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The Evolution of an Internet Market Exchange and Value System: Examples From The Motion Control Industry

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ABSTRACT

This manuscript examines the evolution of internet value systems in the motion control industry. We believe the primary reason behind the inconsistent performance of that industry's adoption of the internet in the supply channel was largely due to poor strategy. Using the concepts of bias exchanges and game theory it is suggested that internet strategies such as disintermediation and first-mover advantage were elusive because firms focused too much on technology and not enough on customer value. Lessons for managers and future decisions are offered.

INTRODUCTION

Business-to-business (B2B) e-commerce holds the promise of efficiently managing procurement activities and opening up new markets (Sood et. al., 1999). Thousands of B2B initiatives have been developed over the past decade targeting different vertical and horizontal market segments, providing tools to expand the reach of participants, and reducing procurement costs. For many firms, these activities seem to be largely based on reactions to the marketplace rather than the result of a larger overall strategy. Industrial suppliers such as Rockwell, W. W. Grainger, and Siemens funded ventures aimed at different industrial channels in order to capture a greater share of the market through web-based technology. Despite significant investments in technology the result of these activities led to only minor revisions of the distribution and value systems (Gilbert & Bacheldor, 2000). The lack of a fundamental change in the industrial products market mirrors the reality that many B2B internet initiatives were not as successful as predicted.

A few B2B initiatives in this market have been successful but competition, government regulation, security concerns, and a downturn in the economy may have contributed to the downfall and repositioning of many of these efforts. We believe the primary reason behind the inconsistent performance of the industrial market adoption of the internet in the supply channel was largely due to poor strategy. The emergence of the internet as a tool in the value system altered many successful firms' strategies. The changes in strategy were a result of a shift in thinking away from providing the customer value towards attempting to exploit technology. The purpose of this paper is to evaluate the progress of ecommerce in the industrial market, highlighting the models that companies are using and lessons that can be learned from some of the recent B2B initiatives. Because of the size and ubiquity of the industrial market, many of the findings presented here can be generalized to other value systems.

Background on the Industrial Market for Motion Control

A key product segment within the industrial market is motors and controls used for a variety of processes. These products tend to be specialized, offered in a variety of configurations, and are often purchased through pre-negotiated contracts. The global demand for motors, drives, and motion control is estimated at approximately \$125 billion (U.S.).¹ Estimates place the number of manufacturers involved in this market at approximately 5000, and the number of sales channels selling these products at close to 150,000. Manufacturers include global corporations like Siemens, Rockwell, and Mitsubishi, to smaller, local manufacturers like AC Technologies, KB Electronics, and

¹ Per Motion Tech Trends, Inglewood, California

Groschopp. Sales channels range from \$5 billion firms like W.W. Grainger, and Graybar Electric to smaller distributors with less than ten employees and sales of under one million dollars per year.² Larger channel member offer a broad range and deep assortment of industrial supplies, while smaller channel members may focus on the sales and service of a specific range of devices, such as electric motors and controls, or on a specific industry such automotive ore aerospace.

B2B Marketspaces

Numerous authors have offered a variety of definitions of B2B marketspaces and exchanges. This paper uses Sood (et. al.'s, 1999) definition of a B2B marketplace as having two components: (1) estructure, the essential architecture of B2B marketpace, and (2) e-markets. Ho and Chen (2000) added that an estructure includes "auction solutions software, content management software, and Web-based commerce enablers while e-markets are Web sites where buyers and sellers come together to communicate, exchange ideas, advertise, bid in auctions, conduct transactions, and coordinate inventory and fulfillment." Kaplan and Sawhney (2000) identified specific characteristics of two alternative market-making mechanisms: aggregation and exchanges (see Table 1). In this context, aggregation consolidates supply and demand in a simple marketpace while exchanges match buyers and sellers. Many sites in the industrial market for motion control (IMMC) supply chain have attempted to serve as both an aggregator of supply and an enabler of supply chain procurement. Kaplan and Sawhney's (1999) concept of bias dictates that a biased, or one sided marketpace, favors either the buyers or the sellers by helping them to "negotiate better terms or streamline the buying/selling process" (Sweeney, et. al. 1999). An aggregator is an example of seller bias and a reverse auction would be an example buyer biased.

