

Wireless Credit Card Technology: SWUPing The Nation
A Paper on PLDT's Shops Work Unplugged

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By:
Sexy Beast

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Ma'am Salma F. Angkaya
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INTRODUCTION

With the on-going surge of the different nations striving for development and economic growth, technological breakthroughs have been proven to play a vital role in sparking up a nation's progress and revitalizing its economy. The infusion of technology in the daily routines of people all over the world has brought about tremendous benefits to the general public. Taking a look at it in a more micro level, it can be observed that firms and other patrons are able to establish a more substantial affiliation in their everyday interactions. With the rapid growth of E-Business in the Philippines, both local and international businesses are beginning to carve into creating a niche in the nation's business scheme.

Quite a number of businesses now operate their companies by utilizing websites and other Internet-based outlets in conducting business and marketing transactions for both its consumers and other businesses. E-business has and is still expected to grow dramatically within the next three to five years, driven by the rapid rise in Internet use. Factors driving up Internet use include a highly educated middle-class population and a well-developed consumer culture. The ever-increasing number of Filipino migrant workers has also driven Internet growth since residents of the Philippines see the Internet as an affordable way to keep in touch with their relatives abroad. As of 2006, there were 357 Internet service providers (ISPs) operating here in the country. With the number still rising, a parallel rise in Internet users is consequently safe to assume.

Technological Infrastructures have dramatically improved as a result of the rise of E-Business in the country. One specific area of improvement can be seen in the telecommunications industry. Partly because of the advantages offered by wireless communication in an archipelago like the Philippines, the number of mobile-phone subscribers has grown sharply within the past few years. The Philippines continues to be the world leader terms of patronizing the use of short messaging services (SMS), with around 300 million messages sent and received daily.

Another area of improvement is seen in computer technology. Breakthroughs in this field continue to provide a remedy to the presence of the Digital Divide in the country. However, personal-computer (PC) use still remains low because of meager per-capita incomes and the high cost of technology. Industry sources estimated the PC-penetration rate is barely over 2% (1.75 million PCs for a population of 87 million) by the end of 2005. However, cyber-

cafes have proliferated in recent years, catering to Internet users without PCs at home. In addition, schools and workplaces have taken initiative in providing their students and employees access to the World Wide Web.

With the increasing number of Internet subscribers, the different ISPs invest in various technological infrastructures allowing them to have a competitive advantage over other service providers. PLDT (Philippine Long Distance Telephone Company) has an existing digital microwave radio system and digital fiber optics running nationwide, from the northern islands of Luzon to Mindanao in the south. PLDT also operates a satellite system through Mabuhay Satellite and a data network that runs at 622 megabits per second.

The government has also pushed for IT development in the country. There are now three major IT zones in Metro Manila: Eastwood City, Fort Bonifacio and Filinvest. All three actively promote investment by IT firms in various fields, one of which is BPO. The Philippines ranks second, after India, in the list of top destinations in Asia for investments in Business-Process Outsourcing (BPO), according to the Department of Trade and Industry (DTI). The Business Processing Association of the Philippines estimated that revenues earned by BPO companies reached US\$1.83B in 2005, and it forecasts this figure to grow by 50% in 2006. The DTI expects BPO revenues to hit US\$10B by 2010.

Moderate growth within the Philippine economy has created an improved climate for the use of debit and credit cards. During a recent review period, the country experienced a slackening inflation, an appreciation of the local currency, an unabated increase in remittances from Overseas Filipino Workers, a rise in disposable income, and a drop in the unemployment rate. Taken altogether, these factors bolstered private consumption, which was seen as the key driving force that increased usage of financial cards in business transactions.

Credit card use was prodded by the implementation of the Price Tag Law through DTI's Department Administrative Order Number 10, which prohibits retailers from using one price tag for cash payments and a separate one for credit card payment. Since then, the users of credit cards have been benefiting from the absence of surcharges entailed by the use of credit cards in making their purchases. This translated into a considerable increase in credit card transactions value and volume in 2007. The prohibition of surcharges on credit card purchases, coupled with an aggressive marketing strategy, will likely encourage new applicants for credit cards and encourage existing holders to use their cards more frequently.

