

KEYNOTE ADDRESS

Principles of supply chain management and their adaptation to the Asian horticultural sector¹

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Abstract

Supply chain management refers to the coordination and alignment of materials, financial and information flows for all activities and processes involved in a supply chain. Broadly speaking, a supply chain describes the full range of activities that are required to bring a product or service from conception through the different stages of production and processing to deliver superior value to the customer at least cost to the supply chain as a whole. Supply chain management encompasses all those activities associated with sourcing and procurement, production scheduling, order processing, inventory management, warehousing and servicing customers across the many independent firms involved in the distribution of food. While the concept of supply chain management is not new, its application to the fresh produce industry is more recent. Increased competition arising from the deregulation of global markets is forcing food manufacturers and retailers to give greater consideration towards ways of reducing costs while simultaneously fulfilling consumers' demand for superior quality. With the increasing need to assure consumers that the food they intend to consume is safe and nutritious, the food industry is moving away from the traditional means of buying towards a more direct and reliable means of procurement where buyers exert greater control over prices, quality and production methods. Unable to respond to the demands of the institutional buyers, there is a very real risk in the transitional economies that most smallholder farmers will become increasingly marginalized. The lack of incentives, the added costs, the lack of knowledge and the inability to make appropriate investments will inevitably result in a dualistic food distribution system where smallholder farmers will face diminishing returns. To break away from the commodity trap and to enter higher value markets, smallholder farmers need to consolidate and differentiate to add value to their product offer. A range of support mechanisms will be required to overcome many of the impediments and to facilitate this transition.

Introduction

Ladies and gentlemen. Welcome to this symposium. I hope that in the next 40 minutes or so that I can give you an introduction to some of the principles of supply chain management, and do so in a manner that will be both practical and interesting for you. I would like to give you first a brief overview of supply chain management concepts, to look at some of the drivers for supply chain management, the implications for producers, and the ways and means that producers can respond. Given the fact, too, that

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I am responsible for the editing of the proceedings and most of you have communicated with me at least indirectly, I have had the opportunity to read your abstracts and the papers that have been submitted thus far. I hope to draw on some of the material to provide an overview and perhaps even a summary of some of the key points that I hope will emerge and some of the strategies that producers might then embark upon in order to improve their relationships with downstream customers.

Supply chain management: a definition

I would like to begin with a definition of supply chain management. Supply chain management refers to the coordination and alignment of materials, financial and information flows for the activities and the processes that are involved in a supply chain (Simchi-Levi *et al.*, 2000). I would like to draw on some of the key words from this definition and to elaborate on them, because they are important in the context of this symposium.

Supply chain management refers to coordination – it is a process. It is a means by which activities and processes are coordinated and brought together. Now, if we are going to coordinate, there must be someone somewhere in the chain who is responsible for that. Much of the literature talks about the role of the supply chain captain. Someone has to be the leader. If someone is to lead and if someone is to control, there must be a flow of information. If activities are to be coordinated, then for the participants who are involved in the process, there must be rewards. The rewards flow in terms of the financial benefits that the various actors in the supply chain receive. So, when we think about supply chain management, from this definition, we need to think about the actors, the people who are involved in the supply chain, the firms, and the individuals; the processes or the activities that are involved; and the resources that each of these actors need in order to perform the activities that they perform. So this is a very holistic definition.

We then go on to describe the activities that are undertaken in terms of supply chains. Supply chains embark upon a full range of activities that are required to bring a product or service from conception through to the different stages of production and processing. When we look at this word conception, this indicates or suggests to me that we are in fact dealing with a proactive process. It's not reactive; it's proactive. And we need to appreciate that in business-to-business markets, this is indeed the way in which most business-to-business markets operate. Both participants, the buyers and sellers, are interacting with one another. There is a process of discussion, a process of coordination, and it is this process that allows products to be conceived. As we will talk later, the fact that both parties are working together in introducing and launching new products significantly improves the success of those products and significantly reduces the costs of new product development.