Aggregation Mechanisms work best when:	Exchanges work best when:
<ul style="list-style-type: none"> • Products are specialized, not commodities. • The cost of processing a purchase order is high relative to the cost of items procured. • Purchasing is done through pre-negotiated contracts. • The number of individual products, or stock-keeping units (SKUs), is extremely large. • The supplier universe is highly fragmented. • Buyers are not sophisticated enough to understand dynamic pricing mechanisms. • A metacatalog of products carried by a large number of suppliers can be created. 	<ul style="list-style-type: none"> • Products are commodities or near-commodities and can be traded sight unseen. • Trading volumes are massive relative to transaction costs. • Buyers and sellers are sophisticated enough to deal with dynamic pricing. • Companies use spot purchasing to smooth the peaks and valleys of supply and demand. • Logistics and fulfillment can be conducted by third parties, often without revealing the identity of the buyer or seller. • Demand and prices are volatile.

Table 1 Kaplan and Sawhney's (2000) Market-Making Mechanisms:

In the IMMC marketpace, many exchanges offered communities, collaboration tools, classified ads, auctions, catalog software and more. The industrial auction sites focused on making a market for the seller selling excess/obsolete/ refurbished goods. Classified ads served a similar purpose where surplus/used /refurbished goods could post until sold. Online catalogs, like those found at <http://www.grainger.com>, allowed suppliers to offer an even broader range of products than their paper catalog. These online catalogs were integrated with entire

² US Census, Trade Associations (National Association of Wholesale Distributors, others) and Motion Tech Trends

distribution/manufacturing/logistics network. ebusiness websites add in software integration solutions aimed at streamlining the procurement process, and features like reverse auctions which are used to help buyers lower procurement cost of purchasing standardized materials. The reliance on multi-functional websites and technological features in the IMMC market mirrors of those many other industrial and consumer markets.

It was a perception on the part of larger IMMC participants that deployment of multi-functional marketplaces was required to capture a competitive advantage. However, as Porter (2001) points out "the internet per se will rarely be a competitive advantage." The adaptation of the value systems in the IMMC market was analogous to Levit's (1966) and Schnaar's (1994) innovative imitation. The result was no clear or compelling new competitive advantage for any firm. The resultant management decisions can be examined by reviewing the key decisions in adaptation of the internet to the value systems.

Manufacturer Led Exchange

In early 1999, major industrial manufacturers were creating their own exchanges - that would serve as the primary point of contact on the web for their supply chain. Rockwell Corporation, parent of Allen Bradley and Reliance brands established SourceAlliance.com in 1999 reacting to "to increasing customer demand for the efficiencies and access offered by the Internet." (Press Release, 3/15/00). Rockwell reportedly invested \$30 to \$50 million and raised an additional \$25 million from channel partners. The manufacturers included some of the industries best-known companies, including Leviton, Emerson Electric, Cooper Industries, Cutler-Hammer (Triangle Tech Journal, April 2001). Claiming 650 distributor locations, and 85 manufacturers, Dan Davis, CEO of Rockwell indicated that Rockwell was "proud to have served as the catalyst in galvanizing the industry behind SourceAlliance.com. We are committed to supporting its continued growth and development" (Press Release, 3/15/00).

SourceAlliance.com strategy was to seek first mover advantage, to become the dominant exchange site for the electrical and automation industry, much like Amazon.com, and eBay have done for B2C and C2C respectively. They expected to achieve sales of \$50 million by 2000, \$250 million by 2001, and \$500 million by 2002 (D2Dnet.com, March 2001).

In April of 2000, Siemens announced that they too were establishing a market exchange for the electrical and automation industries. Dr. Klaus Wucherer, a managing director of Siemens AG announced, "The big chance for Vertacross is that it will be the first of its kind to be able to open the virtual marketplace vertacross.com to all manufacturers and users in the automation and low-voltage switchgear sectors as attractive exhibition platform." (Siemens, April 2000).

