourcing business model, 231-234
Great Divide, 48-49
Greenfield, Ben, 136
grocery stores, market strategy, 137
ground rules, IBCPS (interest-based collaborative problem solving), 36-37
group behavior, 30
groups, 30-31

H

Hamel, Gary, 206
Handfield, Dr. Robert, 204
Haslam College of Business, Global Supply Chain Institute, 89
health and beauty care manufacturing, DSI (demand and supply integration), 58-61
high-performance firms, 284
ideal profiles, 284-286
Hirai, Kazuo, 225
Honda Motor Company, 187
HubSpot, 280
human resources, prioritizing, in DSI, 73-74
hybrid relationships, sourcing continuum, 208-210

I

IB CPS (interest-based collaborative problem solving), 30, 35
action plans, 44
considering potential actions and selecting action plans, 43-44
constructive communication process, 38-42
defining problems/situations to overcome/outcomes to be achieved, 42
establishing ground rules/conduct initial sharing/determine logistics, 36-37
identifying individual and functional interests, 43
providing action plans to decision makers, 44
IBP (integrated business planning), 96
ideal profiles, 284-286
ideal state, DSI (demand and supply integration), 152-157
identifying individual and functional interests, 43
roadblocks, IT infrastructure integration, 96-97
identity, subordinate identity, 32-35
implications, marketing strategy innovation, 286-289
increasing capacity, 154
independent partners, 311
individual interests, identifying, 43
industry analysis, alignment framework, 128, 130
buyer power, 131-132
competitive rivalry, 130-131
new entrants, 133
substitutes, 132-133
supplier power, 132
inequality, 33
information barriers, 302-304
structural barriers, 303
information channels, 301
information exchange, 9
information flow, 184
information sharing, barriers to integration, 302-304
information visibility, DSI (demand and supply integration), 73
informational-structural barriers, 303
information-social barriers, 304
in-groups, 30
innovation, 204, 210
creativity, 268
marketing strategy innovation. See marketing strategy innovation
integrated behaviors, DSI (demand and supply integration)
consumer electronics manufacturing, 67
managerial implications, 70
integrated business planning (IBP), 96
Integrated Business Planning process, 19
integrated global supply chain, 109
integrated knowledge sharing, DSI (demand and supply integration), 69
integrated supply chains, 119
Integrating Marketing Strategy with a Firm’s Internal and External Conditions, 273
implications, 286-289
interviews, 275
recommendations, 290-293
results of, 276
effect of autonomy, 276-277
effect of challenging work, 277-278
knowledge of marketing environments, 279-281
market turbulence, 281-283
overall organizational integration, 283-286
surveys, 273-275
integration
conceptualizing, 300-302
continuity and resiliency, 248-249
cross functional integration, 5, 9-10
cross-functional integration, 190-193
culture, 20-21
difficulties with, 30-31
factors that lead to integration, 6-7
functional information, 90-91
internal integration. See internal integration
performance, 7-8
processes, 19-20
purchasing and logistics integration, 93-94
results of, 94
supply chain management and, 4-6
understanding, 8-9
integration levels, versus network risk, 257
Intel, approved provider transaction model, 215
interaction, 16
interpersonal interaction, 34
interdepartmental integration, 15
interdependence, 34
interest-based collaborative problem solving. See IBCPS (interest-based collaborative problem solving)
interests, identifying, 43
interfunctional bias, 31-32
equal status, 33
overcoming conflict, 32-35
internal conditions, marketing strategy innovation, 287-289
internal firm conditions, marketing strategy innovation, 271-273
internal integration, 177
returns management, 178
managerial actions, 200-201
micro approach, 178-181
returns management process, 181-183
reverse flows, 183-190
interpersonal interaction, 34
interviews, marketing strategy innovation, 275
inventory, building, 154
IT infrastructure integration, 80
cloud, 87
identifying, roadblocks, 86-87
optimizing, 87-88
supply chain effectiveness, 80-82
iTunes, Songs of Innocence (U2), 283
INDEX 319

