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Internet Usage Trend and Postal Service Performance in Australia

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Abstract

This study examines several important factors of Internet usage and postal service performance in Australia from 2006 to 2010, using data from secondary sources. The results on Internet usage indicate increasing trends in domain name registrations, Internet user population, Internet usage duration, and e-commerce value. On the other hand, the results on postal service performance show stagnating trends in mail volumes, revenue, pre-tax profit, rate of return, and labor productivity growth during the same period. While we need more data to investigate systematically any causal relationships between the factors of Internet usage and those of postal service performance, the results taken together suggest that the increasing trend of Internet usage had some negative impacts on postal service performance. This study is expected to help understand the trends of Internet usage as associated with the performance of postal service and set the stage for the future of postal service in Australia and other countries.

Keywords: Internet usage; postal service performance; Australia

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INTRODUCTION

The Internet is viewed as a key technology that has greatly affected our everyday life as well as large segments of business and other economic activities throughout the world. Internet usage refers to usage of Internet technology such as email, websites, intranets, extranets, and so on (Berry and Brock, 2004; Brock and Yu, 2005). Postal service may be one of the sectors that have been greatly affected by Internet usage. In addition to the classical activities including mail and parcel delivery, postal service is not only a system to post, receive, collect and transmit but also to sell stamps, stationeries, money orders and even to offer banking services (Burnett, 1982). Postal service plays an important role in economy and society and it remains so far within government hands in many countries so that strategies are developed to ensure the health of postal service for long term (USPS, 2012). While postal service faces challenges as well as opportunities posed by Internet technology, it may have no choice but to continue its focus on reducing or containing operational costs and improving productivity and efficiency.

This study attempted to examine several important factors of Internet usage and postal service performance in Australia from 2006 to 2010, using data from secondary sources. In the following sections, we first describe the factors of Internet usage and those of postal service performance that we considered and the methods that we used in deriving the trend lines of those factors. Then, we discuss the results on the trend lines of the factors of Internet usage and postal service performance. Finally, we present a conclusion along with some limitations of this study. Taken together, this study is expected to help understand the trends of Internet usage as associated with the performance of postal service and further set the stage for the future of postal service in Australia and other countries.

METHODS

For this study, we used data from secondary sources such as reports from Australian Bureau of Statistics and Australia Post. We considered the following four factors regarding Internet usage: (1) number of domain names registered, (2) population of Internet users, (3) duration of Internet usage on a weekly basis, and (4) value of e-commerce. Fig 1, 2, 3, and 4 show the trend of each of the four factors of Internet usage from 2006 to 2010, respectively. We also considered the following five factors regarding postal service performance: (1) mail volumes, (2) revenue, (3) pre-tax profit, (4) return on revenue, and (5) labor productivity growth. Fig 5, 6, 7, 8, and 9 show the trend of each of the five factors of postal service performance from 2006 to 2010, respectively.

The trend line as well as its R^2 for each factor was derived from using the trend line feature of Excel software. Several different types of trend lines are available in Excel. We chose to use the 4th order polynomial trend line, since the data may fluctuate during the five-year period. A polynomial trend line is useful for analyzing ups and downs over a period. The order of the polynomial is usually determined by the number of bends (hills and valleys) in the data (Intel Corporation, 2010). It may be difficult to interpret the individual coefficients in a polynomial trend line, and it may be more informative to consider the polynomial trend line as a whole. Also, all R^2 values of the trend lines for the factors are found to be at 1, which is a good fit of the curve to the data. A trend line is most reliable when its R^2 value is at or near 1.

RESULTS AND DISCUSSION

Internet Usage Trend

Fig 1 shows the trend of the number of domain names registered at an increasing annual rate of 21% to 30%. This result indicates that more and more websites and resources have become available on the Internet. The trend line equation is:

$$y = 0.0054x^4 - 0.0608x^3 + 0.2496x^2 - 0.1942x + 0.7100.$$

Fig 2 shows the trend of the number of Internet users at an increasing annual rate of 4% to 7%. The Internet penetration rate, which is measured by dividing the number of Internet users by the total population, also reached about 76% in 2010. The trend line equation is:

$$y = -0.0417x^4 + 0.5000x^3 - 2.1083x^2 + 4.4500x + 10.9000.$$

Fig 3 shows the trend of the hours of Internet usage per week at an increasing annual rate of 3% to 7%. While there might be some variances across different age or other demographic groups, Internet users spent 7 to 9 hours per week on the Internet. The trend line equation is:

