Value Chain Talent Management Whitepaper
Closing the Gap

The Axia Institute, May 2020 | By David Closs and Bill Donohue

Introduction

The need for talent development across the global supply chain is more challenging than ever as firms transition from the baby boomer bubble to the millennial and Gen X bubble. Retirement of baby boomers is leaving a significant talent gap that needs to be back filled with individuals having the knowledge and experience to take over supply chain strategic and operational management.

Compounding this problem is the need to acquire talent that has a value-chain mindset. Firms are increasingly aware of the need to move from the delivery of products (supply chain) to the delivery of customer-focused solutions (value chain). This whitepaper explores the nature of the talent-management problem firms are facing for all levels of talent. What are the current talent needs? How are these needs currently being addressed? And what is a better path forward to solving this important problem. This whitepaper proposes a partnership model using the collaborative efforts of supply chain associations, academic institutions, and corporate stakeholders to provide a solution.

The Evolution from Supply Chain to Value Chain

To remain competitive, supply chain professionals must expand their perspective beyond just supply chain to value chain. An early call from Stank, Keller, and Daugherty (2001) suggests reshaping supply chain thinking to a value chain perspective inspired by the groundbreaking work by Michael Porter in his 1985 best-seller, Competitive Advantage: Creating and Sustaining Superior Performance. The heart of a value chain perspective, they argue, is more collaborative ties among supply chain participants that begins with customers and extends back through the firm from finished goods to manufacturing, and procurement. The goal is to improve service through greater collaboration—building a value chain that is customer-solution focused.

What are the talent implications of this evolution from a supply- to value-chain perspective? In research regarding the need to build sustainable supply chains, Oelze, Hoejmose, Habisch and Millington (2016) make the case for greater organizational learning. They found that successful firms apply practices to continuously learn how to improve supply chain operations through training, knowledge acquisition, stakeholder engagement and collaboration. Unfortunately, they found that firms often employ few systematic processes to enhance organizational learning. Thus, it is important to hire or develop individuals who can understand this organizational learning approach to help build more sustainable and effective value chains. The resulting question is: How can firms identify or develop such individuals?

> **There are billions of dollars in value to be realized by integrating how supply chains interact with product design, suppliers, manufacturing, purchasing and other areas of the company. The opportunity comes from integrating all these areas and optimizing the supply chain end-to-end. This is organizational learning from a value-chain perspective at its best.**
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> -   John Moulton, Group Vice President of Global Supply Chain & Manufacturing Engineering for Johnson Controls Automotive

In research outlining how firms can build what they term as a "knowledge value chain," Lee and Yang (2000) make the case that a firm's competitive advantage results from how it organizes knowledge and learns from its mistakes. This includes both application and perceptual knowledge. In the case of supply chain, application knowledge focuses on how to execute supply chain activities while perceptual knowledge concerns how the supply chain relates to the overall firm and its channel partners. The point is, what kind of people need to be hired? In the value chain context, the answer is: people who can drive collaboration, a systematic approach to learning, and ultimately customer service. The more a firm can build a knowledge value chain, the more competitive it becomes.

The Talent Gap: What's Happening Out There?

Given the need for talent that can adapt to this value-chain perspective, how available are these individuals? According to all available sources, talent availability is limited. Some call the talent gap a crisis! Consider these facts. A recent DHL Research brief regarding the supply chain talent shortage concludes that the demand for supply chain professionals exceeds supply by a ratio of six to one. In addition, 25-33 percent of the supply chain workforce, both managerial and labor, is at or beyond retirement age and the backfill pipeline is inadequate to satisfy replenishment demand.

The US Bureau of Labor Statistics (BLS) reveals that approximately 800,000 supply chain professionals in the U.S. will retire in the next ten years. During that same period, BLS projects an increased industry demand in the U.S. alone for an additional 130,000 new supply chain professionals. These include talent demands from firms that are beginning to recognize the benefits of employees who understand supply chain decision making and trade-offs. These projections include both supply chain labor and management. While these estimates may seem low, these projections are based on the job categories recognized by the BLS. Regardless, where will these individuals be found? Universities in the U.S. graduate about 30,000 supply chain students per year which is far below the 93,000 needed to backfill the talent pipeline for firms.