By the end of 2000, Rockwell CEO Don Davis noted that "If the industry doesn't want it why should we?" Davis told Bloomberg News in December "We're not going to support it by ourselves" and by March 3, of 2001, SourceAlliance.com was shut down. The by the end of 2001 Vertacross also announced that it was shutting down. Despite investments that totaled close to \$100 million in a span of approximately 24 months two of the worlds leading industrial manufacturers had failed to generate the kind of business, or returns that they had hoped.

The failure of Rockwell and Siemens can be traced to a variety of factors not the least of which was the decision to capture an advantage in leveraging the internet to aggregate the market. As Norman (2004) points out the value system often drives financial performance; additionally, large companies, at the time, viewed the emergence of the internet in the value system as a threat (Porter, 2001). Consequently the priority for competitive advantage became capturing and controlling the technological value chain analytics (Chen, 2004). The larger participants in the IMMC industry attempted to exercise control through what Kaplan and Sawhney (1999) called a biased exchange and failed.

BIASED VERSUS NEUTRAL EXCHANGES

Kaplan and Sawhney (2000) discussed the concept of neutral versus biased exchanges, noting "neutral e-hubs add value by reducing transaction costs (aggregating) and improving matching (providing liquidity). If only one side of the market is fragmented, the benefits are greatly reduced for the non-fragmented side. Biased e-hubs, in contrast, can succeed as long as one side of the transaction is fragmented." Some biased exchanges, like GE's which serves as a front end of their supply chain, benefits GE through the effective use of integrated procurement software and processes, and the use of software tools like reverse auctions.

Central to the biased exchange is the notion of control. GE manages to improve financial performance by maintaining fragmentation on the supply side of the market. GE captures significant financial advantage through the commoditization of many of the manufacturing and operating inputs. While information between participants in a biased hub is free flowing, the structure of the industry and the basis for competitive advantage remain intact. Despite the emergence of the internet, the fundamentals of GE's value system and strategy remained intact - GE's advantage remained its size relative to its supply partners (Kwak, 2002).

For the IMMC market, the biased hub was less successful because no single firm's position was dominant enough to exploit the fragmentation of the industry. The decision by Rockwell and Siemens to independently control the infrastructure of the supply channel in the IMMC market didn't work because both supply side and demand side were too fragmented for a bias and aggregation to emerge. The first mover strategy was unsound because an advantage couldn't be captured by either Rockwell or Siemens. Despite the problems faced by these two IMMC participants several interesting business models did surface during this time.

Hybrid IMMC Business Models

The experiences of the past decade have brought to the forefront many classic examples of what happens in a competitive market place under conditions of uncertainty. The first wave of B2B appeared in the early 1990's when such exchanges as Industry.net managed to get many manufacturers to pay enormous sums for their online marketplace. This was followed by early entrepreneurial and intreprenuerial efforts, which focused on developing online catalogs, as well as the development of 'virtual' catalogs from third party publishers. The variety of approaches attempted in this industry to exploit the internet demonstrates the difficulty in finding convergence of a prevailing standard.

Virtual Sales Channel. Small, local industrial wholesalers have a difficult time competing for large end users on a national or global basis. While these smaller channels can offer local support, they typically cannot service all needs of large customer. In a virtual sales channel, a sponsored third party aggregates small, independent channels to create a large, integrated supply source that links up inventory, and provides a single point of contact for national accounts. A representative IMMC is SupplyForce.com, which serves as a B2B exchange allowing small, independent industrial wholesalers to compete for business with Grainger, Graybar, and others. By linking up databases and transaction processing component a virtual sales channel can service national accounts and small wholesalers now have a chance to compete nationally, while maintaining their local focus.

Sales Channel Enabler. When firms want to leverage their existing value system, they can use an eCommerce platform to collect and distribute sales and leads. A sales channel enabler used by Miller Electrics establishes a common e-Commerce platform that both Miller and its existing sales channels use to generate sales via the web. A manufacturer of welding equipment, Miller has contracted with a third party e-Commerce application service provider to link its website to its channels via the online sales process. A customer visits Miller's website, decides they want to buy a product, they enter their zip code, and are then transferred to the third parties e-Commerce site that is identified as the local distributors website. This effectively passes the lead from Miller to the local channel using the web. Presumably, the channel, customer, and Miller all win as the revenue and profit are shared between supplier and channel. Instead of disintermediation occurring, Miller uses the web to strengthen their ties with the channel.

