"Enhancing Business Relationships via Inter-Organizational System (IOS) Information Technologies: Wood Products Sellers and Home Center Buyers"

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Keynote Address

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Abstract

The search for international business partners has accelerated dramatically in the 1990's as corporations attempt to rapidly develop global strategies in a cost effective manner (Main 1990; Pattison 1990). As a result, there is ever increasing development of enhanced international business relationships such as value-added partnerships (VAP), cooperative alliances, joint ventures and other cooperative ventures. The authors believe that international business relationship formation and maintenance can be enhanced through the implementation of Inter-Organizational System (IOS) information technology linkages between international buyers and sellers. These linkages, whereby data systems are connected and information is shared, may improve global trade relationships at corporate, industry sector and national levels. For international forest products suppliers, the U.S. homecenter retailer is a potential business relationship that may be strengthened via Electronic Commerce (EC) technologies such as Electronic Data Interchange (EDI) and Universal Product Code (UPC) bar coding for inter-company inventory management and control.

Today's global forest products customer is seeking the highest value products. The U.S. building materials retail industry has been addressing this demand through consolidation and the development of the homecenter warehouse concept to deliver superior product selection at the lowest price. As a result, these retailers are requiring their vendors to provide additional service while, at the same time, more volume discounts (Bouchard and Markus 1993). Critical to success as a vendor to the larger homecenter retailers is an efficient distribution system that delivers the right quantities of high quality products at the right time in the right place - and at the lowest price.

The primary purpose of this paper is to discuss the role of business relationships and specifically, strategic business alliances, in the broader context of inter-organizational system (IOS) information technology between global forest products suppliers and U.S. homecenter retailers.

Inter-Organizational Systems (IOS) Information Technology

IOS's are based on information technology that crosses organizational boundaries (Bakos 1991). Johnson and Vitale (1988) define IOS as: "***... an automated information system shared by two or more companies and built around computer and communication technology that facilitates creation, storage, transmission and transformation of information.***"

IOS technology impacts inter- and intra-firm management and business practices that, in turn, influence such areas as economic value creation and strategic competitive advantage. According to Johnson and Vitale (1988), most successful IOS users have recognized that increased familiarity with customers, dealers or suppliers afforded by joint systems leads to collaborative behaviors that improve economic performance by both partners.

IOS technologies for the wood products industry includes the integration of Universal Product Code (UPC) barcodes with the use of Electronic Data Interchange (EDI) to improve communication between buyers and sellers (Emmelhainz 1993). These channel strategies for enhancing competitiveness by improving speed, quality and accuracy are often referred to in the retail industry as Just-In-Time (JIT) manufacturing - based on the idea that, whenever possible, no activity should take

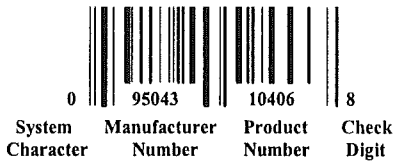
place in a system until there is a demand for it. Quick Response (QR) is an product of JIT logistics in that the development of quick systems is necessary if one is successfully implement time-based systems (Topken 1996). EDI and bar coding allow business to cut time from the supply chain and be more responsive to retail customers' needs.

UPC (Universal Product Code) Barcoding -- at either the piece or unit level is a relatively new but extremely important part of wood products industry relationships. At the piece level, bar coding for those customers with Point-Of-Sale (POS) scanning capabilities reduces keying errors at cash registers, speeds check-out time, aids in automatic inventory replenishment, provides instant data regarding purchases for advertising and other market research and saves labor costs due to fewer cash register operators. Overall, the adoption of UPC barcodes improves communication between suppliers and their customers regarding the products that are bought and sold. Moreover, UPC is the link or translator that describes products electronically and allows domestic or international trading partners to conduct business in a common language.