$$y = -0.0096x^4 + 0.0842x^3 - 0.2304x^2 + 0.7058x + 6.4800.$$

Fig 4 shows the trend of the value of e-commerce at an increasing annual rate of 3% to 7%. It is interesting to note that the rate of increase in the value of e-commerce was down to 16% in 2010 from over 40% in the previous three years. This might be due to

economic downturn and/or e-commerce reaching saturation. The trend line equation is:

$$y = -1.9167x^4 + 20.8330x^3 - 74.0830x^2 + 123.1700x - 28.0000.$$

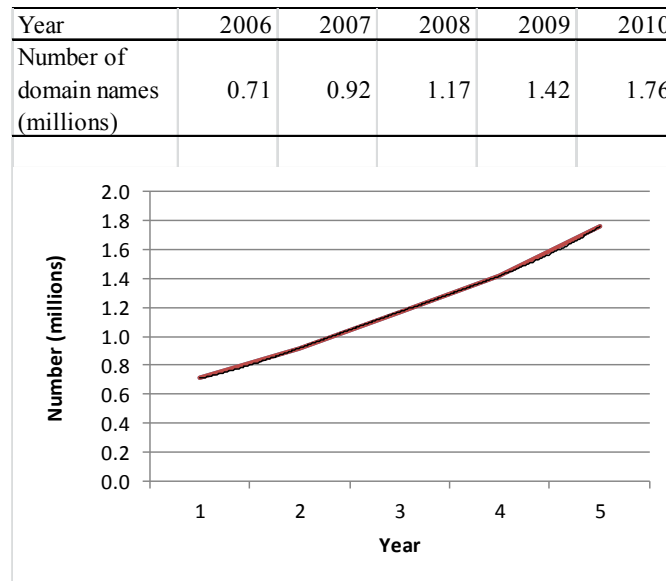


Fig 1: Number of domain names registered
(Source: Australian Productivity Commission, 2011)

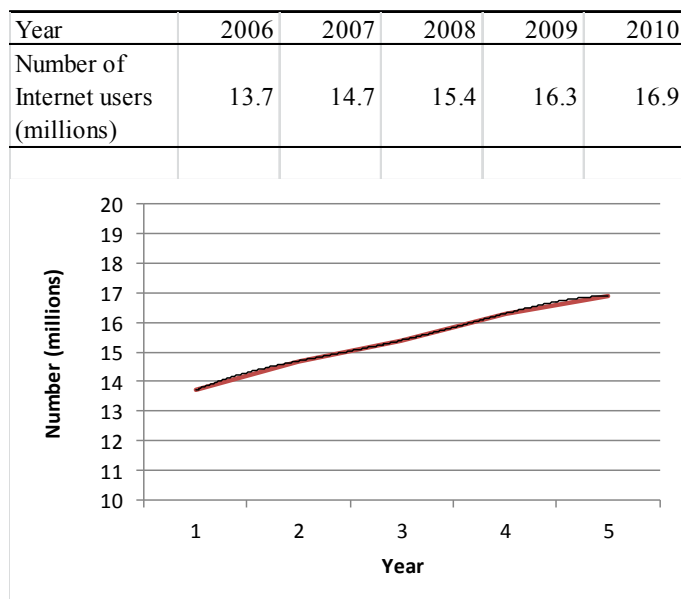


Fig 2: Number of Internet users (Source: World Bank, 2013)

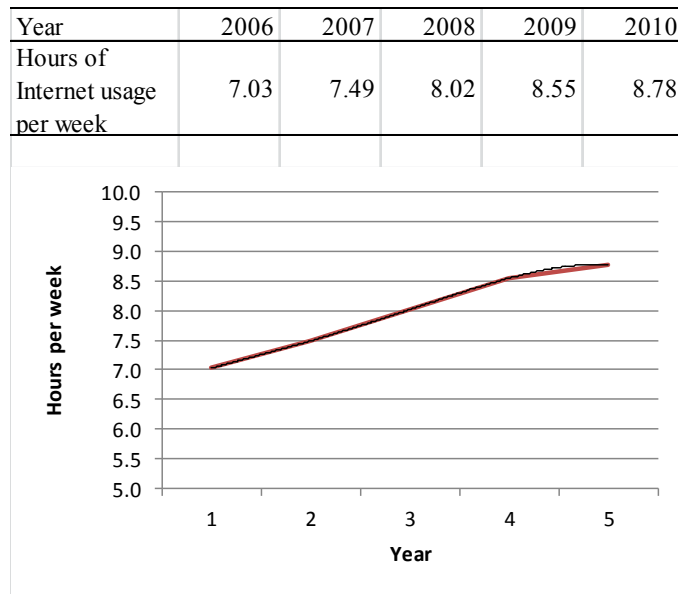


Fig 3: Hours of Internet usage per week
(Source: Australian Productivity Commission, 2011)