See also the two key words occurring towards the bottom of this activity statement: supply chains function fundamentally to deliver “superior value” to customers. When we consider value, we need to stop to think about what value is. Perhaps the best way I can describe value is the quality–price trade-off, the compromise that buyers make each and every time that they purchase fresh fruit and vegetables. Buyers look for the best

value, and in what is becoming an increasingly international environment, we need to recognize that the benchmark is constantly being lowered in terms of lower cost. Hence, as producers seek to reduce cost, they must simultaneously seek to improve quality. Such a strategy is very difficult to achieve. Porter (1980) suggested that businesses fundamentally have two business strategies: to differentiate or to reduce costs, and when they try to achieve both they invariably became stuck in the middle. They are no good at anything. Hence, trying to improve the performance of supply chains is not an easy task. There is conflict in the exchange process, and we will talk about the conflict and power that emerges in the supply chains a little later.

If we are going to coordinate, what sort of activities are we going to coordinate? We need to appreciate that these activities begin not just at the production stage, but they go way back, much further back. They go right back to the procurement of the inputs that are required for each of the various production processes. A firm cannot hope to be internationally competitive if the firm does not have internationally competitive suppliers. This becomes a critical dimension in understanding how supply chains operate. If farmers are to produce good quality products, the farmers must have good quality inputs. They must have the seed of the right variety and of the right quality, they must have the fertilizers, they must have the chemicals, and they must know that the quality of the products that are delivered to them will ultimately deliver the product that the consumer requires.

By definition, supply chain management is also involved with production scheduling. In business-to-business markets, we need to understand that the three key dimensions that customers require are quality, reliability of delivery and competitive price, in that order. We must appreciate and understand that it is the business-to-business market within which most of the exchange processes take place and that the exchange process incurs costs. There are various costs associated with order processing, inventory management and warehousing; ensuring that sufficient quantities of product are available to meet the needs of downstream customers. However, to differentiate our product offer from that of our competitors, we need to look for ways in which we can better service customers. What can we do that will add value? How can we do that across the many independent firms that are involved in the supply chain? The key word here is independent. We need to recognize that the seed suppliers, the fertilizer input companies, the chemical companies, the farmers, the market intermediaries, the food processors, the retailers are all independent businesses who are aspiring to achieve their own goals. Somehow, we have to coordinate the goals of the different actors, the different activities, and all the different resources that these actors need.

To coordinate all these different players, there are two key mechanisms we can use to achieve this. We can of course do it through the market, where we let supply and demand rule and determine how resources will be allocated. However, in the fresh produce industry this is particularly dangerous because the quality is highly variable, the quantities of product that are available are highly variable, and the range of product available may not necessarily meet the needs of the customers. As we are discovering more and more today, we are relying less upon the free market as the mechanism of allocating resources or resource use. If we move then to the other extreme, we move to a hierarchy. If we move to a hierarchy, we have control through ownership. We don't

have a choice anymore, because we are told what we are to do. Somewhere in between these two extremes of the free market and the hierarchy is what I can best describe as the relational marketing paradigm and it is within this relational marketing paradigm that we see the majority of the exchange processes taking place. Here there is a degree of hierarchical control, yet there is also the independence associated with the free market.

It is at this point that I will probably make what is the most controversial statement of this presentation. After all, isn't that what a keynote speaker is supposed to do? Since the 1950s, marketing has taught us that the "customer is king". What the customer wants, the customer gets. Why is it then when we start to talk about supply chain management in the fresh produce industry, that we suddenly start bashing the retailers and the food processors? They are the customers and customers have a legitimate right to command the supply chain. The customers are the supply chain leaders and we need to recognize that because the customers are the supply chain leaders, they have the power – they have the means to control the supply chain. When we start to talk to farmers and producer groups, we need to recognize that producers make decisions about who they intend to sell their produce to. Just as the customers make decisions about who they are going to purchase the product from, farmers need to make decisions about to whom they are going to sell. If our category managers or our retailers or our food processors make demands, then we make choices. We decide to supply or we choose not to supply. If we choose to supply, then we have to abide by the rules that the customers set. Remember: what the customer wants, the customer gets. If we don't supply it, in a global economy somebody else will and that is the reality of the market.