A UPC barcode symbol is composed of a series of bars and spaces that translate into numeric information that can be scanned or read by a scanning device and translated into meaningful business information (Norris 1991). The first digit on the left is the system character, which designates the industry to which the product is going (Figure 1). The second set of five digits is the manufacturer number (assigned by the Uniform Code Council [UCC]), followed by the product number (assigned by the manufacturer). The last number is the check digit which is an arithmetic calculation of the previous 11 digits that confirms to the scanning device that the scan has been successful.

Figure 1:

UPC Bar Code

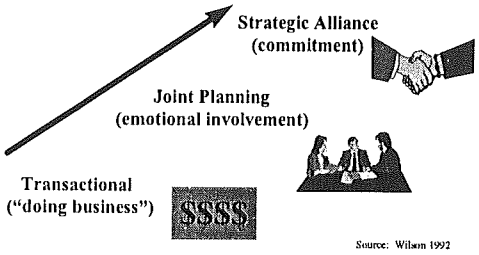


Barcodes are also used at the unit or package level as part of computer-based inventory systems or for transmitting shipping information to customers. This application for inventory tracking, management and control has two fundamental applications. The first is for work-in-progress inventories, which can assist wood products producers with recovery rate calculations and to establish "real time" finished and rough inventory tracking and control. The second application is when barcodes are used in conjunction with EDI to enhance communication between buyers and sellers regarding business transactions. As products are scanned, a computer detects when an inventory reaches a minimum threshold level and then electronically sends a purchase order to their supplier's computer to reorder additional product via EDI.

Electronic Data Interchange (EDI) -- is the transmission of business data between or within firms in a structured, computer processable data format that permits data to be transferred without rekeying from one computer-supported business application to another (in different

Figure 10:

Relationship Continuum



Source: Wilson 1992

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Beyond the emotionally detached transaction is a dyadic relationship, where two exchange partners (a buyer and a seller) become more involved in transacting goods. Attempts may be made by the exchange partners to maximize power and influence over the relationship even though the relationship may continue over time. Distrust and wariness may also be present.

Further along the relationship spectrum may be some form of joint planning where restrictions on relationship development begin to dissipate and attributes of a strategic alliance begin to emerge. Examples of joint planning relationships are promised customer orders, indexed pricing or other price management, sales forecasting information supplied by the customer, physical distribution planning, replenishment arrangements, buying schedules communicated to suppliers and production schedules communicated to customers. As joint planning and information exchange begin to take place, there is a tendency to develop increased ownership and responsibility to maintain the relationship. Typically, due to increased costs associated with developing enhanced relationships, the number of customers/suppliers tends to be reduced with only strategically significant customers/suppliers remaining.

At the other extreme of the business relationship continuum is the strategic alliance. As the term infers, there develops an association between partners that is an integral part of each parties long-term business strategy. One definition of strategic alliance is "***a particular mode of inter organizational relationships in which the partners make substantial investments in developing a long-term collaborative effort and common orientation toward their individual and mutual goals***" (Mattsson 1988). Strategic business alliances in various forms are generally intensely managed and monitored arrangements where some degree of transfer of power and authority between partners takes place relative to transactional relationships. These partnerships require vision and strategic commitment to succeed (Konsynski and McFarlan 1990).

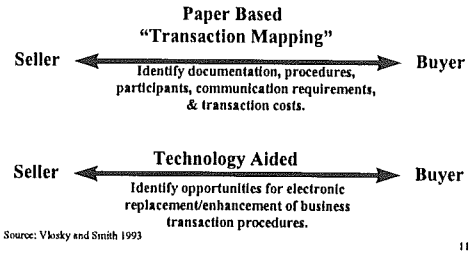
Often relationships, including strategic alliances in business, are premised on non-quantifiable attributes such as commitment and trust. Trust is considered by many researchers to be the binding force in most productive buyer/seller relationships (Hawes, Mast and Swan 1989). The formation of alliances requires each party to divulge information that may be otherwise proprietary and may place the firm in a position of being taken advantage of by opportunistic behavior by the other party. This may subsequently undermine the trust component and create a competitive environment between partners in what Professor Gary Hamel (of the London Business School) terms "a race to learn" whereby the fast learner threatens domination over the slower student (Main 1990). Trust becomes a particularly sensitive issue when companies allow entrance to or interaction with their information systems.