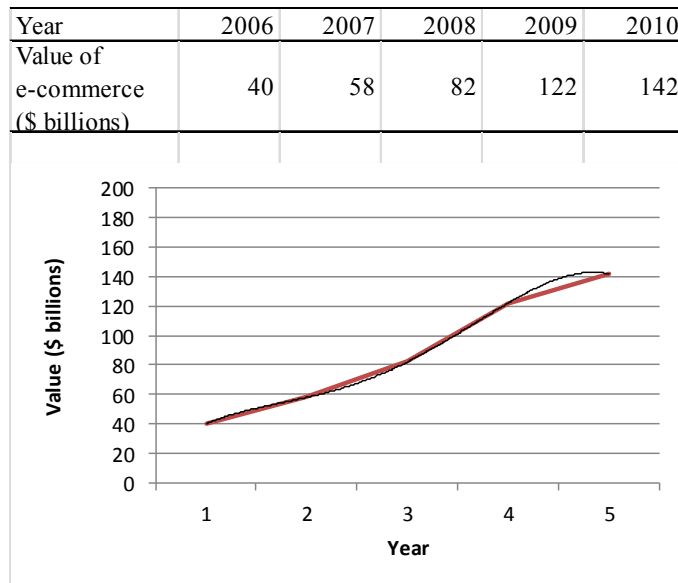


Fig 4: Value of e-commerce (Source: Australian Productivity Commission, 2011)

Postal Service Performance

While the Internet provides significant benefits to users, it can pose serious challenges as well as opportunities to the postal service in Australia as in other parts of the world. Australia Post is the national postal service enterprise owned by the Australian government. Australia Post has evolved into one of the biggest shipping and logistics enterprises in Australia, based upon its national platform and world-wide business. With the rapid economic development and the huge potential in the parcel delivery market, however, Australia Post also faces tough competition from many private parcel delivery

companies such as DHL, Toll Holdings, Queensland Rail, RailCorp, Linfox, Pacific National, P&O Australia, Mainfreight, ANL Container, Co-op Bulk Handling and Star Track Express (a joint-venture of Australia Post and Qantas) (DHL, 2013).

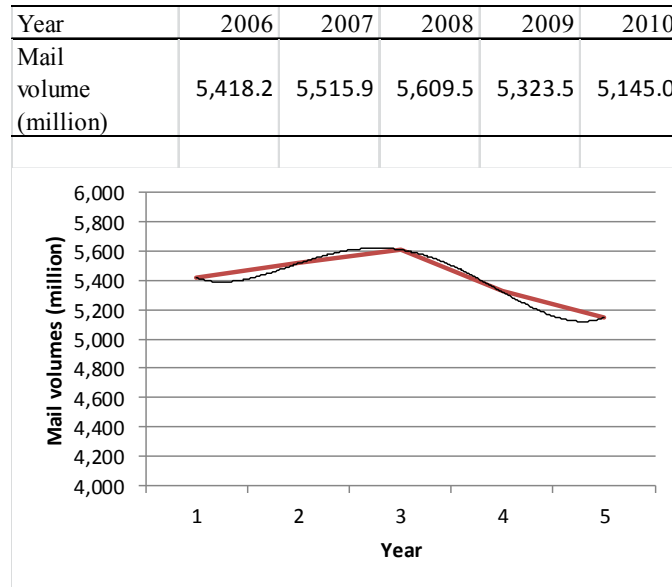


Fig 5: Mail volumes (Source: Australia Post, 2011)

