

Adopting Electronic Commerce as a Competitive Strategy in Malaysian Electronics SMI

Kamal Jit Singh, Barry Ritchie, Jun Xu
Graduate College of Management
Southern Cross University, Australia
Tweed Gold Coast campus, Brett Street, Tweed Heads
PO Box 42, Tweed Heads, NSW 2485, Australia
E-mail: jxu@scu.edu.au

Abstract: The research examines the required conditions and suitable model of Vertical Hub for Malaysian Electronics SMIs. The conditions required for a Vertical Hub were found in the Malaysian Electronics SMI sector and therefore, a Vertical Hub was supported. This research also reveals that the nature of transactions and business arrangements in the Malaysian Electronics SMI sector best suited the Exchange model of the Vertical Hub. The results of this study have both theoretical and practical implications.

Keywords: Competitive Strategy, Small and Medium Sized Industries Manufacturing, Electronic Commerce, Vertical Hub.

I. Introduction

The Malaysian Electronics Sector is the largest manufacturing sector and contributed 46.2% of Manufactured Exports in the period 1996 – 1997; amounting to RM 80,692.4 million [2]. The Small and Medium sized industries (SMIs) in this sector are facing stiff competition from lower cost countries, on top of the issue of restricted market access[12].

With the explosion of the Internet, Electronic Commerce has emerged as a mechanism that can offer a Competitive Strategy to organizations [1] [4] [14] [17]. Electronic Commerce is indelibly changing how businesses gain market access, present themselves and how they communicate with their buyers. Electronic Commerce, via a Vertical Hub, offers ubiquitous worldwide market access at a very low cost. It allows businesses to continue operating 24 hours a day, 7 days a week with remarkable ease [13]. Instantaneous access to information and acting on it immediately has now become a reality with the Vertical Hub, with new markets and channels being opened up that hold tremendous potential for all companies [14]. Electronic commerce provides Malaysian SMIs the opportunity to stay competitive at both locally and globally. The Malaysian government too has recognized the importance of Electronic Commerce and has setup the National Electronic Commerce Committee (NECC).

A Vertical Hub can provide Malaysian Electronics SMIs with numerous benefits, especially global market access at

an affordable cost, and enable them to compete effectively worldwide. In spite of the importance of the Electronics industry and the priority given to Electronic Commerce by the Malaysian Government, no research has been conducted to determine if a Vertical Hub could be setup for SMIs in this sector.

This Research therefore, is important, as it will help determine if a Vertical Hub can operate in the Malaysian Electronics SMI sector. If the conditions required for a Vertical Hub are present, this research will identify the market-making model of the Vertical Hub most suitable for the Malaysian Electronic SMI sector. Accordingly, the Research Questions are:

1. *Are the conditions that are necessary for a Vertical Hub present in the Malaysian Electronics SMI sector?*
2. *If these conditions are present, which market-making model of the Vertical Hub is best suited to Malaysian Electronics SMIs?*

This paper is organized as follows. The following section presents relevant background on vertical hub, the conditions and drivers required for a Vertical Hub, and different market-making models of Vertical Hub. The research method is then presented. Results of survey are presented and discussed in great depth. Finally, research limitations, future directions, and conclusions are presented.

II. Background

II.1 The Vertical Hub

Sometimes called a “Vortex”, “Butterfly Market” or “Net Market Maker” [14], the Vertical Hub is industry-focused and tends to foster a community for a particular industry. It attracts a more qualified, narrow and pre-selected audience, consisting of truly active buyers and vendors with high economic potential [16]. It uses the Virtual Community model as a strategy to bring buyers and vendors together; especially in markets where both have difficulty finding each other [18]. The Vertical Hub creates value by aggregating buyers and vendors, creating marketplace liquidity by mobilizing a critical mass of buyers and vendors, and thereby reducing transaction costs [9] [14]. In the mean time, Vertical Hub is cost-effective one-stop e-commerce solution and requires minimum upfront implementation costs [5] [11]. The Vertical Hub is a neutral community that offers independent and unbiased information [8]. Vertical

Hubs eliminate monopolies and force competitors to compete on the basis of value [7]. The anonymity, which is an important consideration for vendors, is also supported by Vertical Hubs.