With the existing upward trend in the usage of credit cards, technologies such as the wireless credit card swiping captures the demand of the consumers in the market. E-Business coupled with the right technology to exploit the needs and wants of the people could definitely yield marginal advantages for the nation. These improvements in social infrastructure and technology have allowed E-Business to flourish and steadily incorporate itself into the nation's economic system. It has provided more opportunity for firms and employees, and also allowed innovative technologies to be exploited by these businesses. A concrete example of these innovations includes wireless swipe card payment technology.

This research paper will tackle wireless credit card technology and assess its performance, advantages and weaknesses, and at the same time assessing its impact to the country. This rather new, yet promising technology has been able to step foot into the business world but is currently being used by only a handful of companies in the Philippines. Thus, the paper aims to study how this information technology came about, how it works, its current state, the companies that are utilizing it in their daily operations, and those that provide this kind of technology in the country at present.

DEFINITION AND DESCRIPTION OF THE TECHNOLOGY

Living in a time wherein a lot of things are possible with just a few clicks, wireless credit card technology is earning great potential in the Philippine scenario. The word 'wireless' in itself is very much self-explanatory. It refers to a way of communication between two points that would no longer require cables or wires. Because of this, certain technologies are made even more accessible and mobile, which a lot of people can certainly benefit from.

Moreover, credit cards, financial instruments that are being used globally, are small plastic cards issued to users. These enable purchases to be made without taking out paper money or bills. A credit card entitles holders to buy goods and services based on the written contract of the cardholders to pay for their purchases in the future. With every purchase, the card is swiped to a terminal for verification purposes. The said machine (i.e. the terminal) authenticates the payment handed over by customers and also acts as a modem, which transmits data to a verification center like the credit card companies. After swiping the credit card, the data is sent from the terminal to a verification center, which then authenticates whether or not the transaction is possible and allowable, given that the customer has enough resources to pay for the purchases.

Before the surge of wireless swipe card technology, credit card terminals used to be connected to existing telephone lines. In essence, the credit card issuers verified every credit card transaction by means of the landline. Upon the actual swiping of the card, the modem dials up the issuer's number and actual approval of the financial transaction happens there. The use of telephone lines complicates this scenario. There are times when these phone lines get too congested, and credit card transactions take a while to be processed. Furthermore, the need of actual physical connection (such as wires, cables) limits the transactions to take place only at a particular spot.

However, with the now-available wireless credit card technology, it is possible to make credit card transactions at any given place. This technology makes use of wireless data carriers like those used in the operation of cellular phones. Basically, there are two components needed in order that wireless credit card transactions could take place: (1) a service provider, which offers the mobile technology needed, and (2) a machine or terminal that fosters the entire transaction.

In the Philippines, this kind of credit card processing is merely in its introductory stage and not a lot of people are aware of it. In fact, the technology behind this system is presently provided only by PLDT, through SMART. This business solution is called SWUP, or Shops Work UnPlugged. With this kind of technology available, transactions can occur virtually anywhere. Even in far flung places, where Internet infrastructures are not available and where phone lines are inaccessible, credit card transactions can still occur via radio waves or cellular phone technology, which can potentially provide significant advantages to the businesses that make use of such technologies later on.

PLDT's Shops Work UnPlugged (SWUP) wireless data communication service is becoming more and more popular to companies and businesses since it allows users to accept credit card transactions anywhere and anytime. Its features also provide its users the comfort, efficiency and safety in handling credit card transactions. SWUP provides comfort due to the fact that the wireless credit card machines are very much portable that it is hassle-free to carry around. These machines can also be connected to thermal printers, which enable the users to give a receipt to their customers, similar to those used by taxis in Japan, Hong Kong and Singapore. SWUP also provides the benefit of efficiency to businesses. Wireless credit card transactions make it easier and faster than any other means since payments go directly to the accounts on the spot. It can also be cost-efficient to a business owing to the fact that this technology can lessen processing charges during transactions. This may be applicable to businesses that are offering global services. SWUP can also provide security for the business. Because payments go directly to the accounts on the spot, SWUP can prevent the business from receiving bouncing checks. Moreover, wireless credit card terminals have the additional feature in which it checks the validity of customer credit card. With this, it prevents the business from transactions that involve fraudulent credit cards.

