

**PERSONAL ONLINE SHOPPING WIDGET:
CONSUMER ACCEPTANCE LEVEL OF ONLINE
SHOPPING WIDGET**

LEE YEAN HOOI

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requirements for the degree of Master of Science
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STUDENT'S DECLARATION

Name: LEE YEAN HOOI

Matric No: PCOM0052/08

School: Computer Science

Thesis Title: Personal Online Shopping Widget: Consumer Acceptance Level of Online Shopping Widget.

I hereby declare that this thesis in which I have submitted to School of Computer Science on 18th June 2009 is my own work. I have stated all references used for the completion of my thesis.

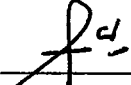
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MOHD REDZUAN ASMI
Penolong Pendaftar
Pusat Pengajian Sains Komputer
Universiti Sains Malaysia
11800 Pulau Pinang, Malaysia

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ABSTRAK

PSG Sdn. Bhd. adalah syarikat perisian yang baru ditubuhkan. Syarikat ini akan membangunkan satu “widget” membeli-belah melalui internet yang dinamakan PSG-S1. “Widget” ini mengambil kesempatan Windows Vista Sidebar dengan menggunakan keistimewaannya menawarkan pengguna maklumat membeli-belah melalui internet dengan lebih cepat, senang dan selesa. Oleh sebab syarikat dan produk yang dibangunkan adalah baru terhadap pengguna di pasaran, pengurusan syarikat telah menjalankan satu kajian soal-selidik sebagai perancangan pasaran tahap pertama demi memahami tahap penerimaan pengguna terhadap “widget” membeli-belah melalui internet.

Kajian ini menganalisa tahap penerimaan pengguna terhadap “widget” membeli-belah melalui internet dengan menggunakan model penerimaan teknologi (Technology Acceptance Model – TAM). Tujuan kajian ini adalah untuk menganalisa faktor-faktor yang mempengaruhi niat pengguna menggunakan “widget” membeli-belah melalui internet. Soal-selidik telah dijalankan untuk menyelidik dan mengumpul tanggapan individu tentang sikap dan niat pengguna mengguna “widget” membeli-belah dengan beberapa faktor yang diubahsuai daripada TAM. Soal-selidik ini dijalankan melalui internet. Sebanyak 400 soal-selidik telah diagihkan dan hanya 60 soal-selidik yang dikembalikan.

Selepas data dikumpul dan dianalisa, keputusan telah menunjukkan faktor kefaedahan (perceived usefulness) paling mempengaruhi niat penggunaan (behavioral intention) “widget”. Selain itu, keputusan juga menunjukkan faktor kesenangan penggunaan (perceived ease of use) mempunyai hubungan positif dengan niat penggunaan (behavioral intention) “widget”. Selain perhubungan antara faktor kefaedahan dengan niat penggunaan dan perhubungan antara faktor kesenangan penggunaan dengan niat penggunaan, faktor-faktor lain seperti kesukaan “widget” dan niat membeli juga diselidik. Semua hipotesis dengan perhubungan antara faktor-faktor yang

diselidik menyokong model TAM. Dalam kajian ini, tahap penerimaan pengguna terhadap “widget” membeli-belah melalui internet dibahagikan kepada tiga tahap iaitu tinggi, sederhana dan rendah. Keputusan dalam kajian ini menunjukkan tahap penerimaan pengguna terhadap “widget” membeli-belah melalui internet adalah rendah. Sebab utama adalah kerana kebanyakan pengguna tidak menggunakan Windows Vista Sidebar.

Bagi perancangan pasaran tahap kedua, PSG Sdn. Bhd. akan membangunkan soal-selidik berlainan demi memahami tahap penerimaan peniaga terhadap “widget” membeli-belah melalui internet. Tujuan utama adalah untuk memahami kesudian peniaga melibatkan diri dalam menggunakan “widget” sebagai laluan tambahan bagi mempromosikan produk-produk ataupun perkhidmatan mereka. Syarikat ini percaya bahawa produk PSG-S1 ini memang memanfaatkan kedua-dua pihak pengguna dan peniaga. Pengguna akan memperolehi maklumat membeli-belah dengan cara yang lebih selesa dan lebih cepat sementara peniaga akan memperolehi laluan tambahan mempromosi dan memasarkan produk ataupun perkhidmatan mereka.

ABSTRACT

PSG Sdn. Bhd. is a start-up software company. The company will develop a personal online shopping widget named PSG-S1 widget. The widget will take advantage of Windows Vista Sidebar feature which offer users a faster, easier and more comfortable way getting online shopping information. Since the company and the product are new to the consumer, company management had developed a questionnaire as the first marketing planning stage to help in understanding the consumer acceptance level of online shopping widget.

This study analyzes consumer acceptance level of online shopping widget, expanding and revising the original technology acceptance model (TAM), focusing on which variables influence the behavioral intention to use online shopping widget. A questionnaire was developed and conducted to examine and collect responses about respondents' attitude and intention to use online shopping widget with various variables modified from the TAM. The survey was carried out in online form. Total of 400 survey forms were distributed and only 60 responded to the survey.