Why aren't universities producing more supply- and value-chain graduates? A combination of factors has constricted this pipeline. The number of supply chain departments in business schools is not increasing to meet demand. In addition, when considering retirements and the number of individuals interested in supply chain doctoral programs, the number of faculty within these departments is also not increasing. According to a DHL whitepaper (2015), there are currently only about 365 supply chain faculty in the U.S. and that number has remained relatively static. Until deans of business schools understand the talent gap, these numbers are not likely to increase. Thus, turning to academia as the sole source of resolving the talent crisis is not likely to be effective in the current climate.

In terms of where the talent gaps are greatest, this same DHL whitepaper (2015) points out that the middle management level has the largest supply chain talent shortage. This research indicates that rising demand, retirements, expanding skillset requirements, faculty shortages, and the profession's image problem are five factors driving the talent gap. In addition, a review of human resource issues in supply chain by Hohenstein, Feisel and Hartmann (2014) found that firms demand a more global supply chain perspective than in the past. The competencies needed for future professionals should focus on how to bring value to customers to build a firm's competitive advantage. They emphasize a need for effective problem-solving skills, the ability to manage ambiguity, and being strong global communicators and collaborators.

Closs and Stank (1999) report in their study of the talent needs of supply chain managers that they were not looking for specialists. Rather, they were seeking individuals who "can effectively comprehend and manage integrated operations both within enterprises and between supply chain partners (p.59)." Managers are looking for people who will use an integrated approach in a manner that maximizes value to end customers.

An important question at this point in our history is, how will the COVID-19 pandemic impact this talent gap? Since supply chains have become increasingly global, firms need to review each link in their value chain to determine its sustainability. This kind of analysis further reinforces Closs and Stank's view that value-chain professionals of the future will need to understand and be able to drive an integrated approach that examines how each link delivers value to customers.

Keller and Cappelli (2014) also reinforce the view that firms should take a value-chain approach to talent management. This approach embraces planning in an environment characterized by uncertainty in supply and demand, and one that acknowledges the inability to forecast away uncertainty and plan years into the future. They ask, "Can we deliver the right product at the right price to meet the changing demands of organizations at any given time?"

To summarize the current talent gap crisis:

- The number of students coming out of supply chain departments is woefully inadequate to cover demand;
- Academic institutions are not filling the gap;
- Firms need to take a value-chain approach to talent management; and
- Talent needs to be trained from a collaborative, customer-solution focused, value-chain perspective that prepares them for a changing global environment.

Current Talent Development Options: What Are Firms Doing?

The question now is what are firms doing to address the talent gap? According to a 2013 article in *Harvard Business Review*, Cappelli indicates that firms have two options—both ineffective. The first is to do nothing and simply rely on outside hiring under the assumption that there is a talent surplus out there waiting for jobs. The second strategy relies on succession planning or keeping a stockpile of talent ready to take over. Economic uncertainty and a reduced labor force for several decades has made this approach unrealistic.

As a result, many firms, particularly more established ones, have applied the strategy of internal development or in-house management training. However, firms have recently begun to abandon this approach due to the expense and the fact that they were often training their staff for the competition. The result is that most firms don't have a comprehensive talent management plan. As a result, they struggle to compete for staff because most employees want professional development opportunities tailored to their needs.

Since neither of these options is sustainable, Cappelli suggests a fundamentally new approach which involves firms adapting to talent uncertainty using three methods. First, he advocates asking employees to share in the expense of development. This might involve employees taking on learning projects voluntarily and giving them the time to complete them. This process of investment helps retain talent. Second, he

suggests creating knowledge development programs focused on firm problems and priorities rather than on general competency development. Finally, he suggests breaking up programs into shorter experiences over longer periods of time to reinforce the learning organization perspective.

Similarly, Lee and Yang (2000) advocate thinking about talent development as a **knowledge value chain** problem. They argue that the process of knowledge management consists of a knowledge infrastructure that includes a) knowledge acquisition, b) knowledge innovation, c) knowledge protection, d) knowledge integration, and e) knowledge dissemination. This combination of management practices results in knowledge performance. The important point of this article is that building this kind of infrastructure, perhaps using some of the Cappelli delivery system principles, requires a systematic or value chain approach to talent. Competing for talent means building the knowledge infrastructure and executing it.