On the other hand, the machines or terminals that are vital to these transactions are available in a lot of models and can be acquired from other companies. When choosing which terminal to buy, some factors to consider include battery life, range, weight and shock resistance. One example is that of provided by G1 solutions. A lot of credit card companies, both local and international, support the credit card processing solution that is currently provided by G1 solutions. It promises to have zero downtime, no monthly fees and penalties and an instantaneous processing time. Aside from this, it is very much beneficial to small enterprises due to its affordability.

Another provider of the terminals used is the Way Systems. The machines provided by this company are only 4 inches and only 2 inches thick: just a little bigger than a common cellular phone. Although small and compact, it still has the capabilities of a technologically-advanced credit card terminal. It puts together cost- efficient mobile phone technologies and the capabilities of point of sale terminal. This terminal can be bought with or without a printer and its prices vary respectively.

Aircharge Processing Systems also provide terminals used in this system. One can choose to buy those machines with printers such as Aircharge AM swiper or Aircharge DM2 swiper and those who have no built in printers like the NPM swiper. Because wireless credit card terminals functions just like a cellular phone, it is possible for the terminal to not function well if there is no network coverage, or if the systems are down. In response to this, some terminals provided by Aircharge Processing Systems have “store-and-forward” functions. With this, the wireless machines can save the information in its memory for later and continue the transaction when it is able to pick-up wireless signals again. The wireless terminal may be more expensive than the normal terminals but its added features of mobility and flexibility can surely compensate for the extra money the business paid for.

Wireless credit card transactions begin when the seller or retailer swipes the customer’s card through a wireless credit card machine and punches in the sales amount. By means of a wireless carrier (like SMART in the case of PLDT’s SWUP), the terminal connects to a radio tower, which then transfers and sends the information about the credit card holder and the corresponding sales amount. The information is then transferred to the companies’ processor and the processor passes the said information onto the bank that issued the credit card used. After which, the bank validates this information and checks if the credit card holder has enough credit to cover the purchase. The bank sets aside the amount of the purchase for the company where the transaction occurred. The issuing bank then sends an approval to the processor, if the credit card is valid, or a decline message if not. The information is then passed on to the mobile credit card machine that is with the salesperson handling the purchase. *(See Appendix A and B)*

Although the processing of this transaction seems to be a complex set of activities, it only takes about 8-12 seconds to finish. The speed of the transactions varies greatly, and depends on the strength of the network coverage available, and the traffic as well. After the transaction is complete, the wireless terminal will print out the receipt as proof that everything is good to go.

At the end of a business day, the company may choose to settle the accounts of their terminals, which will begin the processing of the transaction. Once the settlement process is initiated, the net sales are transferred from the bank, which issued the card to the seller's checking account. If credit cards that are issued by various banks were used during the different transactions that occurred in the business, their cumulative processing can also occur at the same time. Consequently, the amounts of money that are involved in the transactions reach the checking account of the sellers within two business days from the time the transactions occurred.

USERS OF THE TECHNOLOGY

Megalink, the first operational shared ATM network here in the Philippines was first launched on March 19, 1990. As of last year, MegaLink is composed of 23 member institutions, a base of almost 12.9 million cardholders, and is handling more than 436,000 transactions a day and the only consortium linked with both BancNet and Expressnet, extending its network reach to more than 7,000 ATMs nationwide.

ENCASH Network Services, the country's first Independent ATM Deployer (IAD), and MASS-SPECC Cooperative Development Center, a Mindanao-wide federation of cooperatives, partnered with MegaLink in the effort of bringing banking where people need it most, especially in remote areas. Standard services (e.g. balance inquiries, withdrawals, cash advance, fast cash, payment of bills etc.) were made available to those who are living in places that are far from the town proper. This project started on December 16, 2007 with only 6 ATMs in their network. They made a partnership with rural banks such as Bank of Florida, a charter member of the Pampanga Federation of Rural Banks, GM Bank in Nueva Ecija, Muñoz Rural Bank Inc. (MRBI). After embracing the services that ENCASH, MASS-SPECC and MegaLink offered to them, these banks experienced an increase in their market share because many were attracted to the services that the ATMs can provide in their area bringing in comfort, efficiency and security to their customer's banking needs. As of April 2008, the project already had 61 ATMs, which are all equipped by the PLDT Shops Work UnPlugged (SWUP) wireless data communication service, distributed nationwide and was expected to reach 100 ATMs in the next quarter.

