



# Market Share as a Determinant of Making Profit in the E-Commerce Industry - An Empirical Enquiry

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## ABSTRACT

Researchers, business analysts and practitioners are trying to determine the relationship between market share and profitability for e-commerce companies. We hypothesize that market share has a positive exponential relationship with profitability. This paper investigates the market-share/profitability relationship among 50 out of 173 publicly traded e-commerce companies.

## INTRODUCTION

Since January 2000 nearly 10% of Internet-based companies have shut down or declared bankruptcy. In fact, e-commerce companies account for more than fifty percent of companies that failed in this industry. During the Internet boom, the majority of investors assumed that low operating costs in this sector would eventually lead to higher profits. The potential earnings that can be derived from Internet technology prompted many individuals to invest in newly formed e-commerce companies. As a result, in 2000 NASDAQ stock market reached the peak and closed at above 5,000 points. Since then more than four hundred e-commerce companies have shut down or gone bankrupt; a few are struggling to stay afloat. According to Webmergers.com, a total of 423 e-retails went out of business between January 2000 and April 2002, which constitutes 51% of overall online business shutdowns (Miller, 2002). Although the majority of e-commerce companies share similar business models, only a few of them have been able to realize any profits.

In 1999, retailers and venture capitalists were energized and excited about the prospect of capturing market share. Currently, the struggle for profitability weighs heavily on most online merchants. Failed e-commerce companies, falling stock prices, loss of venture capital and pressure from stockholders are forcing Internet companies to take a hard look at profitability. Companies with lower costs will obtain larger profit margins because profitability is a function of cost-efficiency (Gimeno and Woo, 1999). A study conducted by McKinsey-Salomon Smith Barney found that the cost of receiving orders online is lower than the cost of acquiring and distributing goods to customers. Despite low operating costs, the majority of e-commerce companies have not reached a break-even point or generated profits. This may be a result of the relatively smaller market share each company enjoys in this industry. Therefore, we believe that e-commerce companies can generate significant profits if they focus their energy on gaining a larger market share in the industry.

## BACKGROUND

Over the years, numerous studies have been conducted to determine the market-share/profitability relationship (Buzzell et al. 1975, Hergert 1984, Markell et al. 1988, Woo, 1984). The results of these studies vary from no significant correlation to a strong positive correlation between market share and profitability. Studies of Buzzell and Woo found a strong positive relationship between market share and profitability. Markell et al. concluded that the link between market share and profitability is an occasional phenomenon rather than a universal law. Hergert's study concluded that although market share and profitability appear to be positively related on average, the relationship is weak overall and non-existent in many industries (Hergert 1984). However, these studies have been conducted on non-Internet-based companies.

The business models of Internet-based e-commerce companies are based on network reach, intangible assets such as relationships, knowledge, people, and brands (Boulton et al., 2000, McGarvey, 2001). Many of these factors will contribute to e-commerce companies' profit margins; however, we believe that market share would make a more significant contribution to profitability. To determine this market-share/profitability relationship, we studied publicly traded e-commerce companies. The study argues that market share is the primary requirement to earn profits and to succeed in this industry.

Thomas (1973) pointed out that larger companies have monopolistic power thus enabling them to bargain more effectively with suppliers compared to those with smaller market shares. Therefore they can obtain goods and services at discounted prices. Similarly, large companies benefit from economies of scale because they can spread their fixed costs over a larger volume of production. Economies of scale and market power can increase companies' overall profits by reducing costs. In the e-commerce industry, 75% of cost savings come from economies of scale and companies' abilities to bargain with suppliers (Morton et al. 2001). Thus, this study hypothesizes that a percent increase in market share will result in more than a percent increase in profitability (Fraering and Minor, 1994).

## METHODOLOGY

We randomly selected 50 out of 173 publicly traded e-commerce companies. Financial data for each company was obtained from [www.hoovers.com](http://www.hoovers.com). According to *The Market Share Reporter*, the e-commerce industry sold \$26.1 billion worth of goods and services in the year 2001. This figure was divided by each company's sales to determine its relative market share in the industry. For example, in 2000 E-bay Inc. occupied 2.87% of total e-commerce market share, which was calculated by dividing total industry sales by the company's revenue of \$748.8 million. This relative market share was regressed against the operating profit margin. A similar method was used by Porter to determine the relationship between market share and profitability.