J
Japanese earthquake and tsunami 2011 disruptions, 244
Japanese earthquake and tsunami 2011 Mitsubishi Electronics Corporation, 251-252
joint business planning, 63
Jones Lang LaSalle, 220-221

K
knowledge of marketing environments, marketing strategy innovation, 279-281

L
lack of alignment, DSI (demand and supply integration) aberrations, 163
leadership
actions for leaders, PLi, 118-120
DSI (demand and supply integration), 72-73, 173
PLi, best practices, 112-114
strategic management, 125-127
legal, returns management, 182
levels of risk, 257
listening, IBCPS (interest-based collaborative problem solving), 39
logistics, 91
gaps with purchasing, 96-98
performance relative to expectations, surveys, 99-105
returns management, 183
surveys, 100
logistics capabilities, 170

M
macro environmental factors, 292
make versus buy, 205-207
managed services model, 217-219
managerial actions, returns management, 200-201
managerial implications, DSI (demand and supply integration), 68
capacity and demand balance, 71
integrated behaviors, 70
integrated knowledge sharing, 69
performance outcomes, 72
resource allocation, 69-70
value focus, 68
managers
bottom-up culture change, 22-24
marketing strategy innovation, 270
strategic alignment, 92
top-down culture change, 21-22
managing
risk, 243-244
detection, 244-245
mitigation, 246
recovery, 246-247
supply disruptions, 253-259
supply risk, 253
manufacturing capabilities, 169
mapping efforts, 253-254
market conditions, 293
market mode, 207-208
market strategy, 137, 142-143
market strategy alignment, 128
market turbulence, marketing strategy innovation, 281-283
marketing, returns management, 182
marketing environments, knowledge of, marketing strategy innovation, 279-281
marketing flows, 184
marketing focus, health and beauty care manufacturing, DSI (demand and supply integration), 58-60
marketing strategy, 269
marketing strategy innovation
Amazon Prime Day, 270
challenging work, 290-291
Coca-Cola, 268
environmental strategy, 291-292
firm conditions, 271-273
implications, 286-289
interviews, 275
managers, 270
market conditions, 293
Procter & Gamble, 269
recommendations, 289-293
results of, 276
effect of autonomy, 276-277
effect of challenging work, 277-278
knowledge of marketing environments, 279-281
market turbulence, 281-283
overall organizational integration, 283-286
surveys, 273-275
markets, sourcing continuum, 207-208
Mello, John, 20
metals scarcity, 240
Michelin, 143
micro approach, returns management, 178-181
micro environmental factors, 292
Microsoft Preferred Supplier Program (MPSP), 216
agreement with Accenture, 219-220
mining industry, 240
mitigation, 246
models
operating models, 83-85
sourcing business models, 210-211
approved provider transaction model, 213-215
basic provider model, 212-213
Equity Partnerships, 223-224
performance-based/managed services model, 217-219
preferred provider model, 215-217
shared services model, 221-223
vested sourcing business model, 219-221
transactional business model, 210
Mondelez International, 241
MPSP (Microsoft Preferred Supplier Program), 216
multi-discipline supply teams, 110-112, 119

natural disasters, managing disruptions, 244
Japanese earthquake and tsunami 2011, continuity and resiliency, 251
Nestle, resource scarcity, 259
network of risks detection, 244-245
managing, 243-244
mitigation, 246
recovery, 246-247
supply chains, 242-243
network risk, versus integration levels, 257
networks dynamic global supply network and, resource scarcity, 260-263
managing supply disruptions, 253-259
new entrants, industry analysis, alignment framework, 133
Nike, marketing strategy innovation, 288
Nissan, resource scarcity, 239
nonmarket stakeholder groups, 138
nonmarket strategy, 124, 125, 138-140, 142-143
Pepsi, 141-142
Nooyi, Indra, 141

oil industry, 138
Oliver Wight, 19, 94
operating models, 83-85
operational execution, aligning with value focus, 74
operational plans, DSI (demand and supply integration), 157
organizational integration, marketing strategy innovation, 283-286
organizational structure, 18-19
organizations, best-in-class organizations, best practices, 91-92
outcomes to be achieved, defining, 42
outgroup derogation, 32
out-groups, 30
outourcing, 203-204
sourcing continuum, 204-205
hybrid relationships, 206-207
using the market, 207-208
overcoming barriers to integration, 309-311
conflict, within integration, 32-35
ownership, returns management, 196-197