Easytrip Services Corporation is the exclusive distributor of entrance tags at the North Luzon Expressway (NLEX). Easytrip is the counterpart of E-pass at the South Luzon Expressway. Easytrip tags allow vehicles to electronically pay their tolls to have a faster passage through the tollgates along NLEX, thereby lessening the volume of vehicles that line up along the different counters in order to pay in cash. The ones who usually own Easytrip tags are those who travel back and forth from Manila to the north provinces almost everyday. In order to be able to avoid the hassle of paying in cash and loose change all the time, all one has to do is avail of these tags and put load in them.

It is very inconvenient to the tag users if they have to go to a bank or store somewhere far from NLEX in order to load up their Easytrip tags. That is why Easytrip made an agreement with the gas stations along the North Luzon Expressway in order to let its users have the

accessibility to load their tags in a convenient place. Shell EDSA Balintawak, Petron Express Center Marilao (North Bound), Petron Express Center Balagtas, Bulacan (South Bound), Shell NLEX Balagtas Bulacan (North Bound), Petron Express Center Lakeshore (North Bound) are the gas stations along NLEX that have Easytrip booths where a tag owner can reload its tag. These booths are equipped with PLDT SWUP that allows wireless credit card transactions because these gas stations are far away from the city.

Motolite Batteries, manufactured by Philippine Batteries Incorporated (PBI), is the largest manufacturer, exporter and distributor of automotive, motorcycle, and industrial battery products and solutions in the Philippines. Philippine Batteries Incorporated (PBI) is also the biggest investor in manufacturing facilities in the entire ASEAN region. Equipped with highly modernized features, Motolite is the leader in technology and equipments that give Motolite the advantage over its competitors. With its world-class factories and products, Motolite also offers world-class services to its customers. An example of which will be Motolite's Express Delivery feature.

Its main purpose is to give its customers the convenience of purchasing car batteries especially in cases of emergency. Although Motolite has a lot of shops spread around the metro, the need of having to buy a new battery would usually fall under unfavorable circumstances. With Motolite Express Delivery, Motolite employees will literally bring the battery to you – anywhere within the key cities nationwide – at no extra charge.

Car batteries do not come cheap. Typically, they cost around four thousand pesos or even more. Of course, people do not usually carry this amount of cash with them. Most of the time, they do not have enough money in their wallets to pay for a new vehicle battery. To address this, Motolite Express Delivery thought of using the wireless credit card transactions of SWUP. This feature contributes further to the convenience the customer gets in purchasing Motolite batteries. Thus, whenever a vehicle breaks down in the middle of nowhere due to battery failures, Motolite Express Delivery can bring the new battery to its customers. By making use of wireless credit card technology, Motolite gives their customers the option to either pay in cash or through their credit cards.

TECHNOLOGY ASSESSMENT

The Wireless Swipe Card Payment technology was introduced in the Philippines through PLDT's SWUP in 2006. By making use of SMART's nationwide coverage, payments made to businesses and other service providers can be made from virtually anywhere. In a country like the Philippines, whose land area is divided into thousands of islands, such a technology is proving to be remarkable. By introducing the wireless side of this business solution, more people from Luzon up to Mindanao will be able to avail of this service. Thus, it is able to cater to more people who reside in even the most remote of places. This kind of technology is slowly but surely gaining ground in our country, consequently gaining adequate potential in replacing its landline-based predecessors.

The advantages of using this new wireless transaction technology, such as SWUP, are numerous. It can bear so much advantages and expediency for both consumers and retailers alike. A major advantage springs out of the technology's relative availability. It allows the user company the ability to stay connected anytime and anywhere, at all times. This wireless transaction technology permits immediate access to the company by means of an enterprise server or a service provider such as SMART. This consequently implies that transactions can take place virtually anywhere, as long as the terminals stay connected by means of a service provider. Moreover, the fact that the technology is wireless, it eliminates the need for multiple phone lines, and therefore remove any more unnecessary physical hassle to the company.

Aside from the apparent convenience it brings forth to the company, it also allows the company to gain access to a wider geographic area. This allows flexibility in the part of the business, since there is no more need for a particular "hotspot" just so as the company can connect online. What this implies is that both the company, as well as their customers, is not anymore restricted to transact at a particular area only. This means that the company can perform sales transactions anywhere in the country – giving them a wider range of possible consumers, and more revenues at the same time.