Niche Market Channel. For some manufacturers, their existing sales channels fail to provide 100% coverage of the industrial marketplace. ABB in the United States successfully gained market share throughout the 1980's and 1990 is becoming the third largest supplier of AC Drives by revenue after Rockwell and Yaskawa. Their strengths lay in the market for commercial air handling and pumping controls. While they had a solid base in the industrial market, they had very low penetration of the market for low power drives sold to original equipment manufacturers (OEMs). After several years of trying to use their existing channels to develop a presence in this market, they decided in 1998 to launch an e-Commerce initiative called comp-ac.com that was designed to sell their low power AC Drives directly to these OEM's. Within days of their announcement, several of their largest channels had announced plans to cancel their contracts with ABB, shifting their support, and customers to another supplier. Several months later, ABB had repositioned the website so that it generated leads for their sales channels rather than direct sales for ABB. Ultimately, like many such efforts, the site was shut down, and the focus put into global and/or national websites.

Milacron Corporation, a leading manufacturer of metalworking, and plastic machinery, took a similar approach and developed milapro.com as a catalog site targeting the 117,000 small metal working machine shops that it was unable to serve using its existing sales channels (Milacron, 1999). Citing a shift in strategy, and low sales volume, they shifted the focus of the site to include more products, and more customers. By mid 2001, they had sold

approximately \$4,000,000 worth of products through milapro.com over a 2-year period. They also decided to position milapro.com to at the head of their B2B supply chain initiative. Like comp-ac.com, Milapro.com was ultimately shut down in favour of integration into a procurement system.

International Marketing. Not all manufacturers are fortunate to have a strong network of sales channels in a given market. Some, like SEIE, an industrial manufacturer from Italy have a small industrial systems integration business, and a private label partnership with GE’s Industrial Drives Division. Gaining access to the U.S. market has been challenging. Their solution was to go online. In 1999 they launched elestream.com in Italy, then Spain and the United Kingdom, and finally in 2001 in the United States and Canada. They currently claim over 1200 active customers in Italy, and close to 2000 in the countries in which they operate. Christopher Bradley, Vice President of the U.S. operations claims this initiative is different in that “supported by an extremely solid brick and mortar business. SIEI has been successfully manufacturing electrical products for 65 years. So, we don’t have to evangelize the products. Additionally, the e-commerce venture for SIEI has been extremely successful in Italy, Spain and the UK. We have over 1,200 active customers in Italy alone. The business plan is solid and the market is definitely here. We just need to execute.” (Elestream.com to Bring New Concept to Electrical Distribution and Automation Market, 2001) Apparently, execution from the U.S. was a problem. Today, elestream.com informs customers that all offers will be handled through their Italian warehouse.

Catalogware. Industrial Supplier W. W. Grainger was spent in excess of \$100 million dollars on upgrading its ERP system, and in experimenting with a number of different e-Commerce initiatives. Beginning in 1997, Grainger developed a range of websites focused on a variety of opportunities. Orderzone.com was a Grainger led industrial procurement effort that was designed to serve as the front-end of a supply chain, allowing customers to order all of their industrial and commercial products from a single source. Several maintenance, repair, and operational efforts followed designed to provide the specific tools, information, and transaction-processing capabilities needed available via the web. Grainger’s biggest online success though, was the online version of its famous catalog – <http://www.grainger.com>. With over \$300,000,000 in sales in 2001 attributed to this website, it was clear that [grainger.com](http://www.grainger.com) was an important point of contact for some of their customers. Today, it is an integrated part of their procurement system – equally as viable as counter and telephone sales.