The result of the proposed model after regression analysis reflect that consumer perceived usefulness (PU) influence the most on the behavioral intention (BI) towards using online shopping widget. Results also supported consumer perceived ease of use (PEOU) is positively related to the behavioral intention (BI) towards using online shopping widget. Besides the relationships between PU and BI, PEOU and BI, other relationships between affinity with windows sidebar widget (AW) and PU, AW and PEOU, and BI and Purchase Intention (PI) are also tested in this study. Hypotheses that incorporate all of the variables and the relationships among them are tested in a study of consumer acceptance level of online shopping widget, and support is found for the extended TAM. In this study, consumer acceptance level is separated into 3 levels which are high, medium and low. Based on the results of this study, consumer

acceptance level of online shopping widget is at low level. The main reason of low consumer acceptance level of online shopping widget is due to low usage of Windows Vista Sidebar feature among the respondents.

For the second marketing planning stage, PSG Sdn. Bhd. will develop another set of questionnaire to help in understanding business premise acceptance level of online shopping widget. The objective is to understand the willingness of business premises using the widget as an alternative way to promote their products or services. The company believed that PSG-S1 widget really benefits both users and business premises. Users will get online shopping information faster and in a convenient way while business premises have an alternative way to promote and market their products or services.

SECTION 1.0: EXECUTIVE SUMMARY

PSG Sdn. Bhd. noticed that the current trend of online shopping with its pull technology is rather inefficient and time consuming. This is mainly due to end users are required to spend time and put in great effort to seek their desired products or services. Therefore, the company would like to introduce an online shopping widget which uses push technology by taking advantage of Windows Vista's available features on the user's computer desktop. It offers users a faster, more convenient and easier way of retrieving online shopping information from different vendors.

PSG Sdn. Bhd. is a start-up software company which operates based on small or home office (SOHO) concept. The company will only recruit three employees at the beginning stage. There will be two programmers who are experts in XML, HTML and RSS technology who will facilitate the development of the company's first product, PSG-S1 widget. In addition, there will be one administrative employee who handles the company's paperwork. All employees will directly report to the company's CEO.

In order to promote the company's product, PSG-S1 widget, and attract prospective business premises to join as company vendors, the management planned to advertise through email, flyers, well-known forums and blogs. The company also offers 15% discount off the registration fees during the first year.

The company's management is trying to apply for funds from a list of venture capitalists such as Multimedia Development Corporation Sdn. Bhd. (MDeC), Cradle Investment Program and MCA ICT Resource Centre (MIRC) to support the development of PSG-S1 widget. Venture capitalist who wants to invest in the company will become the company's co-operate advisor.

The company is anticipated to generate revenue amounting to RM740,000 and a total profit of RM339,885 in 3 years time. However, the projected financial information is subject to achieving yearly marketing targets. The more business premises register as vendors, the higher the profit gained by the company.

SECTION 2.0: INTRODUCTION TO THE COMPANY

2.1 COMPANY BACKGROUND

PSG Sdn. Bhd. is a start-up software company and will be located in the state of Penang, Malaysia. The company is founded by YH Lee. The main goal of the company is to develop a product named PSG-S1 widget which provides the latest shopping information or product information from multiple business premises to widget users using the push technology. Besides developing the company's own product, PSG-S1 widget, it is also ready to accept and develop any kind of widgets based on client's request in order to increase the company's revenue. The company plans to apply for pre-seed fund from Multimedia Development Corporation Sdn. Bhd. (MDeC) as a start-up fund to develop prototype, PSG-S1 widget. Recruitment in technology, marketing and financial personnel are needed in order to ensure a smooth running of the business.

2.2 BUSINESS INTENT

2.2.1 IDENTIFY GAPS / OPPORTUNITIES

E-commerce can be defined as business or commercial activities which involve purchasing, selling and payment via the internet. E-commerce activities are very common in developed countries where most of the citizens are computer literate and high internet penetration. In year 2006, US marked a total of \$2.93 trillion e-commerce transactions, 13.9% of e-commerce growth compared to year 2005 which reached \$2.58 trillion [1].

Now even in developing country like China, e-commerce had become a common trend as part of the business activity. Many traditional business premises begin to change and involve in e-business in order to sustain their sales and compete among competitors from all over the world. A survey conducted by China Internet Research Center showed in year 2005 73.1 percent of internet users in China had tried online shopping and e-commerce online transaction amount had reached 553.1 billion Yuan in the same year [2].

In Malaysia, e-commerce activities are in increasing trend. According to Telekom Malaysia Bhd General Manager of Strategic Development Division, Dr Fadhlullah Suhaimi Abdul Malek, internet subscribers in Malaysia expected to reach 10 million by year 2012. The statement is based on the increasing trend of internet subscribers from year 2004 (2.9 million people) to year 2006 (around 5 million people) [3]. According to The Star Online News on January 2008, Malaysians are already seeing the benefits of e-payment. More and more Malaysians begin to adapt, trust and feel convenient to involve in e-commerce activities especially e-banking and online shopping [4].

However, a study done by the Wharton School of Business suggested that although total online retail spending is increasing, per person online retail spending is quickly declining [5]. There are many factors influencing the adoption of online shopping. One of the factors influencing the adoption of online shopping is perceptions of complexity. Researchers found

out that complexity has strong relationship with the intention to purchase goods or services over the web. The higher perceived complexity of purchasing goods or services over the web will be associated with lower intention to purchase goods or services over the web [6]. Chiang [7] indicates that “convenience” and “product type” influence consumer intentions to engage in online shopping. Watabe, K. and Iwasaki, K. [8] pointed out that time saving and prices were two of the factors which also strengthen the trend to buy goods at an online shop.

