

The 80/20 Rule and Long-Tail in the Online Auction Market: A Case Study on YAHOO Auction, Taiwan

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ABSTRACT

The online auction market has been growing rapidly, but what are the significant effects on Taiwan? Based upon the 80/20 rule and the Long Tail, the paper started its observation by taking Yahoo Auction platform as a case study and found a negative co-variance existing between performance and the number of online sellers. A further analysis showed that these 20% sellers promoted more items of goods online than numerous online sellers with less efficient performance. The former ones were found to have attracted more patronage than 80% of the sellers do, and they were capable of promoting both popular and rare goods, which led to sustained revenues in E-commerce. The paper concluded that 80% of economies of scale in the online auction market are characterized by higher performance sellers that constitute 20% of the whole participants, a sign that proves supportive of the 80/20 rule. These 20% sellers display more items of goods online and create more revenues than those of the lower performance sellers do, a sign that reflects the Long Tail. The co-existence of the 80/20 rule and the Long Tail, may serve as a preliminary study for further academic research.

Keywords: Online Auction, 80/20 rule, Pareto Principle, Long Tail Theory

1. FOREWORDS

With the rapid development of information technology, access to internet service has been increasing in recent years. According to Miniwatts Marketing Group, by January 2007, there was 1.1 billion users having internet access in the world, among whom, 230 million population comes from North America standing at 69.7%, and 390 million live in Asia hitting 10.7% [12]. Separately but at the same time, TWNIC investigated the condition of broadband network in Taiwan and targeted its respondents over 12 years of age by January 2007. It came out with a report that 13.26 million heads (67.77%) had access to internet in Taiwan, reflecting a closer relationship between internet service and ordinary life [18].

What is also significant on this regard is a rise of E-commerce. An on-line survey made by AC Nielsen on world consumers' behavior [13] showed that in 2005 there were more than 6000 billion people that had been in access to online auction market, among who, 90 percent of Taiwanese people reported that they had experience with e-commerce. Another survey done by MIC also anticipated that a total amount of online transaction in Taiwan reached NT\$78.3 billion dollars, which was a 51.8% dramatic rise from that in 2006 [20]. Moreover, *InsightXplorer* in October 2006 surveyed auction behavior of the internet users in Taiwan and reported that 82.1% of the respondents had been in access to online auction market, 78.4% had purchased goods from

online auction market, and 38.7% had experience to sell their goods online. [6]The above investigations indicate that there have been great market potentials in the online auction market [7].

Owing to the unique feature of E-commerce—emphatic of remote from conventional form of social contact and aided by more sophisticated searching engine—online auction has become a popular and well-received path to start business. It is also found that online auction that initially deals with second hand goods began to upgrade their market into professional fields. From a sampling report investigating online selling parties that have transaction amounts hitting the best 20% of the overall patronage, 13% of the online sellers take it as a full time job, 24% as a side job. Among the online sellers, 13% are house-makers, and 20% are self-employed. All these statistics demonstrated that online auction market has become one of the major means in the market [3].

That online auction market has enormous potentials stems from its platform that caters to scarce, unique and not-in-popular goods. This sets a condition for Anderson's *Long Tail*, a consumer demographic in business to take place [1]. However, Shieh in observing the successful development of online auction market in Taiwan found that in auction market higher performance online auction seller seems to be fewer but they have stable revenues [8]. What are the theoretic explanations? Could this be explained by the Pareto Principle? What is the implication from the findings, if any?

The purpose of this paper is three-fold. First, it seeks to explain the above phenomenon by observing the current online auction market in Taiwan from the Pareto model of 80/20. Second, it analyses the relations between online sellers and items of goods displayed online from the perspective of Anderson's *Long Tail* feature. Third, it also tries to find out whether the *Long Tail* and Pareto principle co-exist in the online auction market.

2. A LITERATURE REVIEW

E-commercial activities are normally one of the important elements of economic development for a country. The expanding market of C2C auction for instance is recognized as one of the government tax sources in Taiwan [11]. A survey made by Market Intelligence Center, Institute for Information Industry, showed that the total transaction of C2C auction market in Taiwan reached NT\$19 billion dollars in 2004. It was NT\$51.7 billion dollars in 2006, and in 2007 it has grown as high as 60%, strongly indicative of its potentials [2]. The success of online auction lies in convenient and effective platforms in the internet and speedy, private but anonymous contact where a client can make choice of the goods with freewill [22]. Furthermore, there exists a set of evaluation system to check the performance of the sellers. This performance evaluation system is understood as open remarks made by the online buyers [16]. It serves as an important reference for those

latecomers searching the bid items. As these remarks can hardly be dictated by the selling side, sometimes the positive evaluation may increase business entity value—the so called “goodwill” as assets—and therefore customer trust [9]. It is found that updated remarks on the sellers' performance may be seen as more representative and influential than the outdated performance records. It is also found that for all the positive remarks given to the online sellers, any recent unkind remarks may reduce the goodwill of the online sellers in a significant degree [21], and therefore threaten the market benefits [15]. Stephen even concluded that evaluation of online sellers' performance had been increasingly recognized as important in E-commerce and sometimes those unkind remarks to the sellers created negative impacts on the final bid prices [17].