Thinking about the supply side of talent, Lee and Yang ask how firms can improve their return on investment for talent development and protect that investment by generating internal opportunities that encourage newly hired managers to stay with the firm. They are advocating a comprehensive approach with their model, just like an effective value chain. A firm needs multiple inputs (a sustainable supply of mission-focused information and experiences), pulled together in a

managed approach (operational effectiveness), and delivered to talent (logistical effectiveness) for knowledge performance (competitive advantage). The result is a talent pipeline that facilitates the progression of individuals from entry level to senior management status.

While most of these programs focus on knowledge acquisition, Dubey and Gunasekaran (2015) explore the broader needs of talent to support the increased demands of a value chain. They indicate that programs should consist of managerial coaching, executive coaching, organizational development, change management, case analysis and live projects in a wide range of situations. This more comprehensive approach is needed to acquire, apply, and retain information that leads to more sustainable knowledge performance.

Even though the DHL Research Brief cited above indicates that the talent shortage is primarily at the managerial level, a comprehensive approach to talent development should examine the talent challenge for individuals on the front line and in supply chain operations (manufacturing, warehousing, and transportation) who need professional certification as well. What are associations doing to develop frontline, entry-level talent?

In a recent article, Trowbridge (2013) discusses the value of professional certifications from the Institute for Supply Management (ISM) and the Chartered Institute of Purchasing & Supply in motivating top talent. These certification programs focus on building competencies. For example, ISM emphasizes the major competencies of supply management including sourcing, category management, negotiation, and 13 others. Similarly, the Chartered Institute of Purchasing & Supply offers programs in advanced negotiation, category management, financial management and several others related to the purchasing process. The Axia Institute in Midland, Michigan, also offers a certificate program through Michigan State University that helps entry-level and middle manage upgrade their value chain skills.

While it is clearly beneficial for frontline individuals to acquire these certifications, Trowbridge also advocates other strategies for retaining talent. He indicates that it is important to give everyone something meaningful to do so they feel they are contributing to the organization. He also advocates rewarding extraordinary performance through bonus programs that focus on connecting work to company performance.

A study by Tramarico and his colleagues (2019) analyzed these professional educational programs from the six leading supply chain associations. In a survey of senior executives, the authors learned that these certification programs provide important benefits to individuals and their organizations. The Certified in Production and Inventory Management (CPIM) program offered by The Association for Supply Chain Management was rated most highly, but other contributed extensively in other skill areas.

To summarize current talent development considerations:

- A comprehensive approach to talent development is best;
- A value-chain approach to talent management should be explored;
- Professional certifications for frontline managers appear effective.

Challenges with the Current Talent Development Methods

1   The first challenge is that there is no comprehensive talent acquisition and development model available to create and develop the talent pipeline. It is important to use an end-to-end value chain approach, building a model which meets the following criteria:

- Focus on the competencies industry requires to maximize performance;
- Understand how to extend talent competency by optimizing the narrow band of resources currently available to employers;
- Design an aligned curriculum combining experiential learning with knowledge acquisition;
- Develop an integrated delivery system, incorporating multiple learning systems that are efficient and most importantly, engaging for the learner; and
- Create an evaluation strategy that eliminates bottlenecks and provides feedback to industry and educational stakeholders.

2   The second challenge is to create a centralized administrative resource that can secure funding and implement the model. Any talent development strategy will not prosper without an administrative resource driving the project. The challenge includes the identification of the activities and the resources required to allow the strategy to work.

3   The third challenge is to identify the human resource (HR) and organizational issues required to ensure success. As employers seek to retain value chain team members, they will have to be mindful of the HR best practices that are effective in developing the broad range of talent. The value-chain talent development program will have to incorporate educational and experiential activities that can create individuals with a broad range of expertise.

Better Path Forward: What Would a Value Chain Curriculum Look Like?