Nowadays, even though information and communication technology (ICT) become more and more advanced, however, most of the websites are still using pull technology where users must go through the step of searching to pull out the information they need. Users must spend great effort in the searching process. There are people who believe that the internet awaits the next big technological advancement [9]. Therefore, it is believed that developing a new method of online shopping by using the push technology which offers users more convenience and time saving will be accepted. The benefits of convenience and time saving are valid to users since nowadays information is being overloaded due to the development of Internet and effect from globalization.

2.2.2 VALUE PROPOSITION OF PROPOSED PRODUCT

In the current method of online shopping, users are required to login to the website and search for the items needed before they can make the purchase. In other words, current method of online shopping practice is using pull technology where users have to spend great effort to search for the items or shop for the information they needed. Therefore, in order to increase the efficiency of the current method of online shopping, the company plans to develop a new method of online shopping using push technology.

This new method will use a small widget by taking advantage of Windows Vista's feature available on user's computer desktop and this offers users a faster, convenient and easier way of retrieving online shopping information from different vendors. By using this widget as a push technology client, it enables users to retrieve and customize preferences and shopping information automatically. Users no longer required to login to the websites just to check for the latest items updated or any other promotions. What users need to do is just a simple customization where all they need to do is to select the item categories and preferred vendors during the installation stage. Related information which is customized based on the users' preferences will be sent to them through the widget.

Figure 2.1 shows the current method of online shopping using pull technology. For example, user A wants to purchase a story book. He may visit *amazon.com*, *borders.com* or *mph.com.my* to search for the book. Assuming the book is not available in MPH book store, which means user A had wasted his time and effort searching for the book in *mph.com.my*. After user A found the story book in *amazon.com* and *borders.com*, he may compare the prices between the two websites offered before deciding to purchase. The whole process requires great effort in searching and getting a great deal. Moreover, users need to repeat the same steps every time they go for online shopping which is time consuming and inefficient.

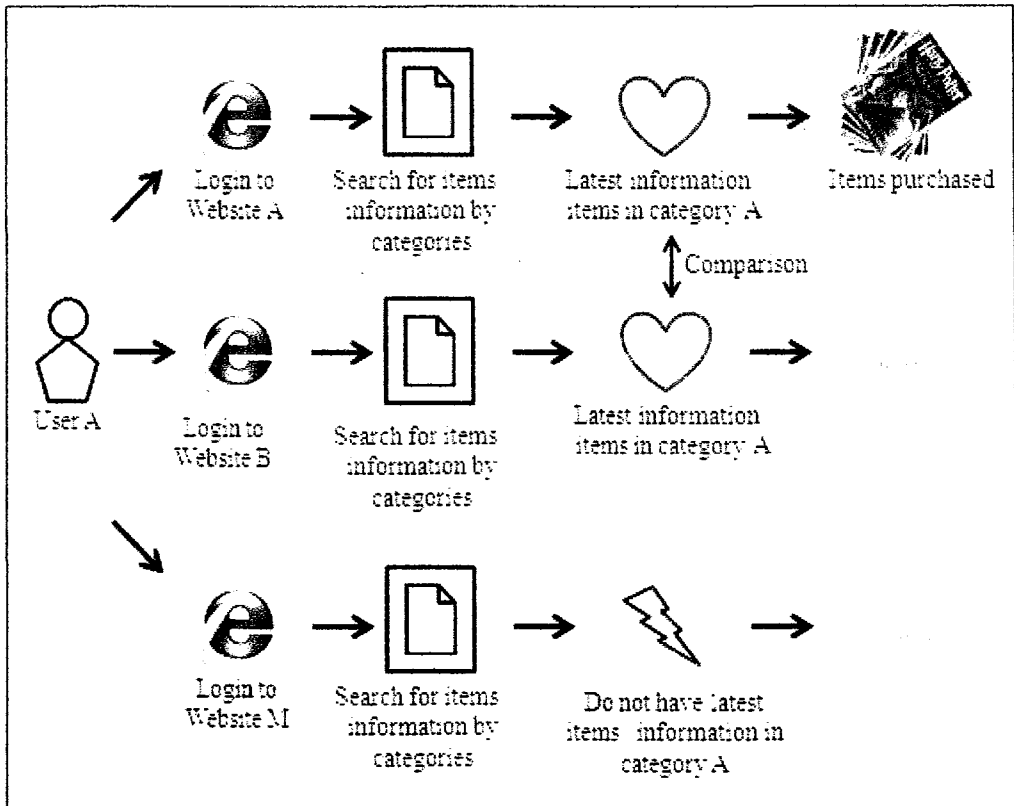


Figure 2.1: Current method of online shopping using pull technology.