The *Long Tail* is understood as a newly developed economic phenomenon thanks to the online service. It reflects not only the change of the marketing means in businesses but also the continuous growing trend of those previously unnoticeable goods that may have accumulated sales no less than those best-selling in virtual business. In the past, people acquired market information through traditional means when the online facilities were not available. Restricted by limited interaction and less instantaneity of mass media as well as burden of high cost, consumers tended to access to commodities that are available in market than those that were relatively lack of promoting means. This asymmetrical condition however has been radically changed with the advent of internet that is characterized by speedy search engine and lower investments. Among the changes, one significant phenomenon is the more convenient ways of consumption. That said; in addition to popular goods that find favor among the buyers on the internet, some rare and special goods also find their niches with some extent of economies of scale in E-commerce, which was substantially indicated by Anderson's *Long Tail* (Lee et al, 2004) [1], and consumers with special demands can also find their satisfaction through E-business channels [4]. As a result of economic utilities by the online service, the *Long Tail* that shows accumulated sale volumes comes into shape [1]. The online businesses have hence become one of attractions in market nowadays.

The Pareto Principle was a well-received concept to illuminate social inequality in development. Research findings as late as 2007 by Hegyi [5], who explored wealth distribution, remained supportive of the phenomenon of the Pareto principle, which indicative its convincing argument. In 1998, Koch strengthened the concept of the Pareto Principle by arguing that there existed a disproportionate casual relations between input and feedback, in which 20% of personnel, customers and in-put resources would create 80% of overall revenues and benefits, the so-called 80/20 rule. [8] In other words, as was argued, as long as businesses take good care of the 20% of resources—the critical

productivity part, they can maximize the benefits. It was also reported that the same logic applies to the academic endeavor too [14].

3. METHODOLOGY

Sampling population of online sellers in this paper came from the *Yahoo! Auction* in the main and was collected by *MS Excel*. After the collecting statistic data regarding the online sellers' performance, it will pre-establish a class interval and with which as a base it draws a chart to show the relationship between result of performance evaluation and numbers of online sellers. In the second phase, the paper will classify the online sellers according to performance evaluation and will accumulate selling units and promoted goods. In the third phase, it will accumulate customers that have done transaction with sellers. To analyze, the paper will also filter the above data for further cross validation and in-depth implications.

There are three reasons for the paper to takes *Yahoo! Auction* as the research object. First of all, as an investigation conducted by *InsightXplorer* showed that *Yahoo! Auction* occupies 90% of online auction market in Taiwan, *Yahoo! Auction* can be seen as the leading and representative player in the online auction market [7] with its eye-catching figure of NT\$20 billion dollars in 2006[19]. Secondly, the *Yahoo! Auction* streamlines and enriches those self-owned auction platforms online, pulling in more buyers into the E-businesses. Lastly, since these online shops especially those through *Yahoo! Auction* have been in operation for a while and have grown into mature enterprises, they become ideal target for this paper to start with.

In retrospect methodologically, after targeting online auction shops at the *Yahoo! Auction*, the paper began collection of sellers' data from the online auction market. However, as it turned out, data duplication stood as a problem owing to unclear classification of the goods conducted by *Yahoo! Auction*. The paper proceeded with a detailed review to delete those duplicated parts. After this effort, the paper analyzed distribution of the collected online auction sellers. It classified the online sellers according to performance evaluation. A section interval was set by every 500 counts as a unit. A Table to show the distribution relationship between head counts of sellers and evaluation results of sellers' performance was also drawn. Finally, the paper halved the sellers into two groups at performance evaluation index 2000 into higher performance and lower performance. It separately accumulated data of the two groups as an analytical basis for clearer understanding the relationship between head counts of online sellers and rise/fall of customers' interaction. Taken together, the above measures paved the way for a relevancy analysis between online sellers' economies of scale and performance evaluation.