The increasing demand for supply chain talent is becoming more multi-dimensional, such that the job requirements should be examined by each position in the organization. Table 1 lists the skills needed for each position. Specifically, the vertical dimension characterizes supply chain positions in ascending order from labor operations to C-level:

- Labor operations positions are the execution level roles in the plant, warehouse, or transportation vehicle. These are the personnel who typically don't have a college degree but are seeing increased demand for specialized skills.
- The first level supervisory positions are those who supervise the operations personnel in the plant, warehouse, or dispatch.
- The management positions are the individuals who coordinate and facilitate the lower level supervision.
- The director level position works with managers to determine and execute strategy and to coordinate across supply chain processes. Directors represent either line or staff positions.
- The C-level position are the vice-presidents who establish and coordinate strategy and execution across the firm.

The horizontal dimension characterizes the types of skills required to support supply chain strategy development, management, and execution. While there are more detailed skill lists, this one focuses on specific skills as they relate to training.

- Functional skills are those required to complete production, material handling, and transportation activities. These include the skills to effectively and safely use the equipment.
- Technology skills are those required to install, maintain, and apply technical equipment such as information technology, material handling, and communications equipment. The technology skills refer to the installation and use of various supply chain technologies rather than the design of technology applications.
- Leadership skills focus on guiding a team to perform specific tasks. Leaders are required to develop collaborative teams and guide them in the execution of operational or strategic initiatives.
- Financial management skills are those required to collect, report, and interpret information regarding supply chain operations. The expertise includes both the knowledge of the accounting transactions as well as the financial implications of the company performance.
- Technology design skills refer to the ability to apply new technologies for the collection, tracking, analysis, and decision support of supply chain strategy and execution. Technology design requires a substantially more comprehensive skill set than technology skills due to the need to understand technological trends, potential applications, and requirements for integration.
- Trade-off and collaboration skills refer to the ability to identify the

opportunities for internal and external organizational functions to shift control of activities and responsibilities. One of the key supply chain management competencies is to identify how activities can be integrated to develop synergies.

- Global Awareness skills refer to understanding the global supply chain environment and its implications for strategy and execution. The specific awareness should include global differences related to operations, legal, regulatory, financial, and transportation.
- Value-chain perspective and business model define the competencies necessary to extend the firm's view beyond simply delivering product (supply chain) to understanding the value proposition for key customers. This competency also includes understanding how to develop a business model to facilitate the delivery of that value proposition.
- Ambiguity management is a major requirement for today's senior supply chain executive. As effective supply chain management has become more critical for firm competitiveness, it has become more important that SCM professionals consider a broader range of environmental factors and develop experience to understand   trade-offs.

Table 1

The cells in Table 1 prioritize the importance of each skill with each value chain position as determined by the authors. A value of 5 indicates that the skill is most important for that position while a value of 1 indicates that the skill is of limited benefit. The value of creating this table is to provide a sense of how curriculum should be targeted at various

levels in the organization. For example, functional skills are most relevant for labor operations personnel, while other skills such as leadership, financial management and other skills are less relevant. As individuals progress in their careers, other skill sets become more relevant.

Table 2

Table 2 presents educational content by position. These percentages reflect the percent of educational resources that should be allocated to each position based on the forced rankings in Table 1. These percentages were determined by summing the rankings by row for each of the position levels. For example, summing the data in row 1 of Table 1 creates a total of 16 so that the ranking of 5 for operator functional skills represents 31.25% of the total. As Table 1 illustrates, labor operations employees need their training to focus on functional skills and application of application technologies such as manufacturing, handling, and transportation technologies. Reviewing Table 2 suggests that mid-level positions require broad training in all the competencies. However, training at the C-level requires a greater focus on more abstract competencies.

The percentages in Table 2 are color-coded based on value. Cell values above 13 percent are coded red because these are the competencies that are the most important for individuals in those positions. Cell values between 8 and 13 percent are blue as these represent competencies of moderate importance for individuals in each position. Cell percentages less than 8 are black and are

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of minimal importance to individuals in those positions.

Table 3

Table 3 converts the percentages in Table 2 to relative percentages by removing the topics that are not important for that role. The result is that Table 3 focuses on the topics that are most important for each position. Table 4 summarizes the content in descending order of importance. For example, labor operations education and development should focus first on functional skills and then on applied technology. On the other hand, education for C-level individuals should first focus on value-chain, business models, and dealing with ambiguity followed by a secondary focus on financial management, technology design, trade-off and collaboration, global awareness, and leadership. Other positions are a mixture of the competencies.

