

# ACHIEVING COMPETITIVE ADVANTAGE IN SINGAPORE MARINE INDUSTRY THROUGH E-COMMERCE

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## Abstract

Singapore's Marine Industry faces strong competition and challenges in the global arena, especially from fast emerging countries such as China and Vietnam where labor costs are much cheaper. Companies of the marine industry are increasingly under pressure in a fast changing business environment to make their operations lean and profitable. Innovativeness in seeking improvements and responsiveness to market changes are essential for gaining sustainable competitive advantage. Information and Communication Technologies (ICT) can play a considerable part in a competitive strategy. E-Commerce could be of a useful tool to achieve competitive advantage, in cost reduction, product differentiation in term of quality service and responsiveness to customer requirements.

Michael Porter's model of five forces of competitive rivalry help firms identify threats to its competitive position and make plans that may include IT and e-Commerce, to protect or enhance that position. E-Commerce offers new ways to manage supply chains, enhancing manufacturing logistics and distribution systems, and linking business partners in a seamless business-operating environment. It also helps to automate business transaction (buy and sell products and services) and flow of information between organizations on the internet. The Singapore Marine Industry would need to seek continuous improvements in all areas of their operations as well as in e-Commerce techniques in order to achieve sustainable competitive advantage.

## Background of Singapore Marine Industry

The Singapore Marine Industry is made up of four main sectors: ship repair, shipbuilding, rig building and the marine supporting industries.

Over the last 30 years, Singapore's Marine Industry has undergone various phases of development to emerge as one of the world's premier maritime centers. The ship repair and shipbuilding sectors have achieved world-class status and

contributed significantly to the growth of Singapore as a leading maritime hub.

The marine industry as a whole, being very labor intensive and over the years as the market environment changes, most shipyards are facing difficulties of staying competitive; and more difficulties encountered in the 1990s and beyond.

Shipyards were forced to re-consolidate with mergers and acquisitions, and restructuring over the last few years to stay competitive and alive. The marine supporting industries are also facing similar problems and most of the companies in this sector internationalize their business and seek new innovative strategies to stay competitive.

Singapore shipyards face strong competition and many challenges from its counterparts in the global arena. Current over-capacity and strong competition from new ship repair facilities with lower labor costs from China, Vietnam, Indonesia, Thailand and India are expected to compete directly with established yards in Singapore over the near term leading to a downward price pressure.

The uncertain economic climate, keener competition from regional shipyards and the constraints on manpower are old issues that have to be addressed with new perspectives. The innovativeness of the Singapore shipyards in seeking improvements and their responsiveness to market changes are essential to ensure that Singapore remains at the forefront of the global ship repair center.

## Competitive Strategy

Companies in the marine industry will only survive if they are competitive; like any other commercial organizations, they prosper if they achieve a competitive advantage. The two generic competitive strategies are price leadership and product differentiation. E-Commerce could be useful tools to achieve price advantage, differentiation and to combat competitive threats. The three basic strategies for competitive advantages are cost leadership, differentiation and focus (Porter, 1980). Cost leadership is simply to be able to sell the goods or provide the service at a price that is lower than that of the competition. Differentiation is where the

goods or services provided have some quality that makes them more attractive than competing products even though the competition may have a somewhat lower price. Focus is concentration on a single aspect of the market, a product niche.

Information and Communication Technologies (ICT) can have a considerable part to play in a competitive strategy. The appropriate use of Information System (IS) and Information Technology (IT) can lower administrative costs of the organization and the use of Information and communication technologies, in the logistics supply chain, can add to that advantage. The use of information and communication technologies, in addition to cost reductions, can also differentiate a product in terms of quality of service and responsiveness to customer requirements. For the niche player, information and communications technologies can be used to target information on the selected segment and to gather customer data from that segment. Eventually quick response supply and just-in-time manufacture, enabled by information and communication technologies, can provide the capability to evolve new products and services and to facilitate customization (Whiteley, 2000).

Michael Porter's model can help firms identify threats to its competitive position and to formulate plans, that may include IT and e-Commerce, to protect or enhance that position. The model shows five forces of competitive rivalry: -

- ◆ Competitive rivalry among existing firms in the trade sector;
- ◆ Threat of potential new entrants to the sector
- ◆ Threat of a substitute product or service to the existing trade
- ◆ The bargaining power of the buyers
- ◆ The bargaining power of the suppliers.