The primary motivation for entering into strategic alliances is to enhance long-term stability and competitiveness of the strategic partners. In the business world, development of strategic alliances are attempts by a firm to buffer itself from uncertainty, to better manage change such as rapid technological advances, industry de-regulation and increased globalization and to increase profitability. Specifically, business partnerships typically provide for some or all of the following competitive advantages: (1) penetration of protected markets; (2) entry of heavily concentrated industries; (3) lowered production costs; (4) risk sharing of high research and development costs; (5) prevention of competitor alliances; (6) maximization of marketing and distribution channels and (7) the gaining of leverage over a supplier (through strategic knowledge of a suppliers production). In a more pragmatic sense, global alliances are often entered into for less esoteric reasons such as obtaining technology, generating capital, accessing raw materials or markets and obtaining market information about international competitors. Perhaps this explains why over half (57 percent) of all joint ventures fail and the average longevity is only 3.5 years (Pattison 1990).

IOS Technology Influences on Strategic Business Relationships - The old model for business transactions involves the examination of documents, procedures, participants, methods of communication and transaction costs. However, a new paradigm suggests the identification of technology aided opportunities for replacing these paper-based business transactions with electronic transaction procedures (Figure 11). The impact of IOS technologies may be viewed as an "overlay" to business alliances.

Figure 11:

Technology Adoption in Business Transaction Flows



Source: Vlosky and Smith 1993

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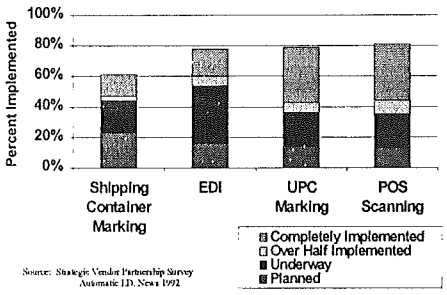
The goal in this context is to develop enhancements to existing business practices which are more efficient and cost effective. For wood products suppliers, technology linkages can provide additional benefits including product differentiation and development of stable business relationships resulting from direct links of company information systems. Furthermore, IOS linkages such as unit and piece level bar coding and electronic data interchange (EDI) may facilitate buyer-seller partnerships by connecting data systems and encouraging information sharing into Quick Response (QR) systems. According to the Strategic Vendor Partnership Survey conducted jointly by the National Retail Federation and Anderson Consulting (1991), 65% of retailers surveyed use or are planning to use Shipping Container Bar Code Marking and 78% use/plan to use EDI (Automatic I.D. News, 1992) (Figure 12).

Figure 12:

Quick Response Technology Implementation



Source: Strategic Vendor Partnership Survey Automatic I.D. News 1992

Vendors are currently under pressure from their customers to develop QR capabilities with the goals of jointly reducing pipeline inventories and improving supplier responsiveness. For example, customer/vendor connectivity issues may involve on-line production schedules to customers; global electronic mail networks may replace telephones for inter and intra company communication; POS data links may be used by vendors for inventory management or for market research; shipping container bar codes may be used in conjunction with EDI to develop joint inventory management control systems; and EDI can be used for a myriad of relationship enhancing activities including order management, sales and distribution planning, product replenishment and production scheduling.

International Implications of Adopting IOS Technologies

A firm's global strategic performance is based, in large measure, on its ability to coordinate sourcing, production, marketing, distribution and after sale service activities in many countries. Various strategies for market entry, sourcing arrangements and/or strategic alliances are available and will depend on clear and concise communication between business partners (Smith and West 1993). The use of strategic alliances in basic forest products industries, such as logging and the primary manufacture into lumber, panel products, veneer, wood chips, etc., must account for geographic location, access to and quality of raw materials (the resource base), the availability, quality and cost of labor, the level of technology and government influences on trade. In terms of higher value-added wood products manufacturing (i.e. furniture, cabinets, paper, paneling, etc.) consideration must also be given to the following strategic factors: design and marketing; related basic forest product supply industries; and the quality and sophistication of the home country demand. (Smith and West 1993).