P

partnering with, finance, 120
partnerships, 311
structured partnerships, 310
Patagonia, 139
Pepsi, 134
nonmarket strategy, 141-142
performance DSI (demand and supply integration), managerial implications, 72
financial measure of performance, DSI (demand and supply integration), 53
firm performance, 124
integration, 7-8
logistics, surveys, 99-105
Purchasing, surveys, 105
performance management, vested relationships, 230
performance-based services model, 217-219
PEST (Political, Economic, Social cultural, and Technological), 134
pharmaceutical firms, 47
physical flow, 184
pizza restaurants, market strategy, 137
plan-driven forecasting, DSI (demand and supply integration) abberations, 161
PLI, 91
actions for leaders, 118-120
alignment to business success, surveys, 106
best practices, 107-108
effective systems and processes that enable superior results, 116-119
fully integrated end-to-end supply chain organization with common metrics, 108-112
networks with operating decision frameworks based on TVO, 114-116
talented supply chain organizations that reward leadership, 112-114
research, surveys, 98-101
self-test, 120-121
surveys alignment of purchasing and logistics, 102
communication, 104-106
interaction is informal and unstructured, 105
procurement and logistics are disconnected, 101
political action, reverse supply chain, 187
political strategy, 124, 140
popcorning, 39
populations, raw material consumption, 261
portfolios, DSI (demand and supply integration), 167-168
Prahalad, C. K., 206
preferred provider model, sourcing continuum, 215-217
premium suppliers, 216
pricing, competitive rivalry, 131
pricing model incentives, 231
prioritizing financial and human resource deployment, DSI (demand and supply integration), 73-74
problems defining, 42
with purchasing and logistics gaps, 96-98
procedural justice, 306
process barriers, 304-306
process-social barriers, 305-306
process integration, 84
process ties, 301
processes, 302
communication processes, IBCPS (interest-based collaborative problem solving), 38-42
Integrated Business Planning process, 19 integration, 19-20
PLI, best practices, 117-118
returns management, 181-183
process-social barriers, 305-306
process-structural barriers, 305
Procter & Gamble, 220-221
challenging work, 290
marketing strategy innovation, 269
winning partnerships, 269
procurement and logistics. See PLI
procurement professionals, outsourcing, 209-210
product proliferation, 60
product review, DSI (demand and supply integration), 167-168
products, recovering, 188-189
profiles, ideal profiles, 284-286
PSI (Progistix Solutions Inc.), 222-223
purchase orders (POs), preferred provider model, 216
purchasing gaps with logistics, 96-98
performance relative to expectations, surveys, 105
surveys, 100
purchasing and logistics, gaps between, 96-98
purchasing and logistics integration, 93-94
fostering, 104
Q
questioning, constructive communication, 38-39
R
R&D, 119
racial integration, 33
racism, 31
rare earth metals, 240
GE aircraft manufacturing, 250-251
rate cards, preferred provider model, 216
raw materials, 259. See also resource scarcity
competition for, 261
consumption of, 261
Raytheon, 218-219
recaptured products, 186
recommendations, marketing strategy innovation, 299-293
reconciliation review, DSI (demand and supply integration), 170-171
recovering products, 188-189
recovery, 246-247
refurbishment, returns management, 183
regulations, reverse supply chain, 187
relational barriers, 306-308
relational “glue,” 301
relationship management, vested sourcing business model, 232
relationships
communicative supply chain relationships, 310
hybrid relationships, sourcing continuum, 208-210
vested relationships, 226-228
relensing, 39
remanufacturing, returns management, 183
renewable resources, 263
resource scarcity, 241
replication, operating models, 83
research
DSI (demand and supply integration), 75-77
PLI, surveys, 98-101
resiliency
GE aircraft manufacturing, 250-251
integration, 248-249
Mitsubishi Electronics Corporation, 251
resource allocation, DSI (demand and supply integration), managerial implications, 69-70
resource scarcity, 230-241
dynamic global supply network and, 260-263
GE aircraft manufacturing, 250-251
integration, continuity and resiliency, 248-249
supply risk, 241-243
water supply, 240
responsiveness, supply chain effectiveness, 81-82
results of
   ideal profiles, 254-256
   integration, 94
marketing strategy innovation, 276
   effect of autonomy, 276-277
   effect of challenging work, 277-278
knowledge of marketing environments, 279-281
market turbulence, 281-283
overall organizational integration, 283-286
returns management, 178, 183-184
   book publishing industry, 192-193
challenges of,
   alignment, 193-198
   cross-functional integration, 191-193
   synchronizing flows, 198-200
   customer relationships, 199
   forward flow, 185
   managerial actions, 200-201
   micro approach, 178-181
   ownership of process, 196-197
   returns management process, 181-183
   reverse flows, 183-190
total cost analysis, 194-195
reverse flows, 183-190
Reverse Logistics Association, 183
reverse supply chain, 183-190
rewarding culture change, 23
Riedel, Joseph A., 288
risk
   managing, 243-244, 253
   recovery, 246-247
   supply chain management, 241-242
   supply risk
      detection, 244-245
      mitigation, 246
   network of risks, 242-243