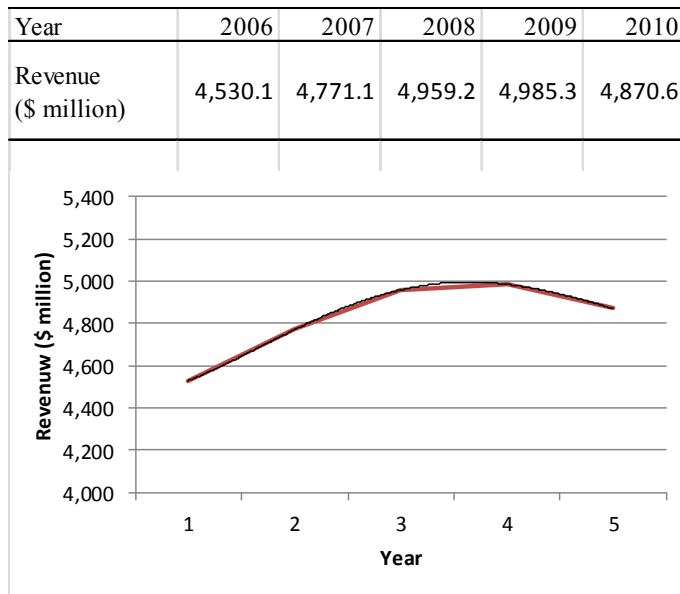


Fig 6: Revenue (Source: Australia Post, 2011)

Fig 5 shows the trend of Australia Post's mail volumes. Mail volumes began to fall in 2009 as much as 5% and continued to fall in 2010 about 3%. The trend line equation is:

$$y = 35.9420x^4 - 422.0000x^3 + 1631.4000x^2 - 2381.7000x + 65554.5000.$$

Fig 6 shows the trend of Australia Post's revenue. It is noteworthy that revenue declined in 2010 after nominal increases in the previous three years. The trend line equation is:

$$y = 5.4292x^4 - 72.4750x^3 + 272.6700x^2 - 151.1200x + 4475.6000.$$

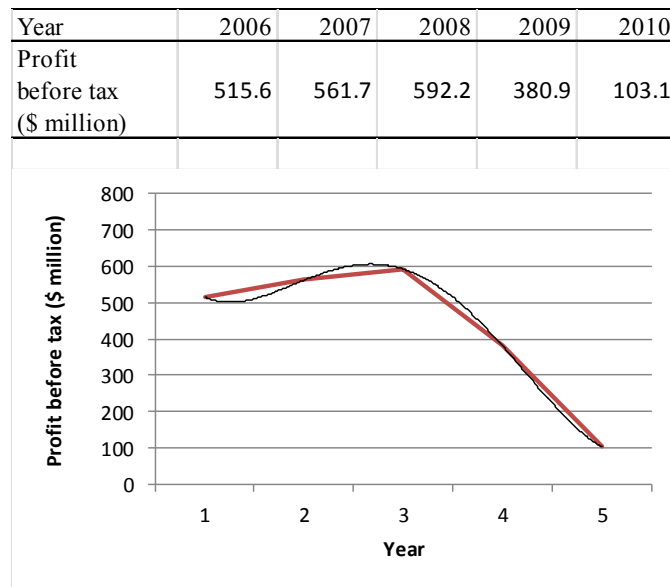


Fig 7: Pre-tax profit (Source: Australia Post, 2011)

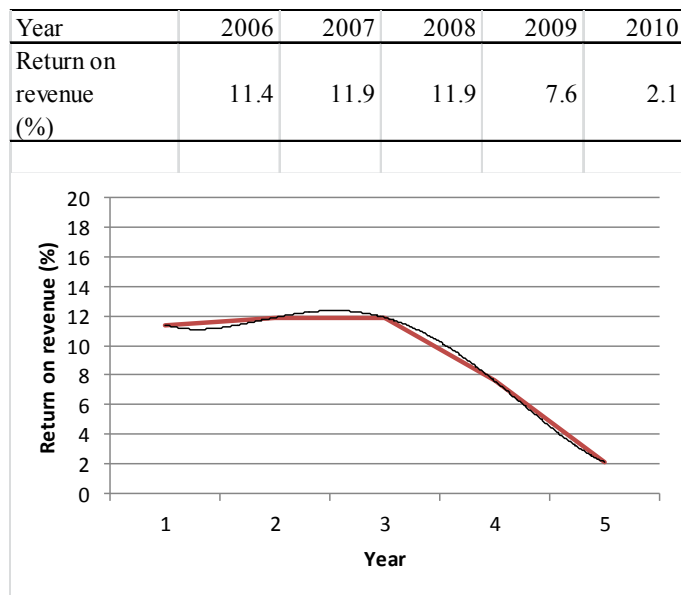


Fig 8: Return on revenue (Source: Australia Post, 2011)