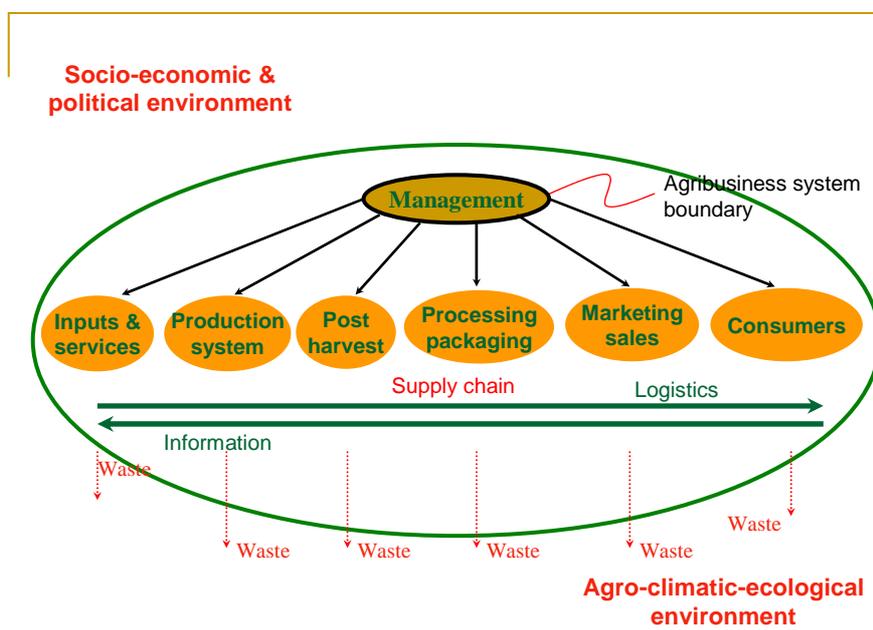
When we think about supply chain management, we need to look at it in the context that supply chain management is fundamentally about delivering superior value to customers at the least cost. In order to do this, we need to look at the supply chain within the context of an agribusiness system, for this brings together the many actors and the many activities and the resources that these actors require to perform the activities.

Figure 1 below is just one model that we can use to explain this. This model is an activity-based model where we look at the inputs and the services that are required to provide the chemicals and the fertilizers and the seeds and the fuel and the equipment and the machinery and the infrastructure to the producers who then utilize those resources in various ways to produce the products that then move on through the post-harvest system, through processing to packaging to marketing to ultimate consumption. We need to appreciate that around each of these activities there is a boundary and a number of both internal and external factors, some of which we can control and some that we cannot.

Management theory tells us that managers plan, organize, coordinate and control. Therefore, supply chain management is all about planning, organizing, coordinating and controlling all the various activities and processes along the supply chain. If we are to do that, we need to recognize that there are factors which are external to this system that impact and influence the things that are undertaken. There are various social, economic and political forces, which we cannot control, that impact the decisions that we must make. As we are dealing here with agricultural products, products which are to varying

degrees dependent upon natural resources, sunshine, rainfall, etc. there are some things that we cannot control. We must acknowledge therefore that we are impacted and influenced more by the agro-ecological environment than by any other factor. If we are going to coordinate, there has to be a flow of information. Product will move down the supply chain from the point of production to consumption. Information, of course, moves back up the chain from consumption to production, allocating resources in ways that will bring greatest profitability to the various actors in the supply chain. However, we must acknowledge that there are various impediments in this process. When these impediments arise there is wastage. Product fails to conform to standards or product fails to meet the customers' expectations because of poor handling, poor production and inadequate knowledge. These are issues that I will continue to explore in a moment.

Figure 1: The agribusiness system



Source: McGregor (1998)

Drivers for supply chain management

In reality, we need to think not so much about supply chains, but about supply nets. We need to think about things as they occur within the context of networks. This is where we employ what the literature describes as the domino effect. When someone in the chain makes a change, this will have implications both upstream and downstream.