There exist three different types of market-making models, namely Catalogue, Auction and Exchange, in Vertical Hubs. A Vertical Hub can operate in three different models – a Catalogue model, Exchange model or Auction model. The Catalogue model provides buyers with electronic catalogues of vendors participating in the hub and allows direct online comparisons. Some examples are: Echemicals (<http://www.e-chemicals.com>), Spplly Search (<http://www.supplysearch.com>), Hong Kong Trade Development Council (<http://www.tdc.org.hk>), E-steel (<http://www.esteel.com>), Fast-Net (<http://www.worldparts.com>), among many others. The Exchange Model offers a forum for both buyers and vendors to make bids and offers on a product or commodity. This format facilitates multi-lateral bids, offers and negotiations - allowing many buyers and vendors to simultaneously make bids and offers. Industry conditions and other characteristics determine which model is best suited to a particular industry. Some examples are ChemConnect (<http://www.chemconnect.com>), Altra Energy (<http://www.altrinet.com>), Bond Network (<http://www.bondnetwork.com>), IMX Exchange (<http://www.houstonstreet.com>), Paper Exchange (<http://www.paperexchange.com>), among many others. The Auction Model automates the process of allowing multiple parties to bid on an offer to sell or a request to buy. It improves efficiency, maximizes returns and is becoming increasingly popular due to the scale, reach and real-time attributes of the Internet [16]. It matches buyers and vendors in a secure trading environment and provides dynamic, real-time pricing [16]. A good example is freemarket.com.

A Vertical Hub is particularly desirable for SMIs, as it does not impose a heavy financial burden upon them. An SMI can enjoy all the benefits of Electronic Commerce and extensive market access, with either minimal upfront costs or only a commission payable for every successful transaction. No technical expertise is required as the Vertical Hub operator undertakes all implementation tasks. Discussions with industry experts and government officials have also revealed that virtually no research has been conducted in the area of Vertical Hubs for the Malaysian Electronics SMI sector. The researcher aims to extend the body of knowledge by filling this gap and determining if the conditions required for a Vertical Hub are present in the Malaysian Electronics SMI sector. If these conditions are present, this research will attempt to identify the market-making model most appropriate for this important sector.

II. 2 Industry and Market Conditions

For a Vertical Hub to be successful, certain conditions and drivers have to exist. These are a large and competitive industry consisting of technology savvy players, high pre-transaction costs resulting from market inefficiencies and difficult and costly market access. The Investment Analyst

company Bear Stearns, listed several market or industry characteristics that help define which industries will better support a Vertical Hub [3]. The more of these characteristics that exist, the more likely a Vertical Hub will be able to provide enough value to attract a community of buyers and vendors. These characteristics include:

- ❑ Large and Competitive Industry.
- ❑ Fragmented Supply Chain (High Company Search Costs).
- ❑ High Information Search Costs.
- ❑ High Product Comparison Costs.
- ❑ Difficult Market Access.
- ❑ Knowledgeable and Sophisticated Buyers.

An extensive literature review undertaken shows that the literature is silent on the Vertical Hubs for Electronics SMIs. Discussions with industry experts and government officials have also revealed that virtually no research has been conducted in the area of Vertical Hubs for the Malaysian Electronics SMI sector. The researcher aims to extend the body of knowledge by filling this gap by examining the following two research questions:

R1: Are the market conditions that are necessary for Vertical Hub present in the Malaysian Electronics SMI sector? Has the competition in the industry increased in the recent years?

R2: If the conditions required for a Vertical Hub are present, which market-making Model of the Vertical Hub is best suited to Malaysian Electronic SMIs?

III. Research Method/Design

Questionnaires were sent to the one hundred five Electronics SMIs, who are members of Small and Medium Industries Development Corporation (SEIDEC). The Ministry of International Trade and Industry has defined an SMI as (a) less the RM25 million turnover per year and (b) less than 150 full-time employees. No distinction was made between Malaysian and foreign-owned companies and discussions with senior ministry officials revealed that to the best of their knowledge, there were no foreign owned Electronics SMIs in Malaysia. The data was entered into the computer program “Statistical Package for Social Sciences” or “SPSS”.

IV. Results of Survey

Demographic Information

A total of 31 responses were received back from the population of 105. The bulk of Electronics SMIs in Malaysia were located in Selangor/KL, Penang and Johor. These three regions accounted for 82% of the Electronics SMIs in Malaysia. Discussions with MITI and SMIDEC officials had indicated that SMIs in these regions were more likely to respond to the questionnaire. Hence, it was anticipated that SMIs in the other regions would typically not respond to a

survey questionnaire. MITI and SMIDEC officials had confirmed that the Selangor / KL, Penang and Johor regions formed the hub of the Electronics industry in Malaysia.

Conditions Required for A Vertical Hub for Malaysian Electronics SMIs

Table-1 presents summary of analysis if conditions for a Vertical Hub. It can be seen from Table-1 that all the conditions required for a Vertical Hub for Malaysian Electronics SMIs were met, and Malaysian Electronics SMIs required the benefits that could be provided by the Vertical Hub.