We hypothesized that a unit increase in market share would result in more than a unit increase in profitability. In order to test this relationship, we used regressed relative market share data against a company's operating income (see Equation 1).

$$\begin{aligned} \text{Equation 1.} \\ \pi &= \alpha(MS)^\beta \\ \pi &= \text{Operating Margin} \\ \alpha &= \text{Constant} \\ MS &= \text{Relative Market-Share} \\ \beta &= \text{Market-Share Parameter} \end{aligned}$$

Equation 1 suggests that there is a positive exponential relationship between the operating margin (dependent variable) and market-share (independent variable). Once the constant and the parameter of market-share are determined, we can calculate the minimum market-share required to break even (see Equation 2).

**Equation 2.**

$$\ln \pi = \alpha + \beta \ln MS$$

$$\text{Or } \ln \hat{\pi} - \hat{\alpha} = \hat{\beta} \ln MS + \varepsilon$$

$$\text{Or } e^{\pi} - \hat{\alpha} = MS^{\hat{\beta}}$$

Replacing the predicted profitability with zero and dividing both sides by the power of  $1/\hat{\beta}$  will enable us to calculate the minimum market-share required to break even.

**RESULTS**

Using the above mentioned equations, the study found a positive linear relationship between market-share and profitability in non-Internet companies. However, in the e-commerce industry we observed an exponential relationship between market-share and profitability. This type of relationship is observed because as market-shares for a given company increase, fixed costs will decline at a faster rate compared to non-Internet companies. Also, variable costs tend to increase at a declining rate because large e-commerce companies can reduce costs through economies of scale and bargaining power.

A regression output showed a significant exponential relationship between market-share and operating margin. The relationship between the dependent variable profit margin and independent variable market-share is significant at a 1% confidence level (see Table 1).

When the predicted values for the constant and the coefficient of market-share were substituted in Equation 2, we obtained:

**Equation 2.**

$$e^{\pi} - \hat{\alpha} = MS^{\hat{\beta}}$$

$$\text{Or } e^0 - (-0.639) = MS^{0.473}$$

At a breakeven point  $\pi = 0$

$$\text{Or } (1 + 0.639)^{1/0.473} = MS$$

$$\text{Or } MS = 2.84$$

By solving Equation 2, we determined that e-commerce companies must have 2.84% of market-share to break even. In other words, companies with a market-share of greater than 2.84% are likely to enjoy operating profits.

The average market-share and operating profit margin in the e-commerce industry was 0.55% and -1.3995 respectively for the year 2000. ADS Systems Inc., a Texas based computer software and Web hosting company, held the smallest market-share with 0.01%. The company posted a loss of \$18 million for the same year. On the other hand, eMerge Interactive Inc., which provides online information and services to livestock producers controlled the highest share with 4.58% and a loss of \$33 million.

Table 2 shows that companies with less than 2.84% market-share posted negative net income before taxes of \$64 million on average. On the other hand, companies with equal to or more than 2.84% of market-share reported net income before taxes of \$32 million on average.

**DISCUSSION**

As predicted, there is a significant exponential correlation between profit margin and market-share. A percent increase in a market-share leads to more than a percent increase in profit margin. E-commerce companies that wish to become profitable should aim to capture a market-share of greater than 2.84% of the industry. Companies with a market-share of less than 2.84% are unlikely to have market power to bargain with suppliers to purchase goods at discounted prices and will not be able to benefit from economies of scale. As a result, they would not be able to realize substantial profits. As discussed in the preceding section, profitability is a function of cost efficiency. Companies that have lower operating costs in any industry will enjoy higher profits. Companies with higher market-shares can reduce their operating costs by spread-

ing fixed costs over a larger volume of sales and by bargaining with suppliers to obtain goods and services at a discounted price. In the e-commerce industry, market-share plays a significant role in determining a company's profitability because receiving orders online and helping customers using "self help" websites, such as frequently asked questions, costs very little (Tillet, 2001). Further research needs to examine the correlation of market-share and multiple product offerings as well as other factors that influence the success of e-commerce companies.

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Table 1.

Model		Coefficients	t	Sig.
1	(Constant)	-0.639	-1.820	.075*
	Log Market-share	0.473	2.845	.0007**
R <sup>2</sup> = 0.447				
* = Significant at 10% confidence level				
** = Significant at 1% confidence level				

Table 2.

Market-share	Number of Companies	Number of companies reported loss	Number of companies reported profits	Average Loss or Profit
MS < 2.84	47	46	2	-64
MS > 2.84	3	2	1	32

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