Another strong point of this wireless transaction technology is the security provided by the networks that provide wireless data transmission. This is feature is greatly emphasized in PLDT's SWUP business solution. Here, the network is based on Multiprotocol Label Switching (MPLS) and not on the Internet. Because of this, the problem that arises from the on-going concern about threats to the Internet's cyber security is eradicated. Hence, a company that

subscribes to PLDT's SWUP does not have to worry about those malwares and viruses that are continue to spread via the Internet. The ability of SWUP to give a stable and secure network definitely provides the user company peace of mind in terms of having their business transactions securely transmitted and recorded. Aside from the use of MPLS, the SWUP wireless technology also relies on the GPRS/ EDGE network. These networks are of nationwide coverage, making the transactions that are sealed via PLDT SWUP secure, reliable and fast.

The modern technology of wireless data transmission also highlights the advantage of speed (accompanied by accuracy). Because of the employment of fast wireless networks and connectivity, the speed of cash and credit card transactions can be trimmed to as little as 8-12 seconds. This high-speed technology allows for faster transactions between the company and its customers, thereby minimizing queues and allowing more transactions to be done in a given period of time.

Although this wireless transaction technology seems to be new in the Information and Communication Technology environment of the Philippines, its manifestation in PLDT's SWUP is in fact simple and convenient to use. SWUP is not at all hard to install and operate – it is a simple plug and play system. Installation is in fact made easier as the terminal is ingenuously designed for the company to be able to operate it without the need for fixed line cables. The company can therefore utilize and reap the full benefits of this technology even by exerting only minimal effort. The cost to install and make the system available for everyday operations is quite insubstantial as well. However, such a breakthrough, although promising, are susceptible to flaws as well.

Even though it can be recognized that the wireless swipe card payment technology indeed entails innumerable advantages to the user company, it cannot be neglected that the employment of this transaction technology can also insinuate costs. One drawback that can be attributed to the use of this wireless transaction technology is that it is relatively only in its infancy stage. The cost implications of such technology, if operated in an industry-wide scale, is not completely known or studied yet. The acceptance of this wireless transaction technology in the point of view of the consumers are yet to be determined. As in the Philippines, the general public as a whole are not yet well acquainted with this kind of technology. There are some who have heard of it, but there are those who are clearly not aware that this kind of technology is now being used in the country. This may be the reason why it is only PLDT that provides this kind of technology in the Philippines. Some users are also hesitant about trying out this

innovation since there is that question about security of their transactions with such wireless technology. There are still issues being raised as to whether this new system could keep up with the efficiency and productivity that previous systems have been known for.

In the long run, weaknesses to this technology will pose various threats to its use and implementation. A concrete manifestation of this will be the fact that the use of wireless transaction technology will entail a pure reliance on wireless networks as a means to connectivity. The backbone of the entire wireless payment solution lies in the service providers. As with PLDT SWUP relying on SMART's GPRS and EDGE systems, the wireless carriers play a vital role in fostering transactions to take place. Since these systems are basically run on satellites and computer-based technologies, there is probability that the system crashes one way or the other. In order to prevent this, service providers should employ regular maintenance and checking of connectivity to make sure that these crashes do not take place. Just imagine what could happen to a company if for an unknown reason, the system unprecedentedly loses its connection to the server. The whole system of financial transactions, which is the heart of the operating activity, will immediately crash and break down. Because of this, the whole operation of the company can be at risk and millions of sales might permanently be lost. To avoid events such as this, companies can employ the "store-and-forward" function as mentioned earlier.

Another predicament that may arise from this wireless transaction technology is that if massive amounts of financial transactions enter the network at the same time. With this comes the issue of whether these wireless carriers have adequate capacity to be able to facilitate numerous transactions all over the country. For instance, during peak hours of business, the connection might slow down significantly. At these times, businesses may have hundreds or thousands of transactions coming in at their different branches, so the service provider and the central network of the company might have difficulty in receiving all those transactions, which might lead to the prolonging of transactions because of network lags. This would be crucial to the company, for longer transaction times would bring about discontentment to their customers. In any case, if the system continues to experience this kind of technological glitches, the company would be better off employing another kind of technology in its daily operations.