Certain revision was also made. Initially there were 10,560 online sellers having been sampled in totality. Owing to the fact that many online sellers promote their goods under one account leading to data duplication, manual effort followed to delete these online sellers' duplicated data with the criterion that an online seller was limited to one account. This manual effort ended up with 4,900 online sellers that were unduplicated as shown in Table 1. This sorted data, admittedly, have an error variance of 2% compared with the finding—5,008 online sellers—as retrieved from the *Yahoo Auction*, despite the gap—108 online sellers—may be not obvious.

4. DATA ANALYSIS

This paper took data retrieved from the *Yahoo! Auction* on July 12, 2007 and there came out two illustrations below. Figure 1 demonstrates the distribution of performance evaluation by the whole collected online shops that could be further divided by every other 500 counts alongside the total performance evaluation measurement. Another illustration is Table 1 that shows the head counts of online sellers falling within each group section.

Analysis shows that Figure 1 reflects a strong similarity between sellers' numbers and goods promoted/displayed online. To simply put, both have the soaring "head" on the left of its own entities with the "tails" barely approaching or even touching upon the X axle. It seems that the accumulated utilities at the last phase of the extensive curves are more significant. It shows that although there are a colossal number of lower performance online sellers at the soaring "head" phase, they cannot compete with those sustaining profits at the remote phase of lineal curves occupied by higher performance sellers.

Judging from the distribution in Figure 1, there were 2,547 online sellers with performance evaluation below 500 counts, constituting 52% of the total counts. However, there were 1,499 online sellers with performance evaluation between 500-2000, a number that rapidly declined 30%. The above online sellers, i.e., with performance evaluation under 2,000 counts were defined as lower performance. Their "poor" performance might be interpreted as inexperienced latecomers into the online auction market. These not-too-efficient online sellers constituted 82.6% of the whole sampling.

There were however 854 online sellers with more than 2,000 counts from the buyers that could be seen as higher performance under evaluation. These online sellers constitute 17.4% of the whole sampling. Nearly all of them worked for more than two years, some of whom took auction by trade. They were seen as skilled in providing catalogues of goods and dealing with customers' complaints. Their skills also reflected a gap between these two groups of online sellers on business modes and management styles.

Table 1 Analysis of the whole sellers performance evaluation Unit: number of seller

evaluation item	below 500	501- 2000	2001- 10000	10001- 20000	above 20001	total
Online seller	2547	1499	757	69	28	4900
Percentage	52.0%	30.6%	15.4%	1.4%	0.6%	100.0%