Table-1 Results for Research Question 1

	Research Question 1 & Sub-Questions	Answer
1.	Are the market conditions that are necessary for the existence of a Vertical Hub present in the Malaysian Electronics SMI sector?	YES
a)	Has the competition in the industry increased in the recent years?	Yes
b)	Is competition expected to increase further with globalization?	Yes
c)	Is the Malaysian Electronic Industry large enough to support a Vertical Hub?	Yes
d)	Is the industry fragmented with no dominant seller or buyer?	Yes
e)	Are Vendor-search costs high?	Yes
f)	Do buyers and sellers have trouble finding each other?	Yes
g)	Do the SMIs have difficulty gaining market access?	Yes
h)	Are market gaining activities expensive?	Yes
i)	Are market gaining activities within the means of the SMIs?	No
j)	Is there unrecognised vendor or product differentiation along non-price dimensions such as product availability, delivery, support, etc?	Yes
k)	Are the products manufactured by the SMIs commodity-like and generic in nature?	Yes
l)	Are there rapid product introductions; i.e. products have short life cycles?	Yes
m)	Are there rapid inventory changes?	Yes
n)	Do these changes result in excess supply and inventory situations?	Yes
o)	Does excess inventory have to be disposed of anonymously?	No
p)	Are there rapid price changes?	Yes
q)	Do products have many features and characteristics, some of which are difficult to define or find?	Yes
r)	Do the products come in complex configurations?	Yes
t)	Is the transaction cost of the procurement process high?	Yes
w)	Are the buyers knowledgeable, sophisticated and aware of the power of the Internet and Electronic Commerce?	Yes

Suitable Market-making Models

The results in Table-2-5 suggest that the Exchange model was fully supported for Malaysian Electronics SMIs.

Table-2 Results for Research Question 2

	Research Question 2 and its Sub-Questions	Results
	Which market-making Model of the Vertical Hub is best suited to Malaysian Electronic SMIs?	Exchange Model
a)	Is the market fragmented with many buyers and sellers, with no one company having the lion's share?	Yes
b)	Are the demand and supply conditions predictable or volatile?	Volatile
c)	Are the products well defined?	Yes
d)	Are the products commodity-like?	No
e)	Are the products custom-designed?	Yes
f)	Are the products hard-to-find products?	No
g)	Is price volatility frequent?	Yes
h)	Are the prices fixed?	No
i)	Are prices negotiable based on supply and demand conditions?	Yes
j)	Is there often a need to dispose excess stock or inventory?	Yes
k)	Is there a need to regularly sell used or obsolete equipment?	Yes
l)	Do buyers only purchase from pre-qualified suppliers?	Yes
m)	Are pre-defined business arrangements with buyers necessary or can products be sold in a "spot market"?	Necessary
n)	Is the frequency of transaction with a buyer high, medium or low?	High
o)	Is there an anonymity requirement when surplus inventory is to be sold?	No
p)	Are the SMIs willing to pay set up costs or annual costs to implement Electronic Commerce?	Yes

Table-3 Exchange Model Conclusion

	Exchange Model
Fragmented Market	Yes
Volatile Industry Conditions	Yes
Business Arrangements	Pre-qualified
Standardized Products	Yes

Table-4 Catalogue Model Conclusion

	Catalogue Model
Fragmented Market	Yes
Differentiation Requirements	Yes
Run of Mill Purchases	No
Standardized Products	Yes

Table-5 Auction Model Conclusion

	Auction Model
Excess Supply Conditions	Yes
Absence of Pre-qualified Business Arrangements	No
Varied Product Types	Pre-qualified

V. Results Interpretation and Discussions

From the results in Table-1, it can be clearly seen that all the conditions necessary for a Vertical Hub are indeed present. While there exist required conditions for Vertical Hub for Malaysian Electronics Industry, the task of setting up a Vertical Hub for the Malaysian Electronics SMIs will be greatly assisted by the fact that there is awareness of the benefits that Electronics Commerce can bring and just as importantly, there is a willingness to use Electronic Commerce. Government organizations such as SMIDEC and others should be used as catalysts to involve SMIs in Electronic Commerce activities to improve their domestic, regional and international competitiveness. They should also be used to educate SMI on major Electronic Commerce trends such as Supply Chain Management and other differentiation models that are being deployed by organizations in the western world. There is a clear need for the Government to have a specific policy on Electronic Commerce with respect with SMIs and to incorporate Vertical Hubs in this policy. The results of the study (Table-2, 3, 4,,5) clearly show that the only market-making model supported by the conditions in the Malaysian Electronics SMI sector is the Exchange model.