In using this wireless transaction technology such as SWUP, the threat of hacking is still in play. Although the wireless data networks that provide this kind of technology offers to facilitate transactions in an environment where there are massive amounts of protection, security and control measures, sometimes there are still loopholes wherein the brilliant hackers

can discover and consequently exploit. When this happens, it is possible that all the revenue accounts and other highly important and sensitive information of the company can be stolen, corrupted, and be used for malicious and criminal motives. Loss of information could disable the company's operations in more ways than one. Hence, this is a serious threat to this kind of technology and should be put into consideration by the management.

Having enumerated all the possible threats and weaknesses of this new breed of innovation, one should also take into account the future benefit that the introduction of this breakthrough can bring about. In today's setting, the opportunities of wireless transaction technology, like that of PLDT's SWUP, seems endless. With the success seen in the employment of wireless technologies in the current years, the avenues for a company to achieve competitive advantages may expand many-fold by tapping into this kind of information system.

In using the wireless transaction technology, companies are able to connect their point-of sale terminals to the company's central network to foster real-time transaction or inventory monitoring that reaches a vast geographic scope. This breakthrough allows companies to reach even their remote branches or stores through wireless networks; providing opportunities for companies to transact with cash or even credit cards virtually anywhere in the country, and thereby increasing their corresponding sales. This new technology even taps the market of impulse buyers or consumers seeking for the convenience of easy payment, since transactions can be done at anytime, anywhere. Moreover, this wireless transaction technology, allows the company to incur lower costs, and this is especially true if the company is based on the remote areas of the province. SWUP allows the company to incur reduced communication costs as compared to the costs incurred if it utilizes dial-up networks and landline based systems.

In essence, this payment solution gives its user companies the ability to enter into transactions at any place of their or their customers' convenience. Companies who utilize what PLDT SWUP has to offer are given the option of accepting both cash and credit card payments. This would play a very important role especially for those customers who do not have adequate cash on hand and those who choose to use their credit/debit cards as their means of payment. This wireless transaction technology gives the opportunity for the company to increase their target market, their geographic scope of business transactions, and therefore increase revenue opportunities in the process.

The opportunity for companies that will employ this payment solution increases even more due to the fact that the number of consumers who prefer to use credit cards is increasing.

This situation further prompts the companies to be ready to transact in credit anywhere in today's competitive market. With this, the companies are able to catch up with the lifestyle choices of their consumers, and in doing so, they are able to satisfy their needs. Because of this, customers will patronize these businesses even more – leading to added benefit to the companies in the long run. These are just a few of the vast ocean of opportunities that the companies could engage in through this wireless payment technology. With mass use come new ideas and innovations that can further improve on the technological know-how that we have at present.

RECOMMENDATIONS

Although this would be of much relevance to businesses, a lot more people can benefit from the said technology. In the Philippines, such technology is only being put to use by restaurants and fast food joints offering delivery, resorts that are located in far-flung areas of the country, large retailers that have different branches all over the Philippines, and mobile merchants that are into door-to-door selling and other mobile businesses like carpet cleaners, in-home services, plumbers, event concessionaires, product delivery services, trade show sales, and lunch trucks. But the number of ways in which this system could be employed does not end there. There are a lot more untapped means by which wireless payment transactions could be put into use here in the Philippines.

A foreseen advancement in this payment solution that can be utilized here in the Philippines would be the use of wireless swipe card machines in taxicabs and other means of transportation. Such is already being done in Japan. Taxicab riders are given the option to pay for their fares by swiping their credit cards in a machine installed in the car itself. Just like the wireless swipe terminals that are available in the market today, this machine is able to provide a printed out receipt.

This payment solution could also be tapped by law enforcement agencies. Nowadays, the employees of the Metro Manila Development Authority (MMDA) have been issuing tickets to traffic law violators and they require payments to be made through by making a deposit in the bank. This system strives to lessen the cases of bribery that occur in the streets. However, the offender can just opt not to pay for their dues. If for example, these MMDA officers are equipped with wireless credit card terminals, the offenders can have the option to pay for their fines right then and there if they do not have adequate cash with them. This would ensure that the fines are paid and that only the right amount be credited into the accounts of the MMDA as well.