Markets are constantly changing. Supply chain management is not new. It's been since World War II, and was first employed by the Japanese in terms of their manufacturing systems and then picked up by the Americans. However, in terms of the fresh produce industry, supply chain management is a relatively new concept.

Why all the sudden interest in supply chain management? Supply chain management fundamentally enables firms to respond more effectively to the competition. We need to

recognize that within the environment in which we are currently operating, competition is intensifying. It's getting harder and harder to make a dollar. As a result of GATT and the World Trade Organization, deregulation of the market and the removal of tariffs and taxes, and the technical barriers to trade are resulting in more and more lower-cost producers entering the market. The costs of production are falling. This is a global trend that we see happening for all agricultural products. Agricultural prices are declining. We also see within the marketplace, aggregation and consolidation within the buyers, driven by the desire to achieve the economies of scale that lead to them becoming more competitive. With the decline in trade barriers, companies who face saturation in their domestic markets are expanding. We see retailers, food manufacturers and food processors coming into Asia in enormous quantities, because Asia is in reality the only area of growth in the global economy.

We must also acknowledge and accept the role of technology in terms of the impact that this provides to fresh produce supply chains through improved transportation and logistics: the capacity and ability through modified atmosphere packaging and storage to move products from one continent to another with minimal decline in product quality. We need to appreciate the improvements in communication technology that, at the flick of a switch, enable me to find out what is happening on the Chicago commodities market today or the New York coffee market right now. I am in touch with the markets in a way that we have never been able to do before. We have information in real time.

This in itself becomes a key issue when there is so much talk today about the lack of information in supply chains. I disagree. I think there is more information in supply chains than we have ever had before. However, it's the type of information that is important. Price information: farmers can't react to that. You cannot suddenly turn on a tap and have tomatoes available tomorrow: it takes time. What we do need is strategic information about what everyone else is doing and this is the most difficult information to achieve.

We also need to appreciate the role and the function of biotechnology in terms of the gene transfer technologies that enable us to produce products which have an enhanced shelf life or products, which through incorporation of the Bt gene, allow us to reduce the quantities of chemicals applied. We also need to accept and to acknowledge the role of functional foods and some of the great work that has been done to enhance the nutritional quality of the food that is available to consumers. I personally believe that we have seriously mismanaged the whole genetically modified organism (GMO) debate and allowed the minority to hijack the potential benefits for mankind and our environment.

Implications for producers

I make no apologies for being a producer-orientated person and I think, in the context of this symposium, our principal focus here is on the producer. How can we enhance or facilitate linkages between producers and downstream market intermediaries? From the producers' perspective, let us appreciate and understand that the producers are dealing with fewer and fewer customers. Our customers are consolidating and aggregating and thus producers have fewer choices. Our customers have more power and they are more

demanding. But remember too that they have a right to determine what they want. Remember, customer is king: what the customer wants, the customer gets, and if you cannot supply, somebody else will.

We also need to appreciate that for the customers themselves, the competition exists not so much within the supply chain, but more between the supply chains, as our customers try to carve out a niche in the market. In order for those customers to stay in business, they need to develop new products and, increasingly, our downstream customers are looking to their suppliers as their source of differentiation.

The customer is king. The customers do have a legitimate right to reject product that does not meet their specifications and to impose penalties on suppliers who do not meet their specifications. We must understand in most cases that the customer is also a supplier to another downstream customer who is in turn supplier to the customer's customers' customer. As I spoke before about the concept of the domino effect, if I can't supply, my customer can't supply and his customer then has to source the product from somewhere else. This is not acceptable in the marketplace today.

In order for suppliers to become a preferred supplier, suppliers must make investments. They must invest in their customers. They must invest in the production capacity, the infrastructure, and the information and communication technologies that are necessary to communicate with their downstream customers in real time, and suppliers must implement the quality assurance systems that are required by the customers or the customer's customers. These are not optional; these are choices. Producers choose to transact or they choose not to.