A Vertical Hub and in particular the Exchange Model, provides easier and lower-cost access to buyers that otherwise, may have been difficult or expensive for vendors to reach. Government organizations such as SMIDEC and others should be used as catalysts to involve SMIs in Electronic Commerce activities to improve their domestic, regional and international competitiveness. They should also be used to educate SMI on major Electronic Commerce trends such as Supply Chain Management and other differentiation models that are being deployed by organizations in the western world. There is a clear need for the Government to have a specific policy on Electronic Commerce with respect with SMIs and to incorporate Vertical Hubs in this policy. The task of setting up a Vertical Hub for the Malaysian Electronics SMIs will be greatly assisted by the fact that there is awareness of the benefits that Electronics Commerce can bring and just as importantly, there is a willingness to use Electronic Commerce.

VI. Conclusion and Future Research Directions

This research has shown that the conditions necessary for the establishment of a Vertical Hub exist in the Malaysian Electronics SMIs. The findings of this research have shown

that shown that the Exchange model is the most appropriate model of Vertical Hub for Malaysian Electronics SMI sector. A Vertical Hub will greatly enhance domestic market access. Globally, there are already several Vertical Hubs for the Electronics industry. For the Malaysian Electronics Vertical Hub to be successful, buyers that participate in the other Vertical Hubs have to be attracted to participate. Unless there is participation from global buyers, a Vertical Hub set up for the Malaysian Electronics SMIs will provide only improved domestic access.

Further research is required to ascertain how these global buyers can be attracted to participate in the Malaysian Electronics Vertical Hub. Further research is also required to determine how linkages can be formed with the existing Vertical Hubs to improve international market access using the Malaysian Electronics Vertical Hub. Further research is also required to determine whether a low-touch or high-touch hub is more appropriate for Malaysian Electronics SMIs.

References

- [1] Berryman, K., Harrington, L., Layton-Rodin, D. & Rerolle, V. "Current Research: Electronic Commerce: Three emerging strategies", *The McKinsey Quarterly*, 1998, 1, 152-159.
- [2] Department of Statistics, Malaysia, 1999, www.statistics.gov.my. [July 2000].
- [3] Ehrens, S. & Zapf, P. *The Internet Business-to-Business Report*, Bear Stearns & Co., September, 1999.
- [4] Ghosh, S. "Making Business Sense of the Internet", *Harvard Business Review*, 1998, 76 (2), 126-135.
- [5] Gurley, W.J. *Creating a Great E-Commerce Business*. Fortune Magazine, March, 1998.
- [6] Hagel J. & Rayport J. F. "The new intermediaries", *The McKinsey Quarterly*, 1997, 4, 54-72.
- [7] Hagel, J. & Armstrong, A.G. "Net Gain: Expanding markets through virtual communities", *The McKinsey Quarterly*, No.1, 1997.
- [8] Hamel, G. & Sampler, J. "The e-Corporation", *Fortune*, December 1998, 45.
- [9] Hellweg, E. "VerticalNet: Industrial Strength Portal.", *Business 2.0*, Sept 1999, Available at: <http://www.business2.com/b2/web/articles/0.17863.527383.00.html> [Aug 2002].
- [10] Kalakota, R. & Robinson, M. *e-Business: Roadmap for Success*, Addison-Wesley: Massachusetts, 1999.
- [11] Legard, D. "Average Cost to Build E-commerce site: \$1 Million", *The Industry Standard*, May 31, 1999.
- [12] Malaysian Industrial Development Authority (MIDA) (1999) Annual Report.
- [13] Merrill Lynch, *The B2B Market Maker Book*, February 2000.
- [14] Sawhney, M. *Let's Get Vertical*, September, 1999, Available at: <http://www.business2.com/b2/web/articles/0.17863.527384.00.html> [Aug 2002].
- [15] Small and Medium Industries Development Corporation (SMIDEC), Malaysia (1999), Corporate Profile. Available at: <http://www.smidec.gov.my>. [July 2000].
- [16] Sood, Sood, R., Friedman, J. Parekh, M., Sherlund, R. G., Bahramipour, L. & Berquist, T., *B2B: 2B or Not 2B?*, Goldman Sachs Investment Research, November 12, 1999, New York.
- [17] Turban, E., King, D., Lee, J., Warkentin, M. & Chung, M. H. *Electronic Commerce: A Managerial Perspective*, Prentice Hall: New Jersey, 2002
- [18] Whelan, V.B. "Infomediaries on the move", *Business 2.0*, Sept 1999, Available at: <http://www.business2.com/b2/web/articles/0.17863.527381.00.html> [Aug 2002].