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Internet B2B: What We Might Expect

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ABSTRACT

We are currently preparing a survey of Internet Business-to-Business (Internet B2B) users and facilitators in ASEAN, specifically targeting manufacturing and manufacturing support industries. We expect to find that B2B portals will focus on facilitating transactions between companies in different countries, with minimal intermediation. For any particular company, the use of multiple B2B exchanges and low transaction volume through each one will be the norm. While SMEs will have a presence, the importance economies of scale and experience with IT suggest that participants will tend to be larger companies.We are currently preparing a survey of Internet Business-to-Business (Internet B2B) users and facilitators in ASEAN, specifically targeting manufacturing and manufacturing support industries. This paper outlines our expectations of what we might find as we explore the Internet B2B landscape in the region, with a particular focus on Small and Medium Enterprises (SMEs). The importance of SMEs to manufacturing is undisputed. In the US, SMEs are responsible for nearly 40 percent of the nation's manufacturing employment; in Europe and Japan, small firms account for 45 to 60 percent of manufacturing employment [8]. In the case of EDI, it is well documented that large companies can and will force smaller suppliers to adopt technology by making participation in the network a precondition for continued business. Indeed, the OECD [10] cites estimates that up to 70% of EDI links are established primarily because a major corporate of government customer specifies doing so as a term of contract. While Malone, et.al. [7] see the benefit of the "electronic integration effect" as lower transaction costs, these benefits often accrue to the larger partner at the expense of the smaller. For example, Hammer [5] relates that when Ford moved to a paperless accounting system, some suppliers still printed invoices but threw them away instead of sending them.

Private markets, where suppliers bid on packages of work, are also growing in popularity and utility. General Electric began purchasing maintenance materials over the Internet, and realized cost savings in the range of 30-40% [18]. GE now does more business through this private marketplace than all public exchanges combined [12]. However, the element of coercion remains in the private exchange: if you want to do business with the company, you must use this channel. Migrating EDI systems to semi-private networks based on Internet technology has no effect on the way they are used. In these environments of competitive necessity, motivations are clear. Uncovering motivations for voluntary investment and participation in Internet B2B requires some further investigation. AMR Research found that not even 1% of the 600 B2B portals they surveyed had reached a feasible trading volume [16], and IDC reported that of the approximately 1000 B2B exchanges launched between early 2000 and mid-2001, only about 100 are handling any genuine transactions [17].

In this paper, we begin with some preliminary findings from a recent study in Singapore. Taking them at face value, we use the literature to extrapolate their relevance to hypotheses we might form for our own study. Here, we use the terms "Internet B2B", "B2B portals", "public exchanges", and "electronic markets" interchangeably. Unless otherwise specified, we use these terms to describe a World-Wide Web (WWW) site that acts as a marketing channel for products that are of interest to businesses rather than consumers, operated by a third-party that does not produce or use the products in question. Our intention is to gloss over the wide range of possible business models in favor of uncovering common motivations for participation.

FACILITATORS AND INHIBITORS

Wirtz & Wong [22] surveyed selected industrial companies in Singapore, and found only one-third of the small and medium sized companies were using or interested in using Internet B2B. 75% of the small firms cited "No Need" as a barrier to participation, alongside a similar proportion of Singapore majority-owned private companies regardless of size.

Amongst firms that were interested in or already using Internet B2B, the top four motivations cited were image & reputation (62.9%) increase in sales (51.7%) the global reach of suppliers (49.1%), and the global reach of customers (49.1%). This group cited security (59.4%), setup costs (36.9%), and ongoing operational costs (28.2%) most frequently as barriers to adoption.

King & Teo [6] asked respondents to classify their firm depending on whether or not they had implemented IT applications that "enabled the firm to gain an edge over competitors or prevented competitors from gaining an edge over the firm". The non-implementers emphasized *top management guidance* as an important facilitator, and the l*ack of IT-related support* as an important inhibitor. The implementers placed more emphasis on *innovative needs* and *economies of scale* than did the non-implementers, both as facilitators and inhibitors. Both groups identified *competitive position* and *environmental factors* as important facilitators.

In reality, these factors are more closely linked than they might appear. Competitive position refers to the need to improve or maintain market position, and the company's image or reputation. Innovative needs imply that firms can gain a favorable image or reputation by using technology to differentiate their products and services. Firms that do not seek to be unique or innovative may be more likely to adopt a "wait and see" attitude toward the strategic application of IT. Favorable environmental change in the form of market growth and overall economic growth make it easier to increase investment in IT, since resources are more readily available.