risk levels, 257
rivalry, industry analysis, alignment framework, 130-131
roadblocks, identifying, in IT infrastructure, 86-87
rules, IBCPs (interest-based collaborative problem solving), 36-37
rules for vested sourcing business model, 227-228
   clearly defined and measurable outcomes, 230
   focus on outcomes, 229
   focus on the what, not the how, 229-230
   insight versus oversight governance structure, 231
   pricing model incentives, 231
S
S&OP (Sales and Operations Planning), 18
   culture, 20-21
   versus DSI, 149-150
   organizational structure, 18-19
   processes, 19-20
sales, returns management, 182
sales, inventory and operations planning (SIOP), 96
Sales and Operations Planning, See S&OP
Samsung
   barriers to integration, 304
   Equity Partnerships, 224-225
Sarbanes-Oxley (SOX), 195
scarce resources. See resource scarcity
scorecards, 119
   balanced scorecards, 63
Scott, H. Lee, 140-141
SDP (Supplier Development Program), 214
self-test, PLi, 120-121
sell more, 181
Sell Right, Not MOre, 179
selling more, 180
selling right, 180
service-level agreement (SLA), 220
Share A Coke, 268, 281
shared knowledge, DSI (demand and supply integration), 73
shared services model, 221-223
shared vision, 229
sharing functional information, 41-42
signs that demand and supply are not integrated effectively, 151-152
SIOP (sales, inventory, and operations planning), 96
SLA (service-level agreement), 220
Smith, Adam, 2, 208
social barriers
   information barriers, 304
   process barriers, 305-306
   relational barriers, 307
social strategy, 139
soft skills, 7
Software Advice, 303
Songs of Innocence (U2), 283
Sony, Equity Partnerships, 224-225
SOO (Statement of Objectives), 230
sourcing business models, 210-211
   approved provider transaction model, 213-215
   basic provider model, 212-213
   Equity Partnerships, 223-224
   performance-based/managed services model, 217-219
   preferred provider model, 215-217
   shared services model, 221-223
   vested sourcing business model, 219-221
sourcing continuum, 204-205, 211
   corporate hierarchies, 205-207
   hybrid relationships, 208-210
   using the market, 207-208
SOX (Sarbanes-Oxley), 195
special concerns, vested sourcing business model, 233-234
specialization, 3
specialized investments, 208
SSO (shared service organization), 221-223
stakeholder analysis, alignment framework, 128, 135
stakeholders, nonmarket strategy, 138
Statement of Intent, 229
Statement of Objectives (SOO), 230
strategic alignment, 90
managers, 92
strategic direction, 74
strategic management, 125-127
alignment framework, 127-128
country analysis, 128
company analysis, 128
competitor analysis, 128
industry analysis, 128
market strategy alignment, 128
stakeholder analysis, 128
strategy
environmental strategy, 138
nonmarket strategy, 124
political strategy, 124, 140
social strategy, 139
structural barriers
information barriers, 303
process barriers, 305
relational barriers, 307
structured partnerships, 310
subordinate identity, 32-35
substitutes, industry analysis, 132-133
success, aligning (PLI), 106
Supplier Development Program (SDP), 214
supplier integration, via vested relationships, 228-228
supplier power, industry analysis, alignment framework, 132
supplier selection, 114-115
suppliers
preferred provider model, 216
specialized investments, 208
supply chain disruptions, 243
supply chain effectiveness
IT infrastructure integration, 80-82
responsiveness, 81-82
suppliers
supply chain management advisory boards, 97
supply chain management and, integration and, 4-6
supply chain management software, 303
supply chain planning, 174
supply chains, DSI (demand and supply integration) across, 157-159
supply disruptions, managing, 253-259
supply review, DSI (demand and supply integration), 169-170
supply risk, 241-242
managing, 253
mitigation, 246
network of, 242-243
recovery, 246-247
supply side disconnects, 94, 96
surveys, Integrating Marketing Strategy with a Firm’s Internal and External Conditions. See Integrating Marketing Strategy with a Firm’s Internal and External Conditions survey
logistics, 100
performance, 99-105
marketing strategy innovation, 273-275
PLI, 98-101
alignment of purchasing and logistics, 102
communication, 104-106
interaction is informal and unstructured, 103
procurement and logistics are disconnected, 101
purchasing, 100
surveys purchasing performance relative to expectations, 105
sweet spots, DSI (demand and supply integration), 166
SWOT (strengths, weaknesses, opportunities, and threats), 136
synchronization, 12
do flows, returns management, 198-200
T
tactical processes, DSI (demand and supply integration) abberations, 161-162
Tajfel, Henri, 30
talent, 120
Target Canada Inc., 79-80
TCE (Transaction Cost Economics), 205, 207
tests, PLI, 120-121
thinking, IBCPS (interest-based collaborative problem solving), 40
time Warner Cable, 140
top-down culture change, 21-22
total cost analysis, returns management, 194-195
total value of ownership (TVO), 114-116
Toyota, relational barriers, 306
training
in collaborative communication, IBCPS (interest-based collaborative problem solving), 41
culture change, 23
Transaction Cost Economics (TCE), 205, 207
transactional business model, 210, 225-226
transformation management, vested
sourcing business model, 232
transmitted knowledge, 14
trust, 307
TVO (total value of ownership), 114-116, 119