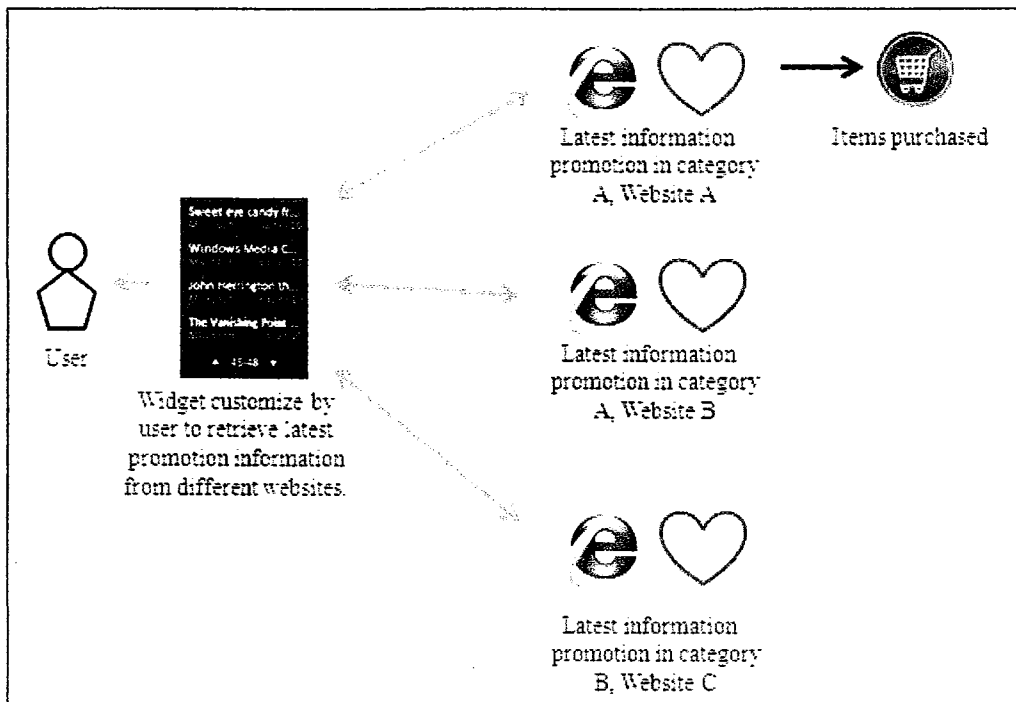


Figure 2.2: Proposed new method of online shopping using push technology.

Figure 2.2 shows a proposed new method of online shopping using push technology. Users with the help of the widget can easily know which e-commerce website has a better deal or latest promoted item. And with just clicking the link provided in the widget, users can directly reach the webpage to get more detailed information before making any purchase decisions. Users have to install and customize the widget based on their preference of item categories and vendors.

Windows Vista was officially released by Microsoft at the end of the year 2006. One of the new features in Windows Vista is Windows Sidebar. Windows Sidebar is a panel that sits at the edge of user's computer screen and houses mini-applications which provide specific functionality. Windows Sidebar can be considered as a replacement of Active Desktop. Most users found Active Desktop to be confusing and undesirable, however, the underlying benefits of Active Desktop are still valid until today [10]. In Malaysia, widgets which use push technology to retrieve preferable shopping information are believed to be few. And, now is the time to start using the small widget with push technology client. This new method of online shopping can become a new online shopping trend in the future.

2.3 GROWTH STRATEGIES

2.3.1 FINANCIAL STRATEGIES

PSG Sdn. Bhd. is a start-up software company. The company needs financial support from venture capitalists in order to develop its first product, PSG-S1 widget. Therefore, Multimedia Development Corporation Sdn. Bhd. (MDeC) will be one of the potential venture capitalist for the company. The company will take part in applying the Pre-Seed Fund (about RM150,000) provided by MDeC. Besides MDeC, there are other venture capitalists or financial organizations which are willing to support potential companies such as Cradle Investment Program and MCA ICT Resource Centre (MIRC). Although every venture capitalist has different rules and regulations to follow, the company will still apply. Once the company had successfully gained the support from venture capitalist and with the first product prototype, it will go for further financial support from other venture capitalists. It will use a larger amount of fund as financial support to market its product, PSG-S1.

2.3.2 TECHNOLOGY AND PRODUCT DEVELOPMENT STRATEGIES

PSG Sdn. Bhd. is a start-up software company. In order to minimize product cost, suitable freeware and open source product such as Extensible Markup Language (XML) and Hypertext Markup Language (HTML) will be used in developing its product, PSG-S1 widget. At the infant development stage, the company will release a beta version of PSG-S1 widget. Beta version can be freely downloaded and used by the public. At the same time comments and feedbacks from the public will be collected. Product will be refined based on users' feedback. The company's personnel will observe closely the technology and development related to the widget. There will be a plan to develop a smart partnership and to understudy closely Windows Life Gallery in order to develop more useful widget. In the future, when the company's finances are more stable and mature, it may extend into developing a mobile shopping widget.

2.3.3 MARKET STRATEGIES TO INCREASE MARKET OR MIND SHARE

In order to have high visibility for the company's product, it is believed that advertisement through email, publication in blogs, forums and well known e-commerce websites are the most efficient ways. Also, there are plans for the company to find and co-operate with business partners to further increase market share and company wealth. Exchanging link with business partners can help to increase the exposure rate of company's product among potential consumers. Allocating a website to collect consumer feedback and comments on company's product to reposition company's product is one of the company's marketing strategies.