Typically one or two of these five forces dominate in the analysis of the competitive position of an organization in a trade sector. Each of these threats is further examined as below:-

## **1. Threat of New Entrants**

Information Technology can be a barrier to entry into a market. Existing players in the sector may well have a substantial investment in Information System / Technology including the use of Electronic Data Inter-change (EDI) to co-ordinate their supply chain. This experience and investment can be difficult for a new entrant to match. The converse is that developments in IT and e-Commerce may leave existing players with heavy investment in expensive obsolescent technologies giving the new entrant the opportunity to enter the market with fresh ideas and a business plan facilitated by a new generation of IT provision. Internet e-Commerce is a technology that can facilitate new

entrants to existing markets without the need to match the IT and infrastructure investment of the existing players. Recent developments in internet e-Commerce have facilitated the entry of new players into a number of market segments, such as without having much investment in setting up the marketing distribution channel.

## **2. Threat of Substitution**

The IT industry has itself substituted many products previously used in business; one example is the replacement of the typewriter by word processor. Of the e-Commerce technologies, Internet e-Commerce has the potential to make significant inroads into traditional retail sectors such as on-line banking or downloadable information from the web-sites that could substitute distribution channels for conventional retailing and, arguably, constituting substitute products.

## **3. Bargaining Power of Buyers**

The use of IS/IT may help companies achieve efficiencies that enable them to meet the price requirements of the powerful buyer. Another approach is to use information communication technologies to facilitate a level of service that will keep the customer loyal. Short cycle times, quick response supply and reliable services are features that can be enabled by e-Commerce technology. Value added services such as stock control and accountancy facilities available from the suppliers are also features that can lock the customer in.

E-Commerce can also be used to reshape the supply chain. Intermediaries such as wholesalers and agents can become unnecessary when an organization can efficiently deal with small traders and members of the public using e-Commerce systems. Competitive advantage, in all three categories, can be achieved using e-Commerce for direct sales. This process of disintermediation can save costs of distribution, allows an organization to differentiate its products and services and/or focus its attention on selected segments of the market.

## **4. Bargaining power of Suppliers**

The strategies of price advantage and differentiation such as branding or quality of service give a stronger competitive position for the suppliers. The ability to trade electronically is a factor in the quality of service and may be a requirement of trade from the buying organization.

## **5. Competition between Existing Players**

E-Commerce is a factor in competition between existing players. The use of e-Commerce can: -

- Reduce the administrative costs of trading (transaction costs);
- Increase the logistic efficiency of the supply chain hence facilitate reduced stockholding and greater reliability of supply ;
- Meet the requirements of trading partners that trade is conducted electronically
- Differentiate the product or service that is offered from that of competitor organizations
- Cut out intermediaries in the supply chain, e.g. replacing sales through an agent with direct sales to the customer;
- Provide a new marketing and servicing channel.

## The First Mover Advantage

The ability to gain advantage from the innovative use of IS/IT can owe a lot to timing. The first organization to implement a new type of ICT system will, if the system is successful, gain the price advantage or the differentiation while competitors are still operating with traditional methods and systems (Whiteley, 2000). The shipowners / ship-operators who are customers for the marine industry are located all over the world and the ICT system can provide the advantage for the Singapore Marine Industry.

The first mover can gain advantage but it is a risky business. New technologies and new ways of using them are expensive to develop and are often not successful. There are advantages to being a late mover: the idea has been tried, its effectiveness can be assessed and the later mover can implement an improved version of the system. In terms of technology, the advantages are that it has been tested and will be cheaper and easier to implement the second time round; it may be that standard components have been developed or that packaged solutions are available, advantages that were not available to the first mover. Newcomers to the e-Commerce scene, using EDI or Internet e-Commerce, have the advantages of being able to benefit from the work of the pioneers without the need to contribute to the development effort. The late mover does not, however, have the ability to surprise competitors or the market; it is essentially a catching up operation.