Another, more entrepreneurial industrial sales channel, AutomationDirect.com launched its online catalog in 1998 as a complement to their traditional catalog. AutomationDirect is barely 10 years old, but it has been successful as a catalog sales channel of factory automation and motion control products through the use of aggressive marketing tactics, and strong customer support. Their e-Commerce efforts have allowed them to broaden their reach without a major investment in printing additional catalogs. By shifting their focus to a web based model, they are able to sell products to an expanding range of small and medium sized industrial users, while using the internet to provide additional service, and more access to technical documentation, products, and software.

Entrepreneurial Exchanges. Entrepreneurial efforts also sprung up in the late 1990’s all aiming to position themselves as the leading exchange focused on specific features, or market segments. In 2002, a review of a leading B2B exchange website located at <http://www.netmarketmakers.com> found that of the 27 sites identified as Industrial Market Exchanges, only 15 were still active (see Table 2). By 2006, only 8 were still active, and www.netmarketmakers.com no longer existed.

Some efforts have worked. Ariba (Formerly called Freemarkets.com) in particular is noted for its reverse auctions, which allow buyers to reduce their procurement costs for specific materials, and sellers to find new customers. Square D, the North American division of French industrial manufacturer Schneider Electric was able to generate a \$1 million order for a specific product as a result of Freemarkets.com reverse auction. In reviewing the highly detailed request for quote, Square D decided to develop a new range of control transformers that would exactly meet the customers’ specifications. Mel Rabovsky, Key Account Manager for Square D noted that “We weren’t selling them our product, we were selling them theirs.” (Freemarkets.com, Online) Rabovsky also noted that participating in the reverse auction shortened the cycle time of getting the order.

Site Name	Active in 2002	Current Model	Active in 2006
1. Ableauctions.com	Yes	Auction	Yes
2. Activeassets.com	No	N/A	-
3. assetauction.com	No	N/A	-
4. Assettrade.com	No	N/A	-

5. Aztecsales.com	No	N/A	-
6. bcee.de	Yes	Auctions	Yes
7. Bigequip.com	No	N/A	-
8. Bigmachines.com	Yes	Software services	Yes
9. Capacityweb.com	No	N/A	-
10. Corporatesurplus.com	Yes/No	Auction/Classifieds	No activity
11. aallc.com	Yes	Auction	No
12. eSprocket.com	No	N/A	-
13. Freemarkets.com	Yes	Reverse Auctions	Yes
14. Goindustry.com	Yes	Auction	Yes
15. Indiaengineering.com	Yes	Software services	No
16. Industrialvortex.com	No	N/A	-
17. Industrialzones.com	No	N/A	-
18. Industrydeals.com	No	N/A	-
19. Inventorydepot.com	No	N/A	-
20. Lightingbuyer.com	No	N/A	-
21. Lightseek.com	No	N/A	-
22. Liquidation.com	Yes	Aggregator	Yes
23. Machineryclassifieds.com	No	N/A	-
24. Locatoronline.com	Yes	Aggregator	Yes
25. Moreprofit.de.com	No	N/A	-
26. Point2.com	Yes	Aggregator	Yes
27. Quick-equip.com	No	N/A	-

Table 2 Entrepreneurial exchanges

“With the standard bid and wait process, order confirmation can take up to a year. With the FreeMarkets process, that time is cut way, way, down.” (Freemarkets.com)

Some efforts have worked. Ariba (Formerly called Freemarkets.com) in particular is noted for its reverse auctions, which allow buyers to reduce their procurement costs for specific materials, and sellers to find new customers. Square D, the North American division of French industrial manufacturer Schneider Electric was able to generate a \$1 million order for a specific product as a result of Freemarkets.com reverse auction. In reviewing the highly detailed request for quote, Square D decided to develop a new range of control transformers that would exactly meet the customers’ specifications. Mel Rabovsky, Key Account Manager for Square D noted that “We weren’t selling them our product, we were selling them theirs.” (Freemarkets.com, Online) Rabovsky also noted that participating in the reverse auction shortened the cycle time of getting the order. “With the standard bid and wait process, order confirmation can take up to a year. With the FreeMarkets process, that time is cut way, way, down.” (Freemarkets.com)

LESSONS LEARNED

The predominant thinking during the explosion of e-business activities in this industry suggested that four distinct opportunities were available:

- 1) the internet links companies directly to customers, suppliers, and other interested parties;
- 2) the internet lets companies bypass other players in an industry’s value chain;
- 3) the internet is a tool for developing and delivering new products and services to new customers;
- 4) the internet will enable certain companies to dominate the electronic channel of an entire industry or segment, control access to customers, and set business rules (Ghosh, 1998).