U
U2, Songs of Innocence, 283
undercover heroism, 86
unification, 83
unified control, 13
United States navy, 218-219
University of Tennessee, College of
Business supply chain audit program, 93
upstream disruptions, 244
upstream facing integration, 19

V
value chains, 34
value focus
- aligning with operational execution, 74
- DSI (demand and supply integration), 68
value recapture, 186
value requirements, 48
vested relationships, via supplier
integration, 226-228
vested sourcing business model, 219-221,
226-228
Five Rules
- clearly defined and measurable
  outcomes, 230
- focus on outcomes, 229
- focus on the what, not the how,
  229-230
- insight versus oversight governance
  structure, 231-234
- pricing model incentives, 231
- rules for, 227-228
VICS (Voluntary Interindustry Commerce
Solutions), 159
Volkswagen AG, 139
Voluntary Interindustry Commerce
Solutions (VICS), 159

W
Walmart, 136
- alignment of market and nonmarket
  strategies, 140-141
- barriers to integration, 304
Wan, Lee Sang, 225
Waste Electronic and Electric Equipment
(WEEE), 187
water supply, 260
Coca-Cola, 240
WEEE (Waste Electronic and Electric
Equipment), 187
Wheeler, Tom, 139
Williamson, Oliver E., 205, 207
winning partnerships, Procter & Gamble,
269
work enrichment, 278
work processes, PLi, best practices,
117-118

X-Y
Xinjiang Medical University, 139

Z
Zappos, autonomy, 290