## Sustainable Competitive Advantage

Having gained competitive advantage, the problem is then to exploit and sustain it. To gain competitive advantage using IS and IT usually needs an element of surprise; the system needs to be out in the market place before competitors make a start in copying the idea. Sustaining that competitive advantage requires that the technical advantage is converted into brand advantage e.g. amazon.com, or that the technical lead is sustained by continuous product and service development.

Sustainable competitive advantage from EDI systems has been rare. Most EDI systems have been implemented in trade sectors where all competitors have a mature use of IT and IS and hence the use of EDI by one player is readily emulated by the competition.

Sustainable competitive advantage appears to be more common with Internet e-Commerce; probably to be expected with a new technology where the element of surprise can be greater. The notable names in Internet e-Commerce have entered existing markets or created new markets using web technologies at a time when the entry costs to those markets were low and the element of surprise was greatest. In producing technologically sophisticated sites and developing their supply chain logistics, they have considerably raised the entry costs for newcomers.

The possible competitive use of e-Commerce has been illustrated and summarized in the Table below: -

**E-Commerce for Competitive Advantage  
(Table 1)**

Force	System	Competitive Advantage
New Entrants/ Substitution	Internet e-Commerce	<ul style="list-style-type: none"> <li>• Reduced entry costs</li> <li>• New sales channel</li> <li>• New service opportunities</li> </ul>
Suppliers (&Trade Buyers)	e-Commerce Logistics (EDI/IeC)	<ul style="list-style-type: none"> <li>• Cost reductions</li> <li>• Quick response</li> <li>• Lockin</li> </ul>
Buyers (Consumers)	Internet e-Commerce	<ul style="list-style-type: none"> <li>• New sales channel</li> <li>• Dis-intermediarisation</li> <li>• Customer Information</li> </ul>
Competitive Rivalry	e-Commerce	<ul style="list-style-type: none"> <li>• Cost leadership</li> <li>• Differentiation</li> <li>• Focus</li> </ul>

**Source:** E-Commerce Strategy, Technologies and Applications; David Whiteley, 2000 (Pg.32)

**Notes:** EDI: Electronic Data Interchange  
IeC: Internet e-commerce

## What is e-Commerce?

E-Commerce is simply any business transaction that takes place via digital processes over a network. E-Commerce, however, is really much more than just exchanging products or services for money over the Internet. E-Commerce is an enabling technology that allows businesses to increase the accuracy and efficiency of business transaction processing. E-Commerce is also a way for organizations to exchange information with customers and vendors to the benefit of everyone involved. Eventually,

e-Commerce will likely replace the movement of paper within and between organizations, as well as between organizations and consumers (Trepper, 2000).

## **The Benefits of implementing e-Commerce**

E-Commerce is a tool for reducing administrative costs and cycle time, streamlining business processes, and improving relationships with both business partners and customers. By using a public shared infrastructure such as the Internet and digital transmitting and reusing information, e-Commerce systems can lower cost of delivering information to customers. E-commerce systems, being of instantaneous nature, allow a reduction of the cycle time associated with producing and delivering information and services. An effective e-Commerce solution can extend the reach of business by increasing opportunities with customers, suppliers and other business partners. For suppliers, through a direct, information-rich and interactive contact with customers, electronic commerce can enhance the promotion of products (Viehland, 1999). Organizations that compete effectively in the e-Commerce arena should therefore be able to make better decisions, which should enhance market position, and ultimately profitability.

E-Commerce techniques allow small businesses to have access to the same markets as larger businesses. Small organizations can have instant access to international markets. Customers all over the world can access the web site and buy the products whether the company has one full-time person or one thousand full-time employees. The direct reach to customers and their bi-directional nature in communicating information, e-commerce systems represent a new sales channel for existing products. Small businesses can grow very quickly and can eventually take on larger businesses in their markets. Smaller businesses may also be able to provide a personalized experience for customers who come to their Web site more easily than larger businesses that have to deal with the bureaucracy involved in designing a Web site.

E-Commerce can provide benefits beyond cost reduction. Electronic sign-offs can prevent inappropriate business transactions that can be missed in a paper-based system. Business rules can be implemented electronically so that systems would not accept transactions than have incorrect codes or insufficient electronic authorization. E-commerce will become one of the components of a brand or corporate image, especially while targeting technology-friendly customer segments. The information-based nature of the e-Commerce processes allows for new products to be created or existing products to be customized in innovative ways. Rapid progress in the areas of e-Commerce will force companies to adapt quickly and offer them opportunity to experiment with new products, services and processes (Viehland, 1999.)