So, what's in it for the producers? What benefits does supply chain management deliver to producers? Quite clearly, because of the improved communication between the customers and the producers, there will be an improvement in product quality, both in terms of the technical specifications of the product, its ability to meet the downstream customer's needs, and in terms of the functional quality dimensions. Functional quality relates to the reliability of delivery, our capacity and our ability to deliver the product consistently and reliably to downstream customers. For producers, if we are able to do this consistently and reliably, then we become preferred suppliers, and we must aim to become preferred suppliers, because once we are a preferred supplier then we have access to the market. As the market moves further and further away from the wholesale market where prices are determined by supply and demand, then it gets harder and harder for us to obtain market information. It is only when we are actively participating in the supply chain that we actually know what is going on and we get the information that we need to make decisions. Not unexpectedly, it's on the basis of this information that we make the decision to invest. As we have seen, these investments are necessary to improve the linkages between producers and downstream customers. When we deal with these customers, there is less risk. With less risk there is the certainty that we can make these investments. There is also reduced product deterioration. There is less waste, there is greater efficiency, there is greater profitability.

Impediments to supply management

So why doesn't it happen??? What are the impediments to more effective supply chain management? One of the most important impediments is the inequitable sharing of value. We need to recognize, as we have already discussed, the importance of buyer power. We need to acknowledge and to accept that the buyers have the power. They are able to control prices. They are able to control quality and they are even able to tell farmers how they should produce, what technologies they must employ, what varieties they should cultivate and what chemicals they should apply. The key issue here relates to the concept of fixed value, because with the removal of trade barriers we are now dealing with the lowest cost producer. The lowest cost producer sets the benchmark. Against this benchmark there is a limited or a fixed pie that needs to be divided amongst all the supply chain actors or participants. This is where the difficulty arises. This is where the problems and the inequities emerge. The size of the pie is fixed: it is how we divide the pie that is the key issue.

We need also to recognize that there is often a lack of incentive within the supply chain for producers to improve product quality. Again, we need to appreciate and to understand that prices in the fresh produce industry are determined primarily by supply and demand, and I would argue here that it is supply that is the critical factor. This in turn is influenced by climatic adversities and chance events. Demand is relatively fixed. There are occasions, however, when there are peaks in demand – red roses for Valentine's Day, for example; turkeys for Thanksgiving – but generally supply is the factor that will determine prices. This becomes problematic for producers, because producers generally receive higher prices when the product quality is poor because of some chance event such as heavy rain, cyclones or some other adversity that has reduced the supply. Price goes up, but it doesn't go up for good quality; it goes up for poor quality. Most producers also acknowledge that the quality that is produced at the beginning of the season and the end of the season is poor. The best quality is produced in the main season, but this is when the product is most abundant and the prices are lowest. This makes it problematic to deliver the correct price signals, but what also starts to emerge here is the need for us (producers) to understand the dual role that customers play in the supply chains.

Our customers are not only buyers, they are also suppliers or resellers, and it's the conflict between buying and selling that creates most of the inequity that we see within the supply chains. Buyers can only reward producers for better quality if they in turn have customers that are willing to pay for it. In Indonesia, for example, most farmers sell through what is described as the *tebasan* system. They sell the whole crop in the ground without grading. Our experience has shown that when growers do take the time to harvest the product and grade it, they don't necessarily get a better overall price, because they have to find a means for disposing of the second grade product. If they don't have a customer who wants it, they will not be rewarded for producing superior quality product.

We need to recognize that there is a lack of credit that impacts upon the supply chain. The majority of small farmers have no collateral. They can't borrow from the banks. The only people that they can borrow from are their downstream market intermediaries,

and so we have this concept of embeddedness where the growers find themselves locked in or tied into relationships with downstream market intermediaries. They no longer have choices. Their hands are tied and we know that these market intermediaries often do take advantage of the growers with exceptionally high interest rates. But what choice is there? What can the farmers do without appropriate financial arrangements? We find that if farmers don't have the finance, then they can't invest in the production inputs and the production capacity that they need to be able to guarantee reliable delivery to downstream customers. They don't have the infrastructure, the cool storage and the refrigerated vehicles to maintain product quality. They don't have the funds to invest in quality assurance systems or information technologies. In other instances, when the farmers do transact with the multinationals, the terms of trade may be from 30 to 60 to 90 days. The farmers can't afford that length of credit. In most cases we are dealing with small subsistence farmers who rely upon agricultural outputs as their main source of income. This income, in turn, is used to meet the household expenses: provide food for the family, clothing, medical expenses and school fees. To put more money into the farm, the family has to do without. Again, our hands are tied.