2.4 TARGET MARKET

In the proposed new method of online shopping, the widget gives users the right to customize their preferred item categories and vendors. Therefore, PSG-S1 widget's first target market will be current online shoppers and online business premises. Business premises which already own e-commerce websites will be the priority target market. The purpose is to gather a group of online business premise to provide multi-item categories for widget users. Based on research done by So, Wong and Sculli consumer online shopping intentions for "search goods" (such as books, videos and computer software) are on average higher than "experience goods" (such as apparels, grocery and clothing accessories) [11]. Therefore, one of the marketing programs for the company is to attract and target more online business premises involved in "search goods" business.

2.5 REVENUE MODEL

PSG Sdn. Bhd. main revenue comes from the business premises registration fees. Business premises looking for additional alternative way to promote their latest products can register as a member. Besides the registration fees, no other extra fees will be charged to the business premises. PSG-S1 widget can retrieve any latest product information or promotion from business premise websites and distribute the information to the users who subscribes to it. Users can easily download PSG-S1 widget from business premise websites and install into their computers. The company will charge a basic fee of RM6,500 per business premise for product registration. Besides the registration fee, the company will provide one year free maintenance service to the business premises.

2.6 OPERATION SETUP

PSG Sdn. Bhd. will operate on small or home office (SOHO) concept at the beginning stage. A small and low-rental office area will be used as working place. The company will have its own website to operate daily business. As a start-up company, it will only require minimum staff especially technical staff at the beginning stage. Research and development of the product will also be done at the beginning stage.

2.7 LONG TERM GOALS OF COMPANY

In the beginning, the main goal for PSG Sdn Bhd. is to promote and attract more business premises to join in the new method of online shopping using push technology which offer users a faster, convenient and easier way of getting online shopping information. After developing the first product, the company will expand the business to develop different widgets for different companies or organizations. In future when the company's finances are stable and mature, it will indulge in developing mobile shopping widgets.

2.8 MARKET AND COMPETITORS INFORMATION

After Windows Vista was officially released by Microsoft to the public, it is believed that thousands of Microsoft Windows Sidebar widgets have been developed. In Microsoft Windows Sidebar gallery official website, approximately 3000 widgets have been developed [12]. There are a few widgets related to electronic shopping developed by a group named Intelligroup Ltd – gold partner of Windows Live Gallery [13]. Table 2.1 lists information and features of three widgets which provide similar functions in the existing market; i.e. Amazon sidebar tool, e-Bay auction sidebar tool, and DiscountCodes widget. PSG-S1 widget is also included in Table 2.1 for comparison.

All widgets shown in Table 2.1 have one main objective which is to provide users a more convenient and easier way of getting preferred shopping information through push technology. Amazon sidebar tool, e-bay auction sidebar tool and DiscountCodes widgets merely provide services for their users to shop on their website. PSG-S1 widget will provide multiple vendors for the users to receive more shopping information from and enables them to shop in various e-commerce websites.


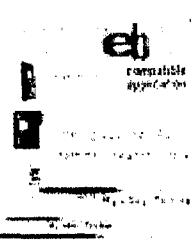
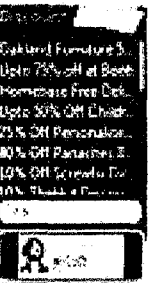

Sidebar Widget				
Name	Amazon Sidebar Tool	E-bay Auction Sidebar Tool	DiscountCodes Widget	PSG-S1 Widget
Pricing	Free	Free	Free	Free
Created by	Intelligroup	Intelligroup	Intelligroup	PSG Sdn. Bhd.
Widget supported country	USA, UK, Canada, Germany, France and Japan	Worldwide e-bay	UK	Malaysia
Features	<ul style="list-style-type: none"> • Search and view items with detailed overviews, image gallery and reviews without visiting the website. • Choose individual search categories and sorting methods for search. • View marketplace sellers for each item and add any seller's item to the cart. • Mini-search mode. • Customize to open search results in the fly-out or default browser. 	<ul style="list-style-type: none"> • At-a-glance, color coded view enables quick identification of winning / losing bids. • Place bids directly from the widget. • Quickly remove items from user watch list. Display user feedback score. • Built-in search with advanced option. • Pop up alerts when outbid, an item is ending or a new message arrives. 	<ul style="list-style-type: none"> • Displays the latest offers from the discountcodes.co.uk RSS feed. • Search the discountcodes.co.uk site right from the sidebar. • Grows when undocked. • Auto scrolls when idle. • Offer preview when undocked. 	<ul style="list-style-type: none"> • View summary of the latest shopping information. • Customize preferable categories to receive related information. • Customize preferable vendors to receive related information. • View detail shopping information or items in the fly-out or default browser. • Customize feed reload time setting.

Table 2.1: Comparison of online shopping widgets in existing market.

2.9 STRENGTH AND WEAKNESSES / SWOT

Strengths (Internal)

- First mover advantage – able to gain control of resources, rewarded with huge profit margins that followers may not be able to match.
- Convenient and user friendly product.
- Actively enhancing product features.

Weaknesses (Internal)

- Co-operation between management team members is a big challenge.
- Lack of experience in e-commerce sector.
- Lack of investment capital / financial problems.
- New online shopping method with low visibility and publicity.

Opportunities (External)

- Internet broadband service is mature and subscribers are increasing.
- Local internet penetration is increasing.
- Local citizen's computer literate level is increasing.
- Influence from global e-commerce platform.
- Government support in ICT-based businesses.
- Benchmarking against successful widget such as Amazon sidebar tool may leads towards success at beginning stage.

