

Smartphone Acceptance among Sales Drivers

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INTRODUCTION

The objective of this research is to find out the acceptance of sales drivers in logistic industry to use the smartphone in their work. This research uses two methods to collect data: survey and experiment. This research integrates technology acceptance model (TAM) (Davis, 1989), self-efficacy (Bandura, 1982, 1986), and innovation diffusion theory (IDT) (Rogers, 1962) into the research model to find out the factors of sales drivers in logistic industry accepting the smartphone. This experiment is focused on three user groups: the employees of a business that implements smartphone usage, the employees of businesses that do not use smartphone, and the students that are currently studying at a department of transportation and communication management. The results will help us understand whether this technology should be integrated into the traditional logistics system, and get to know the pros and cons of this idea.

BACKGROUND

Freight businesses in the logistics industry perhaps have few examples of utilizing mobile devices thoroughly in their daily operations. Sales drivers who are responsible for distributing goods on time need to not only interactively exchange information with the headquarters, but also need to use spare time visiting their customers. Because of the needs to better serve their customers and other operational purposes, logistics businesses have their employees equipped with all sorts of devices like hand held terminal (HHT), bar code reader, GPS, and on board unit (OBU) to keep track of the goods. In addition, those drivers who for a long time have been considered as shippers now have another important role—salesperson.

SMARTPHONES

Since the invention of the telephone in 1876, peoples' lifestyles have been changed drastically as time passes. Then, Martin Cooper introduced a whole new level of communication by using the concept of wireless technology, called the cellular phone.

Since then, the cellular phone has been part of many people's lives, and nowadays almost everyone owns a cellular

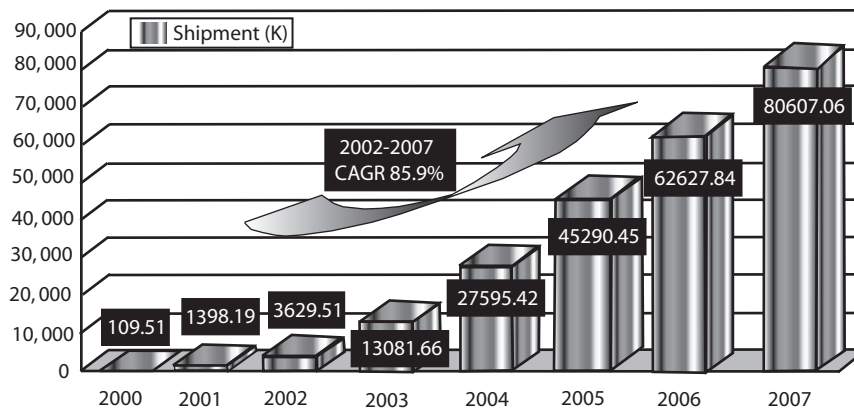
phone. The cellular technology has evolved so drastically that phones with high-resolution digital cameras, voice recording and digital assistant are very familiar to most people. And to satisfy business users, powerful handheld devices that run the smartphone operating system have been developed. All these gadgets are here so that they can make peoples lives easier. Smartphones support many features that are really helpful in the business sector, for example, this cellular can be associated with OBU (on board unit) to create a more efficient delivery system for logistics companies. This technology has greatly benefited logistics companies since the implication of this technology took place. And more and more functions are being included for example portable bar code scanners and real-time communications systems that can update detailed information amongst the driver and the office at all times. Smartphones not only provide useful business oriented functions; they also provide useful functions such as calendars, task planning and even high-speed mobile Internet over the 3G network (Valletti & Cave, 2002; Ralph, 2002; Funk, 1998).

Different Categories of the Cellular Phones

Cellular phones are separated into three categories; the categories are sorted by the limitations of their functions shown as follows:

- **PDA Phones:** These kinds of phones support all the functions that a PDA can do, it is actually a whole PDA integrated into the phone. PalmOS, Symbian and Windows CE are examples of operating systems that are used in PDA phones. More and more software developers are developing operating systems that are becoming more powerful (e.g., Linux). Most of these PDA phones are even able to read and edit Word, Excel and even PowerPoint files, which is really convenient for business users who don't like to carry their computers around.
- **PIM Phones:** Known as the Personal Information Manager, it could also support features such as Outlook synchronization with a personal computer, but the functions are more limited compared to the PDA phones. PIM phones use a closed operating system; they do not support as many applications like the PDA phones.

Figure 1. 2000-2007 shipment of smartphones (IDC)



- **Cellular Phones:** This is the most basic form of wireless phones, which usually offer simple address book functions, messaging, GPRS, WAP, MMS, and video calling. Some of these phones might support Java applets, but the functions are still very limited.

Operating System

There are currently many operating systems for mobile phones on the market, namely Linux, Windows Mobile, Symbian and Palm. Microsoft Windows Mobile and Symbian are most commonly used; this is because of the ease of use and the high compatibility of applications. Some of the operating systems' source codes for mobile phones are open for software developers to use, this can allow more software applications to be developed and allow a higher usage of mobile Smartphones (Gruber & Verboven, 2000; Harrison & Holley, 2001).

Differences between the different mobile phone operating systems are shown as follows:

- Windows Mobile is separated into three different categories, namely Pocket PC, Pocket PC Phone edition and Smartphone; these are all developed by Microsoft. All of the three operating systems are very powerful and can support vast amounts of applications just like the PDA and even some PC applications.
- Symbian operating system is very commonly used because of the ease of use of the system. It also has integration of other software-developing companies that are continuously developing new applications and thinking out new ideas to improve it.
- Linux is well-known for being free; this makes no exception for Linux on mobile phones. This operating system's source code is open to the public; it allows any

kind of alteration to the system itself and allows any developer to develop applications, all for free. Linux also turns out to be one of the most stable operating systems on the mobile phone market and the PC market too. But the problem with this operating system is the low support for applications.

- Palm OS has very high usage in the PDA market; they have successfully integrated the PDA technology with mobile phone technology. They are famous for their highly efficient input method by using the touch screen, and the high support of applications. Most applications that can be used on a Palm OS PDA can be used on a mobile phone running Palm OS for mobile phones.

Because of the rapid growth of smartphones' technology, more and more people are switching from a PIM or a normal cellular phone to using a smartphone, because they realize that it really can make a difference in their busy life. Smartphone-based technology has also been integrated into many logistic systems. From the data gathered from the IDC (International Data Collection), it shows that the number of Smartphones shipped is growing annually, and it also has been forecasted that this trend will continue to grow.

LOGISTICS

In the old days the word logistics had to do with the military's operations, it mainly dealt with procurement, distribution, maintenance and replacement of material and personnel. Nowadays it mainly has to do with the flow of material from one place to another, used mainly in the transportation industry. Logistics operation can include many other functions such as warehousing, packaging and other information based functions.

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