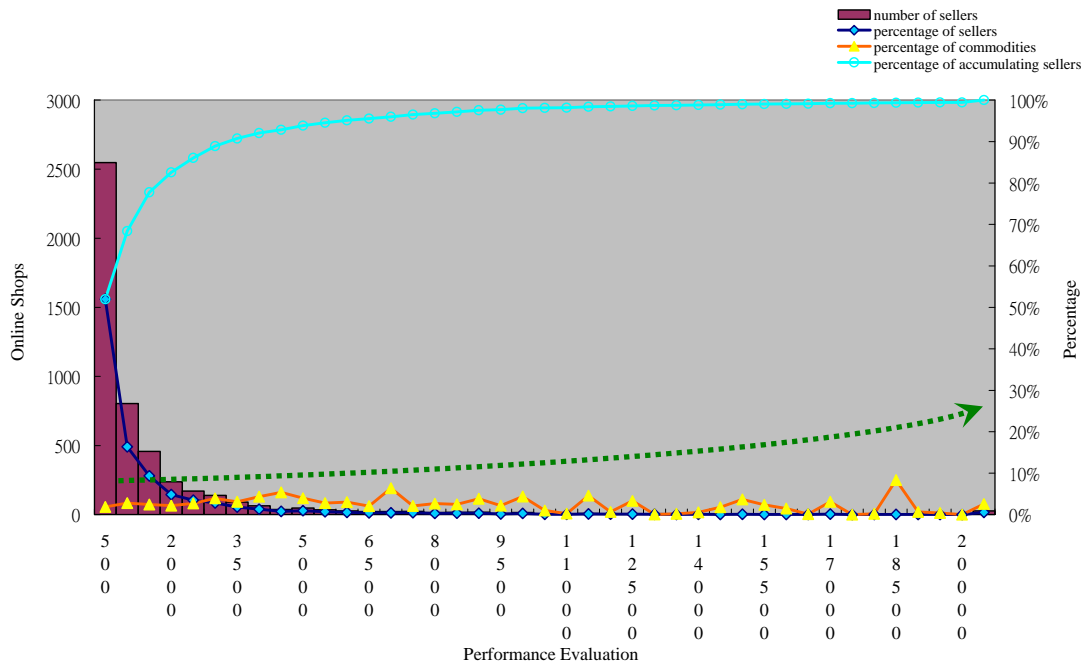


Fig.1 Percentage of performance evaluation and commodities and revenue trend

On the other hand, Figure 1 showed the detailed numbers of online sellers, the proportionality and the accumulated head counts of online sellers. Figure 1 indicates a negative correlation existing between head counts of online sellers and performance evaluation, i.e., the better the performance evaluation, the less the head counts of online auction sellers. If taking performance evaluation 2,000 counts as a watershed, we can see that a distribution of revenues emerges that is similar to what the 80/20 model exhibits. Additionally, Figure 1 also presents a fact that buyers doing transaction with the online auction sellers credited by higher performance evaluation are more in numbers than their transaction with those lower performance sellers.

Table 1 exhibited the relationship between head counts of online auction sellers, and numbers of goods having been purposefully promoted/displayed online, and how many times that transaction is made. After dividing the online auction sellers into two groups, i.e., lower-performance sellers (80%) and higher-performance sellers (20%), Table 2 helped to explain the

relations between goods promoted and effects achieved in the online auction market. To be specific, there were 4,046 lower-performance online sellers in Table 2. These auction sellers, despite they had been evaluated as performing not well, has tried their best in promotion of their goods and promoted 256,346 items of goods online. This figure was three times higher than that promoted by those higher-performance sellers; that is 83,618. On the other hand, although there were numerous lower-performance online auction sellers—five times more than higher-performance sellers and occupying barely 75% of the overall auction market, there were averagely 63 items of goods per lower-performance online auction sellers. This figure to be sure still could not compete with the one - 98 items - promoted by a higher-performance online seller in average. In other words, for all that there were great many lower-performance online sellers promoting far more items of goods, their opportunities to expose the promoted goods were evenly diluted, which in turn, reduced buyers' likelihood to have access to the sellers' goods displayed

online.

Table 2 Commodities number of high and low evaluation seller and number of trading customers

evaluation		Low evaluation seller	High evaluation seller	Total
item		Below 2000	Above 2000	
seller	Number of sellers (person)	4,046	854	4,900
	Percentage (%)	82.57%	17.43%	100%
commodities number of seller	Number of commodities (piece)	256,346	83,618	339,964
	Percentage (%)	75.40%	24.60%	100%
	Average commodities of seller (piece)	63.36	97.91	
number of trading customers	Number of customers (person)	2,000,289	4,987,349	6,987,638
	Percentage (%)	28.63%	71.37%	100%
	Average number of customer (person)	494.39	5839.99	

The paper then looked at the proportions of promoted items to the total items of goods at each section (see Figure 1). The promoted items of goods of every lower-performance online seller at each section were 56 (1.89%), 82 (2.78%), 72 (2.45%) and 64 (2.17%). The accumulated proportion of averagely each lower-performance online seller to promote goods was 9.3%. In contrast, the average accumulated proportion of a high-performance online seller was as high as 90%. Take the three online sellers at the highest performance level for instance. The proportion of performance and average number of promoted goods against the overall items of goods can be illustrated as below: Performance Index 18,500 hitting at 246 items of goods (8.35%), Performance Index 7,000 corresponding to 188 items of goods (6.38%) and Performance Index 4,500 arriving at 159 items of goods (5.39%). These data unveil that higher-performance online sellers had more opportunity to expand economies of scale and accommodated both popular goods and marginal market. In other words, higher-performance online auction sellers are capable of providing larger varieties of goods, more catering to the customers in the E-commerce.

With respect to numbers of customers that conduct business with online sellers, Table 2 presented data to show sellers' potential revenues and the economies of scale. Based upon the accumulated counts of performance evaluation of the online sellers and upon the assumption that each count represented one transaction (without the duplication concern), there were 2,000,289 customers dealing with lower-performance online sellers, constituting 28.63%, while there were 4,987,349 clients dealing with higher-performance online sellers, constituting an overwhelming figure 71.37%. These 71.37% of economies of scale were actually created by only 24.60% of overall items of goods promoted online. On the

other hand, the average numbers of customers dealing with two groups of online sellers were also in sharp contrast. With respect to the higher-performance sellers that have been in contact, they had averagely 5,840 head counts of customers, but with respect to the lower-performance sellers, only 494 head counts of customers showed their interests.

The data analysis indicates that the economies of scale between lower-performance online sellers and those of higher-performance ones were asymmetric, and the online market had been favorable to the latter.