As we have seen in the motion control industry, very few of these observations proved useful. Not only was dominant control of the value system impossible, the economic utility of disintermediation and the creation of new value systems continue to remain illusive. The current state of business models in this industry lead to a variety of observations.

Disintermediation. After nearly a decade of talk about disintermediation and the affects of networking on integrated supply, the evolution of EDI into eBusiness and other shocks to the role of channels, manufacturers and other members of the value system still need to be confident in their relationship. A recent study sponsored by the National Association of Wholesale Distributors found that “distributors are uncertain about whether their manufacturers will be investing in traditional channels during the next five years (D2Dnet.com online, 2002).” The study also found disagreement between manufacturers and channels on the impact exchanges will have on the industry. “Fifty-six percent of the manufacturers surveyed expect online exchanges to generate loyal customers by 2006. Yet, 60 percent of distributors express serious doubts online exchanges will attract customers” (D2Dnet.com). The pressure to disintermediate provided for the realization of the importance of many types of channel members. Channel members provide a variety of benefits including aggregation, breaking bulk, geographic coverage, and brand awareness (Anderson, Day & Rangan, 1997). While disintermediation can reduce the collective cost of intermediaries, it can also create value gaps by removing critical value from the distribution channel (Gallaughar, 2002).

Strategy formulation. Normally when companies are developing a strategy, they seek outside input into the process to point them in a direction, or validate their own internal analysis. During the later part of the 1990's firms in IMMC may have been concerned about losing control over their channels and/or customers, and also, about lower margins Freeman (2001).

Using simple game theory (Figure 2) to help understand why Rockwell and Siemens would both ‘partner’ and compete with one another helps reinforce the competitive nature of this industry. The combination of fear, and leadership can lead companies to make, what in hindsight, are costly, and perhaps unwise decisions. Freeman (2001) noted that any exchange participant should do a comprehensive risk assessment to fully understand the nature of the exchange, and how it will impact their business, including the bid process, links between suppliers, and trademark issues. Presumably, any risk assessment Siemens or Rockwell may have done was offset by their projections of how successful their exchanges would be.

The drive for a defensive strategy also caused IMMC members to attempt to generalize B2C internet models by adopting destination web sites. Kenny and Marshall (2000) note that even in the B2C marketplace “the dominant model for Internet commerce, the destination Web site, does not suit the needs of those companies or their customers.” Indeed the focus on destination web sites as a means of channel control may also have slowed down the rate of adoption of the internet as a viable channel for processing transactions, including the need to integrate web enabled, and back office software systems, anti-trust issues that have emerged as a result of competitors forming exchanges, and branding issues which can affect the customers perception of an industrial supplier. Marshall (2001) noted that multiple suppliers and buyers mean multiple proprietary and standard software packages – both web enabled, and back office, which require a high degree of sophisticated integration, at a considerable expense to reap the full benefits of a shared, web based platform.

Laflamme and Biggio (2001) pointed out that exchanges carry the added burden of potentially intense scrutiny by the United States Department of Justice, and Federal Trade Commission. As in any joint venture, they note that these agencies are concerned about the possibility of exclusionary practices that inhibit competition, and possible collusion - especially as it relates to price fixing. On the other hand, Marshall (2001) pointed out that that close collaboration is necessary to ensure that value is created. Clearly, exchange participants who are competitors walk a fine line between collaboration and collusion.