With small subsistence farmers, we need to appreciate that there is this concept that can be best described as the jackpot mentality. Farmers stay with what they know because they lack strategic information. They don't know what else to do. They don't have the knowledge, and they do what they do, on a wing and a prayer, hoping that somewhere else, a competitor is going to get smacked out. A typhoon, heavy rain, the lack of rain, high temperatures, low temperatures: some adversity that will reduce supply and cause the prices to go up. On the one hand, we see farmers unable to take risks, but yet on the other, this is exactly what they do. Small subsistence farmers are the biggest gamblers in terms of this hope, this expectation, that at some point in time, "I am going to hit the jackpot."

We also need to appreciate that there is a lack of information. As I have already suggested, it's not price information – farmers talk among themselves and in most developing countries, someone in the village has access to a mobile phone. Information is limiting in terms of production technologies and in terms of the marketing options. What we so often see is the lack of awareness of the market needs. The farmers' marketing horizon often goes no further than the trader with whom the farmer transacts. They don't know, in many cases, what the product that they have produced ultimately looks like when it gets to the market. They don't see how the product has deteriorated. They don't see how the way in which they have mishandled the product impacts on its appearance. For example, mangoes. We know that mangoes get sap burn. Producers in the Mekong River Delta were totally surprised when we took them to Ho Chi Minh City to see how their product looked three days after they had harvested it. Most farmers had never seen sap burn, because the product has left the farm before the sap burn has any impact. If farmers don't know, they don't appreciate that what they do impacts upon the quality of the product. They don't see the need to make changes.

Then there is the lack of commitment. The lack of commitment at grower level often relates to his or her social commitments or social obligations. For example, when there is a death in the village, the whole village stops. They forget about the fact that somebody downstream is expecting their product. They fail to deliver. The customer, or

the customer's customer, must then find an alternative source of supply. Then there is the time horizon: the fact that the growers themselves are very short-term orientated. They don't look at the capacity or the need to invest now to collect later. They don't have a choice: they don't have options.

Historically, because of the lack of knowledge and the inability of small subsistence farmers to understand the dynamics of the market, most farmers believe they have been exploited by their downstream customers. In turn, the farmers act opportunistically to seek to take advantage of the traders. There is the concept of topping, where the farmers put the rotten stuff at the bottom of the sack and then put the nice stuff on top. In Papua New Guinea, for example, before they sell the coffee, they throw the bag into the river so that it picks up a little bit of extra water. All of these things reduce the efficiencies within the supply chain.

How do small producers respond?

What I hope you can see emerging from our discussion so far is the emergence of a dual marketing system. Producers can continue to supply the fresh fruit and vegetables that they grow to the traditional wet markets, or they can choose to enter the new retail markets. If they choose to enter the new markets, then they must do as the new markets demand. This is not optional, and as I have indicated, you are either in or you're out. If you are not a preferred supplier, you are an out-supplier and if you are an out-supplier there is a risk that you will become increasingly marginalized. And that, of course, is the key concern, for the gaps between poor farm and rich farm, and rural and urban households are increasing.

Small producers can respond by seeking to minimize costs. Remember that in most instances, the majority of small producers with whom we are dealing are subsistence farmers using minimal inputs. The use of minimal inputs provides us with the ability to move the product quite readily towards more sustainable methods of production. Things like IPM are very, very conceivable in these limited input industries.

Small producers need to focus on what it is that the customers really want so that they can reduce wastage, and small producers need to leverage their competitive advantage. What is it that the small producers have? Economics textbooks talk about three things: land, labour, and capital. They haven't got capital, so the only things that they do have are land and labour. If they concentrate on more labour-intensive crops rather than broad scale agricultural crops, our small subsistence farmers have a competitive advantage.