5. DISCUSSIONS

An in-depth discussion can be inferred as follows. First, this paper argues that there co-exists the *Long Tail* and 80/20 rule in the online auction market. With increasing availability of internet and the technological upgrade of search engines as important aides, online auction market ever since the professional managers of e-Bays entered the power equation has both exposed more commercial goods online and expanded its shelf into an open-end frontier that attracts exceedingly large amounts of onlookers into the business. Figure 1 demonstrates that the number of higher-performance online sellers approaches the bottom line but extends forward in parallel, constituting a disproportionate ratio (80/20) with that of lower-performance sellers, which relationship represents a Pareto Principle. In other words, the lower-performance online sellers occupy 30% of the economies of scale, which is a sharp contrast to 70% held in the hands of higher-performance sellers. This contrast supports the argument that 80% of market revenue stems from 20% of effective sellers. Table 2 also exhibits that the revenue and economies of scale created by those higher-performance online sellers, despite their position is

pretty marginal, can not be underestimated. In fact, *Yahoo! Auction* has been forced to choose sides with the fewer but powerful ones that are characterized by their higher performance. This developing trend effectively proves the *Long Tail* exists not only in ordinary business but also in online auction market. In short, from the perspective of sellers, the *Long Tail* seems to co-exist with the 80/20 rules in the online auction market, despite the common understanding that the *Long Tail* is a contrast to the 80/20 rule.

Secondly, the paper also needs to points out relations existing among performance, scale economy and goods in display online. To begin with, the performance evaluation given by the customers in certain extent reflects the customers' willing to do business next time, which in turn may represents potential economies of scale. As the data analysis shows, despite there are quite many low-performance sellers online, their lack of experience and operation hours led to fewer contact with clients - 494 head counts in this case - and lesser patronage - 28%, a symbol of marginalized scale economy. By contrast, higher-performance online sellers, despite they constitute only 17% of the overall competitors, have access to 71% of customer groups and strike 5.840 counts of transaction. Perhaps owning to their richer working experience, they have indeed created 70% of economies of scale in the online auction market. It may not be wide off the mark for this paper to argue that the higher performance an online seller is evaluated by the customers, the more patronages this seller is granted, and therefore the larger economies of scale. There is in short a triangularly positive variance in this regard.

Thirdly, this paper also notes that there exists a hardly discernible *Long Tail* among the fewer higher-performance online sellers. They however create 70% of the market revenue and economies of scale, which results in an 80/20 rule, which represents sellers' performance and market revenue.

Fourthly, with respect to goods online, the number of goods items promoted by lower performance sellers is found three times higher than that of higher performance sellers. However, if we look at the average number, it shows that each high performance sellers (98 items) has 1.5 times more items of goods than each lower performance seller. This is because those higher performance online sellers have developed themselves into trade great varieties and they have offered more access opportunities to the potential customers on line. Given in this light, the paper may as well argues that those higher performance online auction sellers have more spatial business scopes to display or promote some not so popular rarities. This in turn becomes one of the important sources of revenues for those higher performance sellers online and reflects the *Long Tail* in the market that us beckoning the higher performance

sellers capable of dealing with rarities.

6. CONCLUSIONS

The paper starts with an observation of *Long Tail* bearing on online auction market. As shown in Figure 1, there seems to be a similarity of the two lineal curves between sellers' accumulated numbers and goods that can be depicted by the *Long Tail*.

Limitation however has to be in place. This paper takes the *Long Tail* as one of analytical bases, but the literature review of online auction market from the perspective of the *Long Tail* remains thin. It therefore can be seen as a preliminary study in exploration of developing trend of online auction market related to the 80/20 rule and the *Long Tail* premised upon collected data of performance results.

After classifying the performance results into higher performance online sellers and lower performance ones for further analysis, the paper arrives at Figure 1 that shows an asymmetric distribution with numerous lower performance sellers and fewer higher performance sellers in the online auction market. Further analysis indicates that 70% of economies of scale and patronages go to higher performance sellers, a sign that supports both 80/20 rules and the *Long Tail*. It is therefore safer for the paper to reach the first conclusion that 80% of economies of scale in the online auction market are attributed to higher performance online sellers that constitute 20% of the whole population on the selling side online, a sign proving supportive of the 80/20 rule. On the other hand, the economies of scale in the online auction market are sustained by higher performance online sellers. These sellers constitute only 20% of the whole population on the selling side but promote more items of goods online and create more revenues than those of the lower performance sellers, a sign reflecting the *Long Tail*. Hence, it is not too difficult for this paper to have the second conclusion that higher performance sellers enjoy leverage to display and promote varieties of goods online as a result of better capacity. This leads this paper to reach a third conclusion that, because of better capacity to promote goods by the higher performance sellers, their larger accumulated counts of performance evaluation will bring forth sustainable economies of scale and significant revenues in the context of fewer competitors online.

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