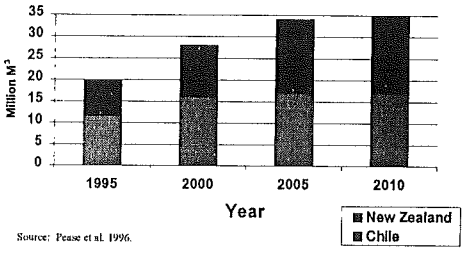
Among multinational companies, strategic logistics alliances are becoming commonplace (Bowersox 1990). These alliances are characterized by: 1) extensive linkages between buyers and suppliers whereby the parties seek the synergistic benefits of working together; and 2) the view of the relationship as a continuum as opposed to one with separate arms length transactions. These partnerships appear to more effectively favor innovators and have shorter marketplace response times versus large vertically integrated corporations (Johnston & Lawrence 1988).

Although a number of integrated electronic messaging systems such as electronic mail or fax communication can be employed to shorten the international business cycle and improve buyer/seller partnerships, IOS information technologies have great potential in aiding in the establishment of global alliances. Electronic commerce standard formats have been established for over one hundred business documents including those used in international transactions. Most customs and transportation related documentation are available in EDI format.

Summary

Many of the world's rapidly growing economic areas lack the wood raw materials necessary to become self-sufficient in wood products, resulting in the continued growth of international trade in wood products (Cohen and Smith 1992). Increasing wood products exports may be particularly attractive to major producing regions of the world with a surplus of wood and a significant volume of forest products exports (Truitt 1990). In particular, New Zealand and Chile anticipate rapidly growing supplies of softwood supply at a time when the North American Pacific Northwest's supplies are being restricted (Figures 13 & 14).

Figure 13:
New Softwood Supply From New Zealand and Chile



Source: Pease et al. 1996.

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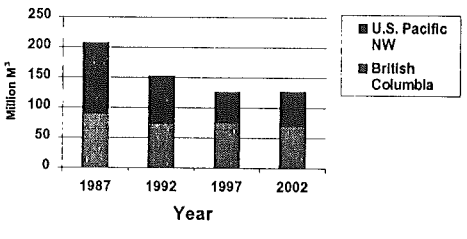
Figure 14:
U.S. Northwest and British Columbia Log Harvests



Source: Pease et al. 1996

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Global sourcing represents an efficient use of the world's human, material, energy and capital resources and represents a common strategic variable among many manufacturing industries (Merrifield 1989; Ohmai 1989). The benefits of global sourcing include the strengthening of supply reliability through a portfolio approach, the acquisition of unique or higher quality products and/or technology which may not be available domestically and the entry of protected markets through sourcing arrangements (Fagan 1991). Implicit in this concept is the strengthening of long-term international relationships between raw or semi-processed raw materials and their overseas customers. Moreover, in natural resource-based industries, such as forest products (i.e. wood-framed construction or furniture manufacturing), distribution factors are an important component of product cost, thus providing additional incentives for the creation and management of strategic IOS information technology alliances.

The evolving global, high tech information society demands long term perspectives in decentralized networks. As we move into the latter-1990's these forces have intensified as an overload of information threatens to inundate systems. Additional factors for consideration are outlined in Megatrends 2000 (Naisbitt and Aburdene 1990), whereby the authors state that "the movement to global free trade is being driven by an alliance between telecommunications and economics that permits (one) to deal with a business associate in a (Rotorua) office from a mountain perch in Colorado as if (one) were across a table -- sharing conversation and documents."

Successful global competitors in the wood products industries will take a long term view of business that will include the integration of innovative strategies with

relatively high entry barriers to discourage competition. Moreover, these large multinationals will be resource driven and capital intensive; combining raw material supply advantage with production cost, technology, marketing factors and favorable government trade policies for success. Strategic alliances will utilize international management teams and electronic IOS information technologies to capitalize on these factors and secure long term supply, distribution and market access on a global scale.

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