Internally, well-defined management objectives and top management support are prerequisites for the perceived importance IT to company strategy. Political considerations may weigh heavily in the investment decision, as investments that benefit only a limited part of the firm reduce the pool of resources available to all others. Economies of scale make investment more feasible, and the number of users is more likely to reach the "critical mass" required for maintenance of qualified full-time support staff. Visible investment in support staff and training must be complemented by visible promotion of the intangible results and tangible benefits of IT applications [2]. It is entirely possible that when it comes to corporate culture, management support is more notable by its absence than its presence.

SME FACTORS

Mason, et.al. [8] distill three other key points from the literature related to SME adoption of information technologies:

- Benefits from information technology are cumulative and synergistic, with a disproportional increase in benefits as the number of applications (and enterprise integration) increases.

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- The cost of learning to use and integrate new technologies makes evolutionary change seem less risky. More advanced technologies may have greater productive potential, but the firm expects greater costs if it has less expertise in implementing such technologies.
- Informal but trusted conduits for sharing of technical know-how appear to lower the cost of learning for the firm. Public sector initiatives, such as technology transfer centers and assistance networks, act as a bridge between sources of knowledge about new technologies and the SMEs as potential users.

This discussion implies that in the absence of clear competitive necessity and internal economies of scale, the management's perception of possibilities to enhance the firm's image will be a key motivation for investment. This will be moderated by the perception of successful implementation of IT applications both internally and externally. Williamson's characterization [20] could apply equally to the purveyors of technology, and the technologies themselves:

Reputation, which is to say prior experience, is of special importance in establishing the terms of finance for transactions that involve large, discrete commitments of funds. Faced with incomplete information, suppliers of capital are vulnerable to opportunistic representations. Unable to distinguish between those unknown candidates who have the capacity and the will to execute the project successfully from the opportunistic types who assert that they are similarly qualified, when objectively (omnisciently) they are not, the terms of finance are adjusted adversely against the entire group.

We could also find an explanation here for the high degree of concern about Internet security, relative to startup and maintenance costs. To information security specialists, these are inseparable: security policies and mechanisms must be established before the system is brought on-line, and audited over time to ensure proper implementation and timely evolution as new threats are identified [9].

PUBLIC EXCHANGES

Economists say that there is a network externality when the value of a good depends on the number of other people who use it [19]. This situation may exist where a market maker creates a centralised channel for trading in a traditionally fragmented environment. For example, The Economist [1] describes Enron's efforts to act as a market maker for all sorts of energy, by treating it as a commodity and providing a platform for rapid execution of orders. Malone, et.al. [7] might find this a clear example of the "electronic brokerage effect", where the benefits increase for both the market maker and each individual participant as the number of users of the network grows.

Chen [3] shows that the rate of adoption of Web users will depend on the number (or the utility) of Web servers, not the number of other Web users. Conversely, the rate of adoption of Web servers depends upon the number of users (or the usage), not the number of Web servers. Furthermore, the benefits from each additional Web server increase directly for all future and previous Web client (but not server) adopters, and benefits from client adoption increase directly for all future and previous Web server adopters.

Grewal et.al. [4] study a public exchange for jewelry (Polygon), where a monthly access fee allows members to buy and/or sell products which are not, by their nature, commodities. The "open bazaar" environment makes it efficient to exchange information related to price, product specifications, and terms of trade. There is no facility for electronic payment, but ratings are provided for all participating firms based on their payment history.

Grewal et.al. conceptualize the nature of participation in terms of three distinct states, and distinguish between them by the number of transactions executed in the market and the length of time a firm has been a participant. Firms in the exploration state are "testing the waters", trying to understand the new medium better. In the expert state, firms believe they have been successful in reengineering their business processes to function effectively in the electronic market.

In the passive state, organizations maintain a presence but carry out virtually no business in the electronic market. Their research suggests that the passive state is (1) propagated by firms entering on an experimental basis, including competitive hedging by firms that consider electronic markets a future opportunity or threat and therefore want to observe and learn; (2) perpetuated by low entry barriers, in that joining requires a commonplace computer and access to the Internet; and (3) reinforced because maintaining a presence is not expensive, requiring a firm simply to pay its monthly subscription fee.

The implication here is that even passive participation can generate positive externalities, and that as the number of market makers increase, it may be advantageous to be a passive participant in more than one. A low transaction volume in any particular market could add up to substantial transaction volume for the firm, *especially if the portal is actually facilitating transactions executed offline or through other channels* (we will return to this point presently). If barriers to entry for server providers are low, and clients are charged on a subscription basis rather than per-transaction, the marginal cost of passive participation may well be calculated on the basis of "serendipitous" transactions that result from a widespread presence in many markets. Reinforcing this view is the fact that search costs increase for the potential customer as the number of market-makers increases. Maintaining a presence in many markets increases the chance that the firm will be visible to anyone searching a subset of them.