It is important to note that these competencies must be presented from an integrated value-chain perspective. Specifically, each competency must be put in the context of how it maximizes customer value and brings solutions to customers. For example, when exploring technology development, it will be essential to review how each of the technologies can enhance customer solutions. Global awareness should be pursued from the perspective of different customer preferences in various global regions, and then how to view various value chain global ways of doing business from that perspective.

Better Path Forward: What Are the Best Delivery Systems for a Value Chain Competency-Based Approach?

Table 4

Now that Table 4 has suggested the topics for each position level, the final step is to identify the pedagogy for developing the talent. Historically, the primary means of developing talent was through use of classroom teaching or hands-on experiences. However, the combination of increased demand and broader technological capabilities have offered more educational options. These include:

- Cases – Discussion and solution of cases to develop experience in problem solving and dealing with ambiguity. A variant of the case method includes applied workshops that use the knowledge to develop a solution for a firm issue or problem;
- Computer Based Training (CBT) – Training through the use of synchronous or asynchronous modules using lectures, problem solving, and testing;
- Laboratory – Hands-on learning with technical equipment; and
- Seminar – Classroom-based learning with lecture and student interaction.

The goal would be to pursue a blended learning approach that integrates the most appropriate pedagogies in both formal and applied learning environments. The delivery system would include multiple options:

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- The use of technology including Artificial Intelligence (AI), VR, and a Learning Management System (LMS) should be integrated into the options. Kintu, Zhu and Kagambe (2017) indicate that blended learning is effective when the quality of resources is high, and students have flexibility in how the regulate their time in completing assignments.
- Options should include online instruction, co-op activities, learning laboratories, executive education and simulations. Singh and Hurley (2017) indicate that online learning can be effective and empowering for students when the quality of instructional resources is high.

Table 5

Table 5 identifies the pedagogy that should be used for each position and topic. These results illustrate that the lower level positions (Labor Operations and First Level Supervisor) should primarily use CBT and Lab approaches as their training is more structured and must be designed for a larger number of participants. On the other hand, the more senior level individuals (Director and C-Level) should use a combination of seminars and case discussions.

Building the Talent Management System: What Is the Strategy?

When offering these educational programs, it is essential that the curriculum is aligned around customer solutions. That means not having different suppliers provide training from their own unique perspectives. Thus, the challenge is to decide how best to build and then administer this comprehensive talent management plan. The traditional approach is often very fragmented as individual institutions independently create their own programs, certifications, seminars, and internal corporate training efforts. While such programs have provided firms with a menu for value chain management talent development, they neither take advantage of new training approaches, nor provide firms with the synergies to deliver more value to their customers.

To address this fragmented approach, value-chain talent development leadership is needed to forge a more comprehensive path toward reform. The leadership must have the credibility and expertise necessary to pull together a broad partnership that can pull together a system that synergistically delivers these experiences:

- Engaging entry-level operational talent to expand their interest in value chain issues to pursue professional certification;
- Providing strategies to incentivize universities with doctoral programs in supply chain management to expand their ability to produce research faculty in supply chain;
- Providing strategies to incentivize universities to create minors and other programs to increase the number of

students graduating with supply-chain credentials;

- Building a curriculum strategy to provide professional development certificates in value chain creation for supply chain managers;
- Creating a strategy that enables key stakeholders to confer regularly about curriculum success; and
- Identifying opportunities and content for seminars that can provide the unstructured knowledge related to value-chain and ambiguity.

To achieve these goals, it is important to build a consortium of organizations to develop and execute a talent development vision for value chain management. This consortium of government agencies, universities, community colleges, corporations, and trade associations would take the lead in creating and implementing pilot programs. The consortium would provide the political will and the resources to both create and evaluate these pilot programs.

The first step is creation of a consortium to hold a value chain talent-development summit to both discuss the talent gap and begin creating a system to address the gaps. The summit would examine issues at all five talent levels, the curriculum needed at these levels, and then the infrastructure needed to improve talent at these levels. It would then make recommendations about how to accomplish the five goals listed above.

The second step is to develop more detail regarding the curriculum and pedagogical content. This includes the definition of specific content and topics for each module, the pedagogy to apply for each topic, the media for communicating the lessons, and the methods for evaluation.