Buying patterns can be tracked as well which allows organizations to make better decisions about the product and service delivery. Giving the right information to the right people of the right time can dramatically improve the company's ability to compete in its marketplace. The changing industry structures and the e-commerce systems allow for new business models to enhance competitive advantage, based on the wide availability of information and its direct distribution to end customers.

Organizations that use e-commerce techniques and technology will also attract additional consumers because of a higher level of customer service, through intelligence built into systems and the extended availability of intelligent support systems. It will also allow for more personalized relationships between suppliers and their customers, due to their ability to collect information on customers' needs and behavioral patterns. Organizations that move to the Web will be able to help their customers resolve problems faster, which will eventually lead to better customer relations and more customers. Organizations that customize the interactions of both vendors and customers will appear to be more attractive business partners, which ultimately enhances their market position. Some organizations will find that a majority of their customers prefer to conduct business via the Web rather than traditional methods, which means that the organizations that cannot keep up with the technology will find themselves in trouble.

By simply using e-Commerce techniques will not, however, necessarily lead to success. Organizations that currently suffer from inefficient processes, questionable product quality or poor customer service will find that e-Commerce enables them only to make the same mistakes faster and more frequently. On the other hand, organizations that are truly dedicated to excelling in these and all areas of their operation will benefit from electronic commerce because it will enable them to most efficiently build upon these capabilities.

(Trepper, 2000) states e-commerce, as in a useful way, the benefit of e-Commerce help to define what it is, Electronic Commerce: -

- Offers new ways to manage supply and value chains; to enhance manufacturing, logistics, and distribution systems; and to link business partners together in a seamless business operating environment.
- Provides organizations and individuals with the ability to buy and sell products, services and information on the Internet.
- Automates business transactions and the flow of information between organizations.
- Helps organizations cut customer service costs while improving the quality of service and increasing the ability of the organization to better manage the customer relationship.

## Business to Business (B2B) e-Commerce

Business-to-business (B2B) e-Commerce represents an enormous opportunity for organizations both now and in the future. This will certainly also provide opportunities for the marine industry as well. According to Forrester Research, the market for B2B e-Commerce will surpass S\$1.3 trillion in 2003 (Cameron, 2000).

In Singapore alone, 97% of the 1998 S\$1.2 billion e-Commerce market represented B2B e-Commerce, according to the government's Department of Statistics. In addition, Forrester Research's overwhelming worldwide B2B market prediction of S\$1.3 trillion represents only 9.4% of all business sales in 2003 – up from 2% of all business sales in 1998. Clearly, room for growth in this arena extends beyond 2003 and this will include the marine industry.

Although B2B e-Commerce presents far greater opportunity than B2C e-Commerce, implementing it is also considerably more complex. A consumer e-Commerce site requires smooth functioning e-Commerce software, the ability to process credit card transactions, and a solid marketing plan. B2B applications are diverse and vary considerably by industry; the marine industry itself could also vary depending on which sector or areas of specialization the company is in. Furthermore, a single organization often must support a variety of arrangements with its partners – different contracts, discounts, and payment methods, for example. Off-the-shelf software can help implement such applications, but substantial customization is still required.

It is noted that the use of e-Commerce in the Singapore Marine Industry is still in the premature stage, except for the marine supporting sector where companies that are doing more international business especially of foreign owned companies with headquarters abroad and have base in Singapore. However, it has been noted that the major

shipyards in Singapore, such as Keppel and Sembawang groups have recently taken an overall e-initiatives to move from the traditional buying process to become seamlessly integrated as a marine marketplace. The OmixAsia.com is established and will serve as a B2B e-marketplace in the marine and offshore industries. The estimated volume of buying volume within this is said to be about S\$300 million. The use of this e-commerce is through membership and an entrance fee of S\$4,000 with annual subscription fees of S\$4000, and for non-members a two percent (2%) commission is payable for each transaction. This may however act as barriers for smaller companies due to the high fees charged.

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