A further implication is that passive participation can enhance the firm's reputation. Earlier, we noted that in the absence of clear competitive necessity and internal economies of scale, possibilities to enhance the firm's image will be a key motivation for investment. If stakeholders view technologically sophisticated firms more favorably than technologically naïve firms, even passive participation in an electronic market puts the firm in a position to assert that it is ready for the challenges of the information age. By extension, organizations that embrace electronic markets to mimic a successful benchmark firm may believe that participation is a critical success factor, or that participation provides a better fit with the modern-day organizational profile [4].

GLOBAL REACH

The mention of global reach by Wirtz & Wong [22] warrants further investigation. The obvious explanation is that their survey, like King & Teo [6], has some bias toward larger companies that seek economies of scale. However, an alternative explanation based on negative externalities may also have merit.

If the potential subscribers to a portal are competing suppliers, the expected benefit from joining the network may be lower as the size of the network increases (negative externalities) [13]. As Varian [19] points out, the network not only allows consumers easy access to other firms' prices, it also allows the participants to monitor each others price movements. Models in which some consumers search out the lowest price for a generic product while other consumers shop at random generate similar equilibria: sellers manage to charge a relatively high price on average by randomizing their prices to discriminate between searchers and non-searchers.

In other words, companies may compete for searchers by temporarily lowering prices; those who invest in the search end up with a lower price, while the probability and magnitude of the discount will, to a degree, determine the propensity to search. Moderating the tendency to search for lower prices in the short term is the fact that overly price-sensitive customers will give up the benefits conferred by loyalty. Expectations of repeat business may discourage efforts to seek a narrow advantage in any particular transaction [21].

Competitive firms will generally try to differentiate their product and services so as to discourage price comparisons [14]. Global reach may mitigate local negative externalities, by providing a basis for price differentiation between local and foreign markets. The OECD [11] cites research that shows many SMEs are using B2B Internet to open and/or maintain a presence in foreign markets. They raise the possibility that international markets can function as niche markets for start-ups that otherwise face greater competition at home. Once

these have a certain brand reputation and expertise, they may then reinforce their position in domestic markets, especially if the domestic market is large.

SUMMARY OF THE IMPLICATIONS

(a) In the absence of clear competitive necessity and economies of scale, the management's perception of possibilities to enhance the firm's image will be a key motivation for investment. This will be moderated by the perception of successful implementation of IT applications both internally and externally. Widely publicized concerns about Internet security increase uncertainty and perceived risk.

(b) As the number of B2B portals increase, it may be advantageous to be a passive participant in more than one. Passive participation can enhance the firm's reputation, and offers an opportunity to gain experience without substantial investment. Maintaining a presence in many markets increases the chance that the firm will be visible to anyone searching a subset of them.

(c) Participation in the electronic market may foster competition based on price alone. Global reach may provide a basis for price differentiation between local and foreign markets, and also provide opportunities for enhancing image and reputation.

(d) A low transaction volume in any particular market could add up to substantial transaction volume for the firm, *especially if the portal is actually facilitating transactions executed offline or through other channels*.

The final point merits a brief discussion, because of its implications for the business model of the B2B exchange itself.

From the firm's perspective, the key is to exploit public exchanges to create private sources of advantage [12]. Even if the growth in transactions over the Internet is leading to greater competition, according to Steinfeld [15] it does not appear to predispose firms to relate to their business trading partners on a transaction-by-transaction basis. For two trading partners with a history of successful transactions, a portal that relies on a per-transaction revenue stream must add significant value. Passive participants will see the portal simply as a convenient way to monitor market activity and exchange information. A company may establish a relationship with another through a public exchange, and then migrate to some other channel for their transactions.

In sum, there are any number of scenarios where the continuing stream of transactions is invisible to the portal, and a business model based on per-transaction revenues does not reflect the value created for the trading partners. The least risky approach for the portal operator is to facilitate the exchange of information in return for a membership fee, with minimal intervention in the actual transactions that take place.

EXPECTATIONS

Based on this discussion, as we survey the Internet B2B landscape in ASEAN we expect we will find that B2B portals will focus on facilitating transactions between companies in different countries, with minimal intermediation. For any particular company, low transaction volume through a given public exchange will be the norm, and passive participation in several exchanges will effectively constitute economies of scale. Amongst participants, we expect our sample to show some bias toward larger companies, because of potential internal economies of scale and greater experience with IT applications. However, regional public and private initiatives should ensure a significant presence of SMEs.

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