CONCLUSION

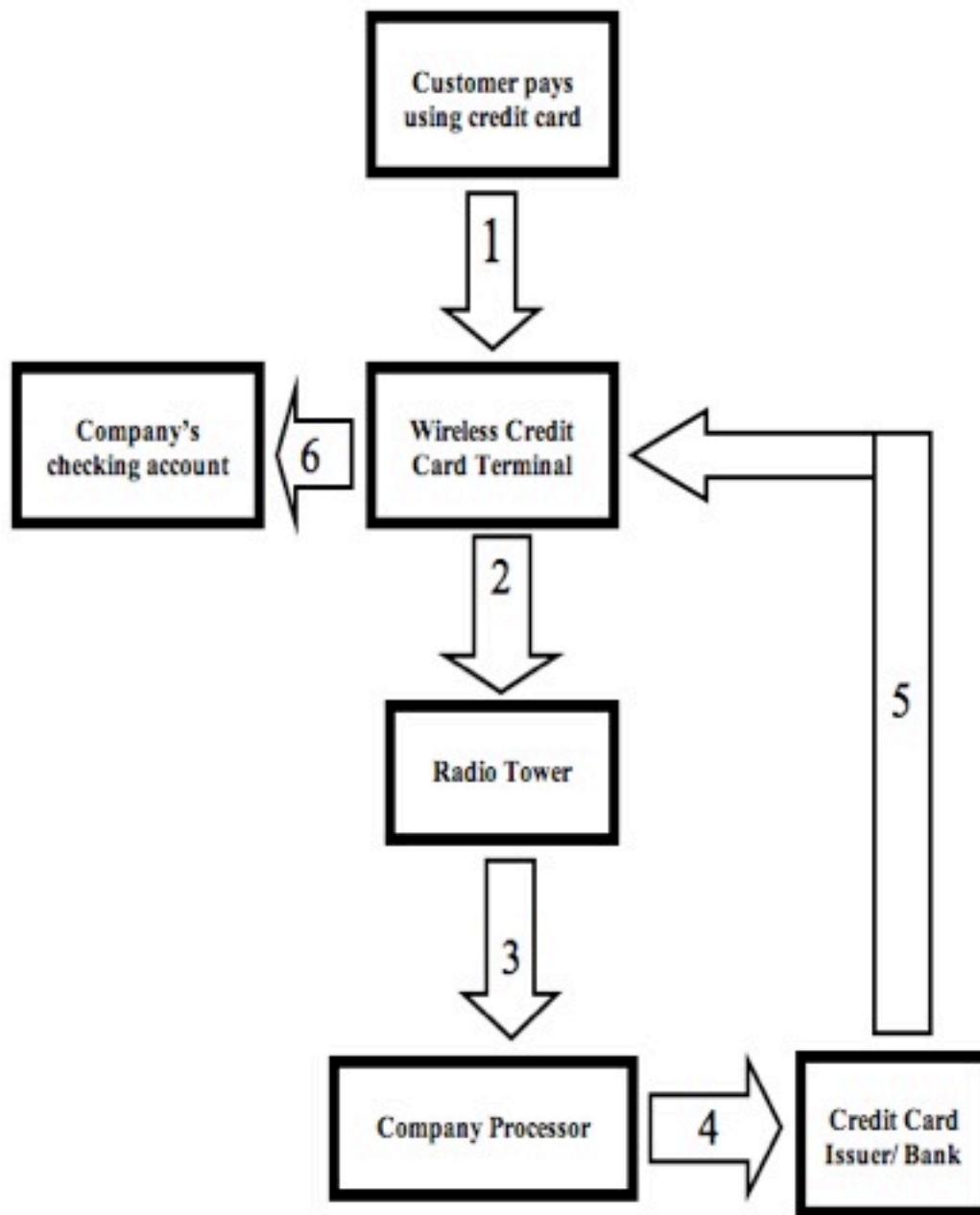
The analysis of the recently introduced technology to the Philippines, PLDT's Shops Work UnPlugged (SWUP), shows the innumerable advantages wireless payment technology can bring. This technology enables wireless employment of an individual's credit card to purchase goods or services, as long as the company possesses a wireless terminal and is able to gain network coverage. The transaction takes only seconds as the purchase amount is sent and recognized at the bank, after which, a receipt is then printed out for the customer.