Threats (External)

- Inflation and effect of global financial crisis.
- Fraudulent cases in e-commerce affect the trustworthiness of e-commerce.
- Low acceptance level on widget technology.
- Co-operation with vendors on the requirements is a big challenge.

SECTION 3.0: EMPLOYMENT OF KNOWLEDGE WORKERS

3.1 MANAGEMENT TEAM

PSG Sdn. Bhd. is a newly incorporated software company with the objective of developing useful widgets for the public. The management of the company will be lead by Mr. Lee Yean Hooi, who is the founder and the Chief Executive Officer (CEO) of the company. Since the company operates based on small or home office (SOHO) concept, it only recruits three employees in the beginning stage.

The CEO of the company will run most of the operations including marketing and finance functions. There will be two programmers whose main responsibility is to develop company's first product, PSG-S1 widget. They are also required to be involved in the company's research and development plan. The sole administrative staff will be responsible in assisting the CEO in running the day-to-day operations as well as handling all paperwork in the company.

With SOHO as their main concept, all employees are required to report directly to the CEO. The company plans to recruit a technician in the third year, depending on the company's financial ability at that point of time.

3.2 ORGANIZATIONAL CHART

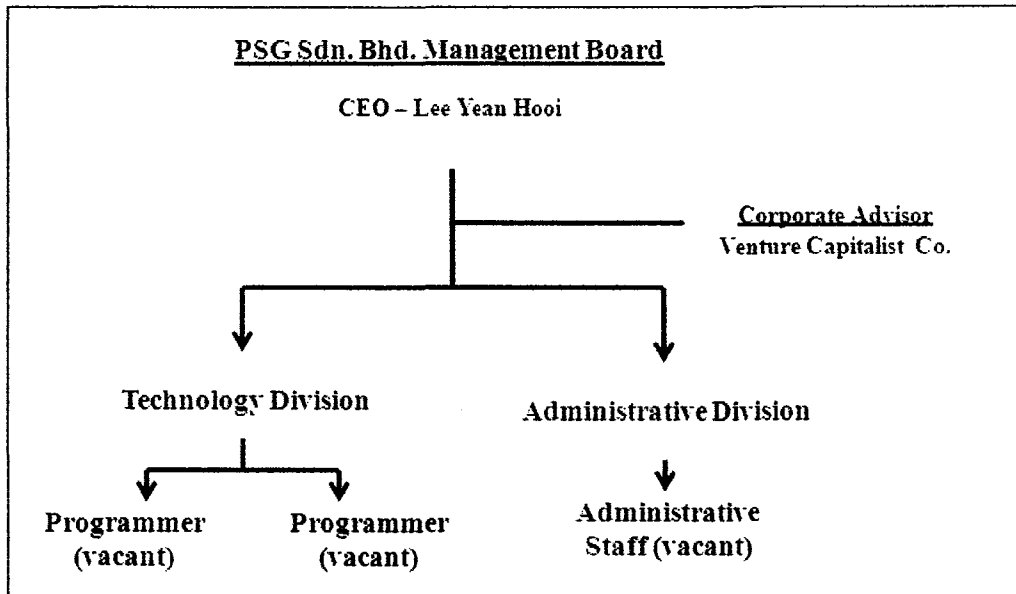


Figure 3.1: PSG Sdn Bhd. organization chart.

Figure 3.1 shows the organization chart for PSG Sdn. Bhd. The company is lead by Lee Yean Hooi, the company Chief Executive Officer (CEO). Since the company is in the midst of applying funds from venture capitalists, it is believed that venture capitalist who wants to invest in the company will become the company's corporate advisor. There are two divisions in the company which are technology and administrative. Technology division is responsible for the research and development of company product PSG-S1 widget. Administrative division is responsible with the operations of the company. All paperwork will be handled by the administrative employee. All employees are to report directly to the CEO.

3.3 HUMAN RESOURCE PLAN

Position/Role	Year 1	Year 2	Year 3
<u>Management Staff</u>			
Chairman/CEO	1	1	1
<u>Technical Staff</u>			
Programmer	2	2	3
<u>Admin / Support Staff</u>			
Admin staff	1	1	1
Total Staff	4	4	5
Total Knowledge Workers	4	4	5
% Total Knowledge Workers	100	100	100
Breakdown of Total Staff			
a. Local	4	4	5
b. Foreign	0	0	0
Breakdown of Total Knowledge Workers			
a. Local	4	4	5
b. Foreign	0	0	0

Table 3.1: Human resource plan.

Table 3.1 shows PSG Sdn. Bhd.'s 3-year human resource plan. During the first year of the company, there are only four employees including the CEO. Two technical employees are the programmers. One administrative employee helps in overseeing the company's operation together with the CEO. The company only recruits local citizen as employees. For the second year, there will be no changes of the human resource plan. However, the company plans to recruit a technician in the third year when the company is financially stable.

SECTION 4.0: PRODUCT OR SERVICE DEVELOPMENT

4.1 TECHNOLOGY OVERVIEW

4.1.1 PULL VS PUSH TECHNOLOGY

In recent years, Internet had become more and more important in business, education and government. The most publicized and fastest growing aspect of the Internet is the Worldwide Web [14]. Internet users can get whatever information they need from webpages whenever they want. The web is becoming increasingly important as a source of commercial information, news, education information and government data. Typically internet users will “pull” information by requesting specific webpage. However, due to the fast growing usage of technology and information, people had come up with a new approach called the “push” technology.

