Forecasting the Imminent Market Shares Pertinent to HTC Corporation Domestically: The Vanguard Regarding Taiwan’s Smartphone Industry

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ABSTRACT

The development of the smartphone will intensify in the future. Recently, many Taiwan’s manufacturers are investing in the smartphone market. The present research used the grey envelope analysis to forecast the smartphone industry market share of High Tech Computer Corporation (HTC) in Taiwan. The average residual error of up and down envelope is 6.1825% from 2003 to 2007, and the predicted market share in 2012 is 3.334%. The forecasting results showed that the market share of HTC will decrease in the future. The founding of research offers meaningful information for HTC to decide the new strategy. For government, the result could also help to implement adequate policies to support the development of smartphone industry in the future.

Keywords: Grey Envelope Analysis, Market Share, Smart Phone, Taiwan, Taiwan Manufacturing

INTRODUCTION

The simple definition of smartphone is a hand-held device that combines a mobile phone with the technology found in a personal digital assistant or computer, such as the ability to send and receive e-mail, edit documents, and play music. Such devices can generally transfer information and connect to the internet either wirelessly or via a wired connection. A smartphone can also be expanded by using a memory card to store data and by letting users synchronize data via personal computers and synchronization software. Smartphones with authorized operating systems allow users to download software at any
time and to customize their phones’ features. According to the Internet Data Center (IDC), there are six main features of a smartphone: (1) mobile phone standard, (2) pen or keyboard input, (3) network functionality, (4) data transmission, (5) send and receive e-mail, and (6) close or authorized operating systems.

In line with the IDC, the order quantity of the global smartphone market had reached 1.3 million in 2003 than 2.64 million in 2002. It grew 264%. In 2007, the order quantity of global smartphone market was approximately 125 million. While the current smartphone market share is only 7% of the total mobile phone market, the proportion of smartphones is projected to grow approximately 20% in 2011. With smartphone functionality increasing and prices dropping, the global smartphone market will exhibit significant growth in the future.

Because the traditional mobile phone manufacturers (e.g., Nokia, Motorola, Samsung, and Sony Ericsson) have significant advantages in R&D and market promotion, these companies will lead the smartphone market in the future. In 2008, the first quarter market share was 47.5% in Nokia, 17.4% in RIM, 4.1% in HTC, 4.1% in Sharp, 3.3% in Fujitsu, and 23.6% in others (Chang, 2003).

The development of the smartphone will only intensify in the future. Market share is important data to compare among companies. There is little recent data concerning smartphone market shares. The GM (1, 1) can forecast several samples with high accuracy (Lin, Lee, & Chang, 2009; Hsu, 2011). Thus, this research used the GM (1, 1) model to forecast the market share of HTC. In conclusion, the structure and purpose of this research are (1) using the grey envelope analysis to forecast the HTC market share in Taiwan; (2) providing the forecasting data to HTC be the reference when they make the business strategy in the future.

GM (1, 1) ENVELOPE ANALYSIS MODEL

The GM (1, 1) model was first introduced in 1982 by Professor Julong Deng to analyze systems with poor information (Deng, 1982). A grey system is one in which some of the information is known and some is unknown (Lin & Yang, 2004). Any random variation in a system is treated as the variation of the grey value within a certain range, and any random process is considered a time-varying grey process by the grey system theory. Instead of using a statistical model, grey theory uses grey generating techniques such as Accumulated Generating Operation (AGO) to transform the stochastic raw data into a more regular series. Grey prediction is one of the most important components of grey system theory. It utilizes past and current known or indeterminate information to establish a grey model to extend the past information into the future so that the grey model can be used to predict future variation tendencies of the system output. The key operation in the construction of a grey model is the use of discrete time sequence data to construct an ordinary differential equation. AGO and Inverse Accumulated Generating Operation (IAGO) are the basic tools for determining the grey forecasting model. The most extensively used grey forecasting model is GM (1, 1) (Lin, Liou, & Huang, 2011). Compared to other non-analytical methods, such as neural networks and regressive analysis, the grey model has the following characteristics: (i) a small data set (i.e., 4-6 data), (ii) less computation, (iii) high precision (in small data), and (iv) the ability to adjust and correct the model (Deng, 1989).

The GM (1, 1) model has been widely used in forecasting. Lin and Yang (2003) applied the Grey forecasting model to accurately forecast the output value of Taiwan’s opto-electronics industry from 2000 to 2005 (Lin & Yang, 2003).
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