Small producers can consolidate. I would suggest, in fact, that small producers must consolidate. Cooperatives are not a dirty word. In terms of supply chain management and the markets within which we now operate, we must cooperate, we must collaborate. It is the only way that we can ensure the survival of the small farmers. Through consolidation, small farmers are able to improve the reliability of supply. They are able to secure greater volumes. They are able to undertake production planning to ensure that there is a continuous and regular supply. They are able to improve quality through

having large enough volumes that they can grade the product, but collectively make the necessary investments in infrastructure and logistics to deliver what customers require. Small farmers can respond by differentiating. We can explore alternative ways of servicing our customers through cultivating desired proprietary varieties, through creating a product assortment, through prepacking, through precutting, through semi-prepared products, or through labelling, all of which add value for the customer. Our producer groups may seek to explore alternative market arrangements, or new market segments. We are seeing greater opportunities for producer groups to supply directly to customers, or even to consumers. In the developed countries, the Internet is becoming more widely used as a means of purchasing fresh fruit and vegetables. In the transitional economies, producer groups have the ability to deliver direct, door-to-door, to consumers.

Producer groups also have the ability to differentiate their product by branding. You can brand the product as organic, but you can also brand the product as hydroponic. We find that often the consumers' perceptions and the consumers' reality are quite different. But consumers can and consumers do differentiate between those chemicals that are applied to control pests and diseases and those that are applied to the soil or nutrient solution to facilitate growth. Producers can differentiate their product on the basis of sustainability, the concern for the environment, and the increasing concern among the more affluent consumers that farmers have been treated fairly and equitably and that their welfare has been adequately protected. Fair-trade labels are increasing rapidly throughout the industrialized countries.

What makes supply chains work?

Clearly, if supply chains are to operate, there must be clear benefits for both partners. Farmers are going to look for high prices and a guaranteed market. Buyers are going to look for low prices and a reliable supply. Since many of the actors who are involved in the supply chain are both buyers and sellers, there is clearly a conflict. Conflict is inevitable. It's how we manage the conflict that is the interesting factor. To do that, we need to build enduring long-term relationships. We need to recognize that as we move towards supply chain management, the partners become increasingly interdependent. Our customers rely upon our suppliers. As the suppliers, we rely upon our customers. We are not interchangeable, because of the investments that we so often make. This is perhaps the greatest difference between business-to-business and business-to-consumer markets. In business-to-business markets, buyers do not readily switch suppliers. We lock in for long-term relationships, and clearly long-term relationships will only operate where there are compatible goals, where both partners are pursuing the same outcomes.

The key construct that continually emerges in building long-term relationships is trust. Trust is the knowledge that I have that my partner will do what I expect my partner to do. I know how they will react. I know how they will respond. I know that what they say they will do they will do and that provides me with an assurance. Trust is also about knowing that my customers will do what they say they are going to do in my best interest: that is, they will not take advantage of me. So, when we talk about trust, we need to talk about trust in terms of two key issues, credibility and benevolence.

Credibility is the knowledge that they will do what they say they are going to do, and benevolence, that they will do it with my best interests at heart.

Of course we need the commitment. Commitment is a state of mind: it's an attitude; a quantum shift where supply chain actors recognize the interdependence that exists between suppliers and their downstream customers. Commitment is also instrumental from the point of view that various investments are required in infrastructure and technology. It is also temporal. It involves a time element. Commitments are long term.

We need an appropriate means of governance. We need some way that we can work collaboratively and collectively to ensure that there is a more equitable sharing of the value that is created within the supply chain. We need to find a way and a means to be able to measure performance and to measure efficiencies so that when improvements are made those improvements are shared equitably among all the players in the supply chain.

Clearly, we need an open exchange of information. It is information that allows firms to adapt, and as we have seen already in terms of talking about preferred suppliers, it is the capacity and ability of suppliers to adapt to meet the needs of their downstream customers that leads them to become preferred suppliers. As I began the presentation, it's all about effective leadership. Somebody has to take control, and the various suppliers and the various actors need to acknowledge and to accept the right to control the supply chain.