Since there is a recognizable increase of credit card users in the Philippines, the introduction of SWUP in the country proves to be timely. Utilizing this technology presently are MegaLink, the Easytrip service in the NLEX, Motolite Express Delivery, food delivery services, and other mobile salesmen. This wireless innovation, however, is still not widely used by the general public because not a lot know about said the technology and some may also be hesitant to employ this innovation.

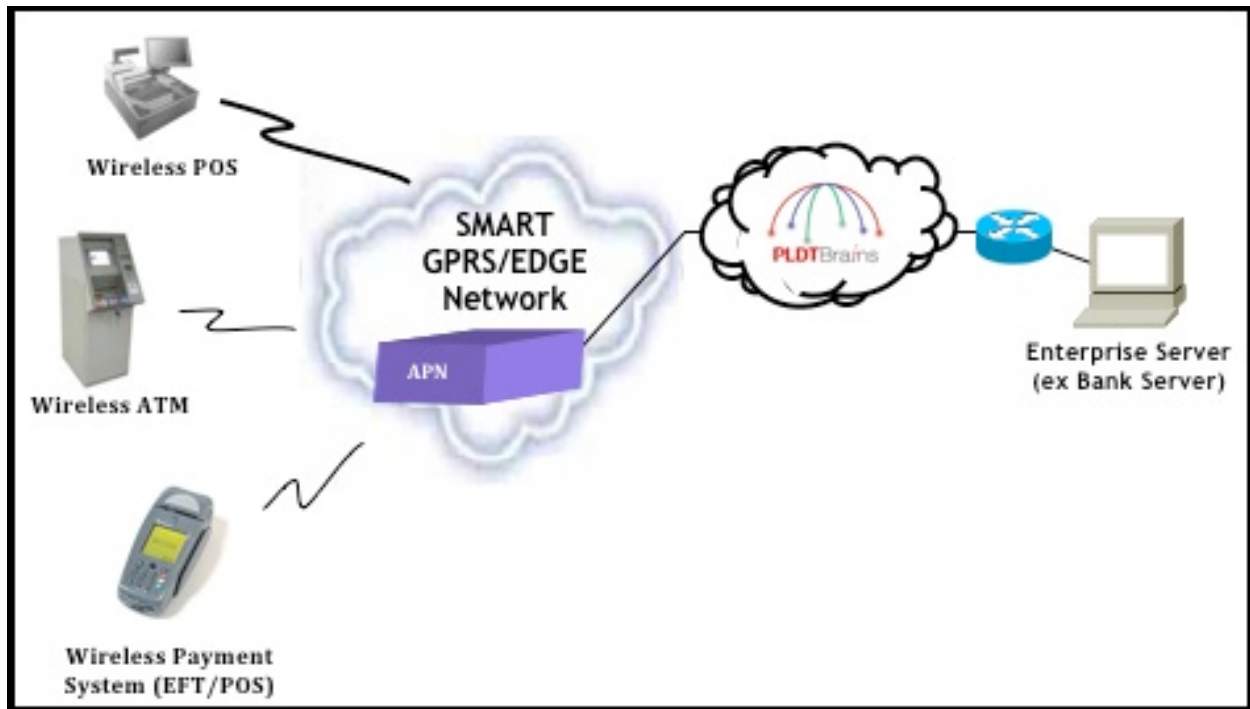
From an unbiased point of view, the benefits of SWUP outweigh the disadvantages. With the wireless and portable terminals that it has to offer, transactions can be made anywhere and anytime as long as there is network coverage. The flexibility of the technology expands a company's target market by broadening its geographic scope, thus resulting to an increased profit. Also, the technology is efficient: it is cost effective, as it reduces transaction costs, it is easy to install, and transactions only take a few seconds of processing time and are deemed secure. Since this innovation is relatively new to the Philippines, only a few negative implications have been fully recognized. These would include the inevitability system crashes and the possible threats that would arise from hackers.

The examination of wireless credit card technology through the dissertation above proves that the innovation is obviously an efficient and practical development that is recommended to firms and companies to use in their daily operating activities to increase competitive advantage and cater to a wider target market. Companies should always keep in mind that procuring a business is not just about generating profits. It is about delving into new ways of making life easier not only for the business itself by the general public as a whole.

APPENDIX



Appendix A
The Transaction Process



Appendix B
How PLDT SWUP Works

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