The third step is to designate an organization to both create and administer the consortium. The organization would host the talent development summit, invite stakeholders to shape the scope and reach of the consortium, and synthesize the results. Clearly, bridging the talent gap and stemming the crisis requires integrating the key stakeholders and corporate partners in an all-out effort to dramatically increase talent. Ultimately, the question is what kind of commitment are stakeholders willing to make to reduce the talent gap or crisis, in a manner consistent with global business development?

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TABLE 1

RELATING SKILL IMPORTANCE TO POSITION LEVEL

	Functional Skills	Technology	Leadership	Financial Management	Technology Design	Trade-off and Collaboration	Global Awareness	Value-chain Perspective and Business Model	Dealing with Ambiguity	Sum
Operations	5	4	1	1	1	1	1	1	1	16
First Level Supervisory	4	5	2	2	2	2	2	2	2	23
Management	3	3	5	3	3	3	3	3	3	29
Director	2	2	4	5	5	5	5	4	4	36
C-Level	1	1	3	4	4	4	4	5	5	31

TABLE 2

IDENTIFYING EDUCATIONAL CONTENT BY POSITION

	Functional Skills	Technology	Leadership	Financial Management	Technology Design	Trade-off and Collaboration	Global Awareness	Value-chain Perspective and Business Model	Dealing with Ambiguity	
Operations	31.25%	25.00%	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%	56%
First Level Supervisory	17.39%	21.74%	8.70%	8.70%	8.70%	8.70%	8.70%	8.70%	8.70%	100%
Management	10.34%	10.34%	17.24%	10.34%	10.34%	10.34%	10.34%	10.34%	10.34%	100%
Director	5.56%	5.56%	11.11%	13.89%	13.89%	13.89%	13.89%	11.11%	11.11%	89%
C-Level	3.23%	3.23%	9.68%	12.90%	12.90%	12.90%	12.90%	16.13%	16.13%	94%

TABLE 3

RELATIVE IMPORTANCE OF CONTENT BY POSITION

	Functional Skills	Technology	Leadership	Financial Management	Technology Design	Trade-off and Collaboration	Global Awareness	Value-chain Perspective and Business Model	Dealing with Ambiguity
Operations	55.6%	44.4%							
First Level Supervisory	17.4%	21.7%	8.7%	8.7%	8.7%	8.7%	8.7%	8.7%	8.7%
Management	10.3%	10.3%	17.2%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%
Director			12.5%	15.6%	15.6%	15.6%	15.6%	12.5%	12.5%
C-Level			10.3%	13.8%	13.8%	13.8%	13.8%	17.2%	17.2%

TABLE 4

SUMMARY OF CONTENT BY POSITION

	Functional Skills	Technology	Leadership	Financial Management	Technology Design	Trade-off and Collaboration	Global Awareness	Value-chain Perspective and Business Model	Dealing with Ambiguity
Operations	55.6%	44.4%							
First Level Supervisory	17.4%	21.7%	8.7%	8.7%	8.7%	8.7%	8.7%	8.7%	8.7%
Management	10.3%	10.3%	17.2%	10.3%	10.3%	10.3%	10.3%	10.3%	10.3%
Director			12.5%	15.6%	15.6%	15.6%	15.6%	12.5%	12.5%
C-Level			10.3%	13.8%	13.8%	13.8%	13.8%	17.2%	17.2%

TABLE 5

TEACHING PEDAGOGY

Relative Importance	1	2	3	4	5	6	7	8	9
Operations	Functional Skills	Technology							
First Level Supervisory	Technology	Functional Skills	Leadership	Financial Management	Technology Design	Trade-off and Collaboration	Global Awareness	Value-chain Perspective	Dealing with Ambiguity
Management	Leadership	Functional Skills	Technology	Financial Management	Technology Design	Trade-off and Collaboration	Global Awareness	Value-chain Perspective and Business Model	Dealing with Ambiguity
Director	Financial Management	Technology Design	Global Awareness	Leadership	Value-chain Perspective and Business Model	Trade-off and Collaboration	Dealing with Ambiguity		
C-Level	Value-chain Perspective and Business Model	Dealing with Ambiguity	Financial Management	Technology Design	Global Awareness	Trade-off and Collaboration	Leadership		