Company A	Develops Site	<u>Outcome</u> $A = A+Y+ZZ\%$ $B = -Y\%$	<u>Outcome</u> A and B split profits
	Does Not Develops Site	<u>Outcome</u> $A = 0\%$ $B = 0\%$	<u>Outcome</u> $A = -X\%$ $B = B+X+Z\%$
		Does Not Develops Site	Develops Site

Company B

Where A = the amount of additional revenue A will make as a result of the exchange;
 B = the amount of additional revenue B will make as a result of the exchange;
 Y = the amount of Revenue A will make at the expense of B;
 X = the amount of revenue B will make at the expense of A;
 Z = the amount of revenue B will make at the expense of other competitors;
 ZZ is the amount of revenue A will make at the expense of other competitors.

Figure 2: Simple Application of Game Theory to Industrial B2B Exchanges

Laflamme (et. al., 2001) suggested that this could create a problem for exchanges, as companies seek to maintain a strong identity within their industries. The paradox is that for an exchange to be successful, it needs to create its own identity with buyers and sellers alike. The exchange brand may become the dominant brand in the transaction and relationship. To ensure its revenue stream, it will need to reinforce the value it creates, while carefully nurturing its relationship with the suppliers that participate in its business. Suppliers on the other hand, will continue to do every thing they can to strengthen their brand name. Any perceived loss in value due to participation in an exchange will be factored into the return associated with the exchange.

Many other potential issues can affect the level of participation by a company in an exchange, including trust, security, and equity. For many of these participants, the opportunity is to view the past several years as educational ones, during which they either had the opportunity to directly, or indirectly learn some lessons about participating in B2B e-Commerce. These lessons include the following:

- In a competitive market place, alliances and partnerships seldom work the way they are intended to;
- Associations are excellent at aggregating industry information, lobbying congress, and generating data; they are not so great at socializing processes - especially when it has to do with a firm's profits, and key differentiators.
- Believing the hype is expensive;
- Any software implementation beyond installing a new single license application will inevitable take more time, cost more money, and perform below expectations;
- Freemarkets.com and GE demonstrate that exchanges can work

Exchanges had the potential to influence the market for industrial products – a fact reinforced by recent data from the Institute for Supply Management (ISM). ISM sponsors a quarterly survey published by Forrester Research that indicated in their April 2002 report that manufacturers were buying 8.3% of their indirect materials, and 5.7% of their direct materials via some form of eCommerce. These figures were down from 9.5% and 6.2% in the prior report. The study also indicated that over 70% of the manufacturers surveyed indicated they were purchasing some items via the internet, with a similar percent indicating the specific use of an exchange. 20.3% indicated use of reverse auctions. (Salimondo, June 7, 2002).

While the figures are seemingly headed downwards, somewhat consistent with the recent downturn in the economy, and slow recovery, the fact remains that industrial end users are purchasing products online. This suggests that industrial manufacturers and sales channels need to continue to explore how to leverage the web to develop new opportunities, and strengthen existing relationships.

Recommendations for Managers and other Decision Makers

Any company looking to set up or join an online channel, eCommerce website, or exchange needs to evaluate the impact such a venture will have on their organization by considering (1) their customers; (2) their core competencies; (3) their channels. Failure to do so will inevitably lead to conflict, and/or weaken the organization's ability to perform.

Tie (2001) suggested that companies need to persist at making any technology change work. They need to commit themselves to making the technological and cultural changes necessary to ultimately achieve success. This would include maintaining a positive attitude towards the change, and educating employees and stakeholders so that they can learn to embrace it. Tie also noted that if a small firm is required by a customer or supplier to use a specific exchange or software package, the small firm has little choice but to comply.

Summary and Conclusions

McKibben (2001) pointed out that the market for industrial equipment is characterized by low volume, highly customized, machines and devices. Kaplan and Sawhney (2000) suggested that for these types of products, aggregation mechanism's work best. Noting the capability of exchanges, McKibben added that while they are capable of many things, they cannot replace a discussion between two people with an existing level of trust between them.

While the initial wave of B2B activity is over, many industrial manufacturers are still using the web to create new markets, develop new customers, and integrate their supply chains. Some have taken their software, and technical expertise, and are now offering it to manufacturers as a solution for integrating their procurement systems with the web. Vertacross and SciQuest.com are examples of companies that attempted to establish an online exchange but then shifted their focus to becoming a 'solutions provider' of software, and services.

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