Fig 7 shows the trend of Australia Post's pre-tax profit. Pre-tax profit declined 36% to \$380.9 million in 2009 and further as much as 73% to \$103.1 million in 2010. The trend line equation is:

$$y = 16.7290x^4 - 204.9900x^3 + 803.9200x^2 - 1181.7000x + 1081.6000.$$

Fig 8 shows the trend of Australia Post's return on revenue. Return on revenue is a measure of profitability that compares net income to revenue and it is calculated by dividing net income by revenue. The trend of return on revenue was very similar to that of pre-tax profit, declining to 7.6% in 2009 and further to only 2.1% in 2010. The trend line equation is:

$$y = 0.2875x^4 - 3.5083x^3 + 13.6120x^2 - 20.0920x + 21.1000.$$

Finally, Fig 9 shows the trend of Australia post's labor productivity growth (five-year cumulative growth). Labor productivity growth was flat over 2009 and 2010 after a sharp decline over 2008 and 2009. The trend line equation is:

$$y = -0.8208x^4 + 9.2917x^3 - 34.2790x^2 + 47.7080x - 3.6000.$$

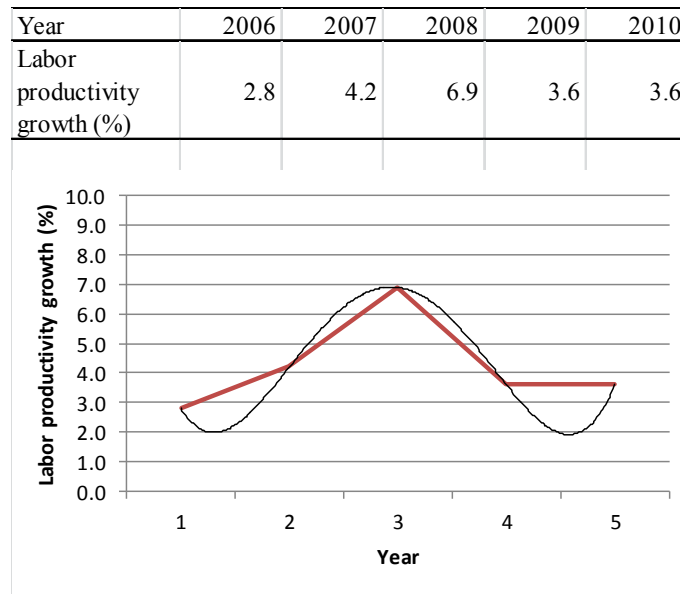


Fig 9: Labor productivity (Source: Australia Post, 2011)

It is worth noting that there was a sudden and significant decline in Australia Post's performance results over 2009 and 2010. Ongoing economic slowdown in Australia and internationally might be a factor, but a main threat to Australia Post's business seemed to be the decline in mail volumes (see Fig 5), particularly letter volumes (including letters, bills and bill payments) from which Australia Post derived just over half of its revenue (Australia Post, 2011), as people switched to Internet-based communications alternatives such as email, instant messaging, voice over IP, and social media websites among others. About 91% of businesses used the Internet for email (Australian Bureau

of Statistics, 2000) and almost 90% of intensive use of the Internet was also for email (Mathews and Bianchi, 2010). In addition, slowdown of e-commerce in 2010 (see Fig 4) seemed to lead to slowdown of Australia Post's parcel delivery, which in turn had some negative effects on its revenue and profit. Also, increasing competition from private parcel delivery companies might have some negative effects on Australia Post's revenue and profit, although data on competitions and market shares were not readily available.

CONCLUSION

This study attempted to examine the Internet usage trend and the postal service performance in Australia, using data from secondary sources. While we need more data and studies to investigate systematically any causal relationships between the factors of Internet usage and the factors of postal service performance, the results of this study suggest that the increasing usage of Internet technology had some negative impacts on the performance of Australia Post. Also, it seems that ongoing economic downturns in Australia as well as in other parts of the world and increasing competition from many private parcel delivery companies had some negative impacts on Australia Post's performance.

A few limitations are recognized in this study. First, because of lack of data and consequent descriptive nature of this study, we did not examine systematically any causal relationships between the factors of Internet usage and those of postal service performance. In this regard, we need to compile more comprehensive times series data on these factors. Second, the factors of Internet usage and postal service performance that we considered are not certainly exhaustive, but they are important ones associated with Internet usage and postal service performance. Third, due to lack of data, we did not validate the trend line equations for the factors of Internet usage and postal service performance. Fourth, we focused only on postal service in Australia. We may consider examining postal services in other countries for a comparative study of the postal service sector. These limitations are not certainly exhaustive but rather important ones. Obviously, these limitations, in turn, suggest several possibilities for future.

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