When internet users surf the web or search for relevant information through search engine, this is known as pull technology. Figure 4.1 shows pull technology where an Internet user requests for a page, for example the latest state election news, the computer receives the request and sends it over the Internet to the user’s computer. The page is then stored on the user’s local hard drive and displayed on the monitor. In other words, the action where Internet users need to go to webpage to pull out the information they need is known as pull technology.

Push technology is different from the pull technology. Push technology emerged from a very simple idea. News or information can be sent to users without having them specifically ask for it, or requiring users to explicitly get the information they need. In other words, push technology means automating the delivery of news and information to computer desktop on Internet or organizational intranets. Figure 4.2 shows push technology where data provider sends updates to users who have registered as subscribers and specified what they want to receive.

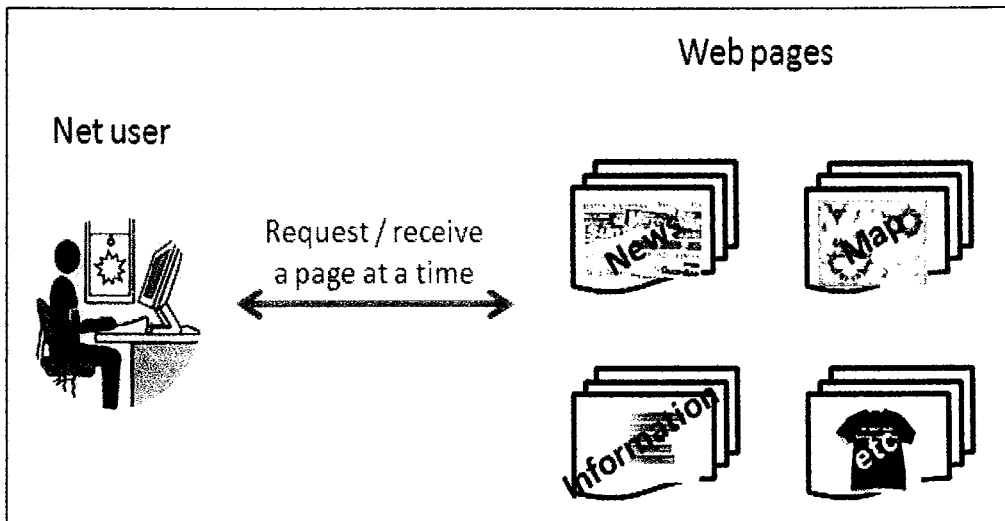


Figure 4.1: Pull technology.

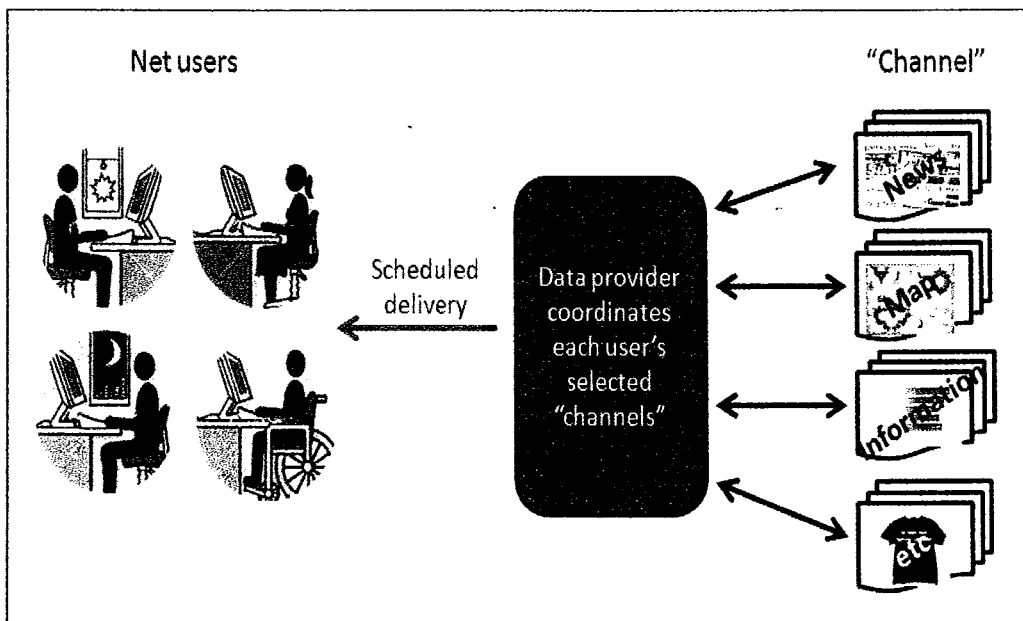


Figure 4.2: Push technology.

The push technology was created to alleviate problems faced by Internet users e.g. information overload and low bandwidth. Information overload is the main reason for the development of push technology. Push technology can help users to manage information overload by filtering, indexing, and directory services. Also, push technology provides the means of pre-delivering much larger packages of content such as audio, larger graphics or short video clips and leaves plenty of room for multimedia content [15].