DELEGATE: I want to ask Dr Peter Batt the difference between value chain management and supply chain management?

DR BATT: Traditionally, supply chain management has been production driven. We have looked at pushing product down the supply chain, whereas the value chain concept works the other way. It's a pull rather than a push. Here we look at the customer's requirements as being the driving factor. Hence, we use the term value chain rather than supply chain to recognize the customer orientation. I didn't use the term today because I was asked to talk on supply chain management. Differentiating between value chains and value nets all becomes rather academic. The key issue here is to appreciate and to understand that it's the customer who rules. The customer is king. In a global environment, customers have a lot of options. So, if we don't deliver, somebody else can and somebody else will.

DELEGATE: I would like to ask Dr Peter that if the customer becomes the major driving force for the farmer, under what situations will the farmer become king? I would like to ask Thai farmers to produce only enough for the family, only enough for the community, only enough for domestic consumption. I have no need to produce for export. I think in this situation, it may be the farmer who will be the king, because the city people have nothing to eat. I would like to get your idea about that.

DR BATT: I appreciate the question. I love a challenge. Taking your comments to the extreme, and perhaps there will be others later who will comment here as well, about a third of Europe's GDP is spent on the common agricultural policy. I would argue in

such a context as this, the farmer is already the king. Farmers are getting paid not to do anything and to take their land out of production to solve the very issue that you have described. By controlling supply, you can control the market. But as we operate today in a global environment, if you were to suggest that Thai farmers should hold back production, product will come in from somewhere else, because the higher prices will attract farmers in the People's Republic of China or Viet Nam or Malaysia. The higher prices will attract the competition and inevitably supply will exceed demand and prices will fall. We must also acknowledge that the only way farmers can respond to falling prices is to increase production again, and as production increases, prices fall still further and so farmers increase production still further. This is described as cobweb theory. Prices keep going down and down and production continues to increase.

DELEGATE: Dr Batt, in the beginning when you defined supply chain management, you emphasized that it needed somebody to take the lead, to coordinate, to control. At the end, one of the key success factors was effective leadership. I saw an invisible leader somewhere who is controlling. Does that mean government? Does that mean the traders and the producers or everybody?

DR BATT: I would sincerely hope that it is not the government – let the market rule – but I think what we are acknowledging here is that the market, where prices are determined by supply and demand, is no longer appropriate. It can't work in terms of being able to supply the consistency and the reliability that downstream customers require. I am talking here specifically about supermarkets and food manufacturing. The example that I so often use here is potatoes. We need to appreciate that certain types of potatoes are cultivated for fresh markets, others are cultivated for chips, and there are others that are cultivated for French fries. If we are going to produce these potatoes, we need to know who we are producing them for and what quality specifications they require. The invisible hand that is so often talked about in marketing texts is becoming more and more visible. It's the retailers, the category managers and the food processors who are determining the market requirements.

DELEGATE: Thanks very much, Peter. Last May, Peter and I were in Bali visiting a project. Just after we got back into the bus I bought three T-shirts from a lady for \$10. Peter bought 7 T-shirts from the same lady for \$10. Now, I don't know whether his purchases were an equitable sharing of value and I really got ripped off, or whether my purchases were an equitable sharing of value and he was really ripping off the seller. But, the point I want to make is that equity and inequity are subjective concepts. Could you elaborate on that a bit?

DR BATT: Another challenge. I agree equity is subjective. Regrettably, we must acknowledge that the farmer is at the bottom of the food chain. We can't change that. Farmers are always going to take what basically is left, but what we are starting to see is more responsible leadership. We will hear from speakers about the importance of fair trade and equity where there is greater transparency. Consumers are beginning to demand that farmers receive a certain proportion of the income or at least are perceived to, and as the value increases, they receive a fair share of that increased value. Equity is subjective and it depends upon what we perceive to be a fair and reasonable share. That

is going to become increasingly difficult to do as low cost producers effectively muddy the water.

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