Push technology is a technology by which a program running on the workstation can either request or receive information from web automatically and display that information on the screen. Content can be delivered through different ways, but mainly through a browser either built-in to the push client or captured by an external browser. The program running on the workstation can be called the push client. Push clients are only one side of a client process. On the other side of this process, push servers are responsible for sending channels of information to clients as shown in Figure 4.3. The availability of various channels depends on the push client software. The content of the channel can be personalized so that users get only the information they need. Many push systems make use of user profiles to determine the kinds of information users want to see.

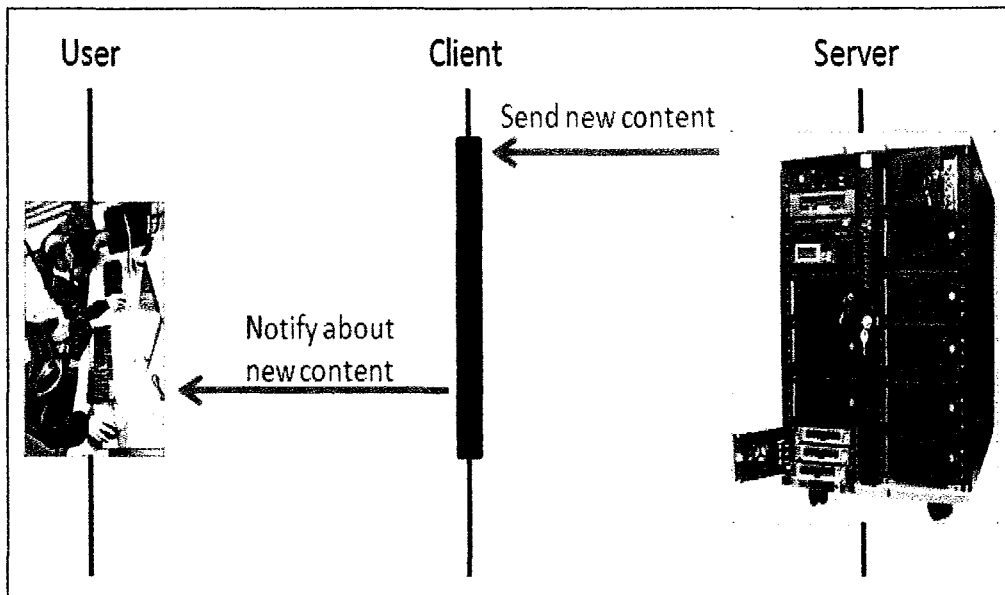


Figure 4.3: Push technology - Content provider (server) sends new information to user's desktop (client) and user is notified about it.

In 1997, push technology was heralded as a new way to retrieve information via user desktop computer. However, due to most people only had dial-up Internet connections at that time and computers were just beginning to get fast enough to run multiple applications simultaneously under Windows, push technology did not take off immediately even though the concepts behind it was good. As a result, push technology faded into the background for a period of time [16]. Today, push technology in its current form is still the same like years ago. With the widespread of broadband network access and Really Simple Syndication (RSS) feeds, anyone with the right equipment can use push technology. Every time when a person or company updates their websites or post new information, anyone who subscribes to the RSS feed will see the updated content and can access for further details. People will no longer have to manually check all the different links on regular basis.

4.1.2 PRODUCT OVERVIEW

PSG Sdn. Bhd. would like to introduce a new method of online shopping using a widget by taking the advantage of Windows Vista feature which offers users a faster, convenient and easier way of getting online shopping information from different vendors. In other words, the company will develop a widget named PSG-S1 which uses push technology to send online shopping information to users without having them specifically requesting for it. The company will plan to develop a beta version of the PSG-S1 widget. The purpose is to provide 6-months trial period and receive comments and feedback from users and business vendors. The newly improved version will be released after the trial period.

The company will use Really Simple Syndication, RSS, to develop and design the PSG-S1 widget. RSS is a format for delivering regularly changing web content. Many news related websites, weblogs, and other online publishers syndicate their content as a RSS Feed to whoever wants it. RSS benefits users who regularly visit the websites. It allows users to easily stay informed by retrieving the latest content from the websites users are interested in. Users can save time by not needing to visit each website individually to retrieve the latest information.

The company vendors will only need to update their website whenever they have any new item or information to publish. The information updated will be automatically sent to the users who have subscribed to the vendor channels. The PSG-S1 widget is designed for users to select their preferred vendors and item categories in order to receive the updates. Figure 4.4 shows the design architecture of the PSG-S1 widget.

PSG-S1 widget will have the following features:

- View the summary of the latest shopping information or promotion items from the vendors.
- Customize individual categories to receive preferable shopping information.
- Customize individual vendors to receive preferable shopping information.
- Customize to view detailed shopping information or items in the default browser.
- Customize feed-reload time setting.
- Information published is attached with direct link to the webpage with more detailed information.

There will be some constraints developing this widget. Since PSG-S1 widget provides more than one business premises as vendor, all payment and delivery issue will be based according to the vendor's website. PSG-S1 widget will just act as a bridge for the convenience of the users to easily receive latest shopping information from their preferable vendors. Different vendors have different purchasing and delivery rules, therefore, all the purchasing terms and regulation will be based on the vendors website. Figure 4.5 shows PSG-S1 widget icon in the user's widget list after it is installed in the computer. Figure 4.6 shows PSG-S1 widget on user's Windows Sidebar.