

# A PROPOSED SERVICE PORTAL PLATFORM FOR APPLIANCE MAINTENANCE IN BANGKOK

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## Abstract

Nowadays, handheld device is the tool people carry all along their daily life for both personal and business purpose especially for service and shopping proposes. Currently, there are already existing several famous portals for shopping goods for example Shopee, Lazada, and Central. However, the services such as maintenance service, are still seen either limited to physical barrier in the local area or sitting in the unadvertised domain name unless visited physically. This paper presents a proposed service platform for maintenance daily life appliance usage which scattered across cities by initiate a portal application. Looking at many famous applications to utilize as customer service platform, LINE application was chosen as launching service channel. The application provides the functions that allows customer who bring their appliance to drop at the specific locations and customers to bring in their shoes, choose the service type and make payment, and pick up later when notified as finished. Whilst back office is located locally, the orders coming in and out can be picked up by scheduled transport without the need to consume expensive space. The trial location is established. By integrating maintenance service over IT, local maintenance service like shoes fixing can obtain more traffic and deliver more value. Each pair of shoes are separated by order which can be tracked for individual. Both cobblers and customers can communicate via LINE to eliminate any confusions and mistakes. This brings more transparency, reliability, and trust to the customers.

**Keywords:** Service platform for maintenance portal, maintenance services

## 1 Introduction

In this fast-growing age of cyber where shopping platform exists online, there are still many kinds of shops that have been left behind due to the limitation of physical location. Whilst land value becomes more expensive it becomes more difficult for several shop owners to move around to keep on track with increasing demand. Looking at small local shop like shoes fixing service, it can be seen mostly in a mall or at local street of Thailand. Even though, with advertisement on

brochure and website, it could only be a few customers with the need and enough time to visit the shop on site. Typical maintenance services are struggling to catch the online traffic. This is because their offered goods are unable to be delivered by post. Advertising the services could draw more customers however this is still limited to the physical existence.

There could be another way to provide services to more area, to establish more branches and hire more staff in order to reach more clients and serve them. This is possible only if the business owners own large amount of capital because of high cost of investment and high rental fee in the city.

Whilst existing local business are still scattered across the area, people are connecting closely together through mobile applications. To spread the condensed online traffic, from mobile to local shops, internet is the key. Either in daily routine or formal tasks, as much of 89.6% Thai population use mobile phone (Thairath Online, 2018). From 69 million mobile internet users, 45 million of them has LINE account (TWF Agency, 2020).

This proposed service portal platform over LINE application was planned to locate at BTS Wong Wian Yai station as central point. Service would begin and end in LINE application where customer is introduced with QR code to the service, proceeded to payment, which then leads to shoes deposit and return.

Where this first portal is main channel attached to the traffic from BTS Wong Wian Yai, shoes are scheduled to deliver to and from back office too.

Staff will be needed at initial stage to avoid the cost of complex system development. However, system is designed to support future enhancement to replace human intervention. More portals can be expanded onto another BTS stations when financial situation is ready and economic is suitable to reach more people whilst back office locates in original place.

This implementation of service platform for maintenance portal is to utilize existing technology to seamlessly embed onto user interface. It should enable local maintenance service like shoes fixing service to fast-moving IT era to capture and reach more customers online. The system should provide higher value to users in terms of transparency, reliability, and trust and at the same time get rid of miscommunication, and human error and intervention.

On top of this, this digital channel will enable business owner of local service shop like shoes fixing service to launch new track of profit making with digital capabilities which have not existed in traditional way. It is no longer require a physical construction with high cost and time-consuming steps. Hence, it is possible to build a shop in couple weeks with very low investment as 1,000 THB a month in this digital world, not even need to own self-build complex with IT infrastructure to fully operate flow from shop front to goods delivery.

## 2 Literature Review

Even though, there are brick-and-mortar businesses existed in the local area, the maintenance service like shoes repair can take extra step to online platform as well as utilizing, mixing, and adapting to technologies with selected distinct features especially in a platform where developers keep inventing radical tools. These advantages could be achieved: service at palm, no more argument with price display, standard service time, priority service, shoes tracking, service history, paperless, reduced risk to COVID19, agreement and terms of service, and chat for inquiries. The

shop can run business both at their original place and BTS without interrupting ongoing work stream, but fully integrating with new stream taking workload from BTS. The investment cost of hiring staff, renting operating space, and managing branches are reduced significantly. This solution is also ready for future enhancement, for instance, credit card payment, expansion to other BTS stations.

Moreover, in this fast pace online business arena, by implementing this service platform, it could enhance owner to reach and utilize other cyber tools including marketing tools, ecommerce channels, payment enabler, and logistic operators. Relevant supporting services are ecommerce enabler who helps from starting online shop to business strategy, training for various skills, and finance for online sellers provided by financial service. Saravanakumar & SuganthaLakshmi (2012) stated that the Internet and e-commerce have had a great impact on how businesses function and promote. The rapid implementation of social media technology and new technologies that the business used have impact on businesses.

Regarding marketing tools, Shopify allows editing product listing for search engine optimization (SEO) (Wiki, 2021) per screen captured in Store Importer section of next chapter, to draw more traffic. Listed products can be found by shopping search engine like Priceza which ranges product price among shops on the Internet. Email marketing or electronic direct mail (EDM) can be used with LINE OA Gain Friend and the Shopify list of customers who subscribe to letter, and sharing service details and experience via Facebook or Pantip can also be added and share as content marketing.

In Thailand, 95% of online business is social commerce (Techsauce, 2020) which is selling products via social media like Facebook or Instagram. Shop owner may invest money on Social Media AD Platform such as Facebook, Instagram, LINE Ads platform to advertise products and services to specific target group or establish a chance-to-win prize of sharing product or service on social media as affiliate marketing. Another choice is to re-targeting platform to advertise to lead generation surfing Internet across websites, AD network who puts on advertisement across global sites, and content marketing with social.

### 3 A Proposed Service Portal Platform For Appliance Maintenance

The services platform forms the system environment for mobile application. The services platform delivers services based on both application requirements and contextual facts (Costa, Pires, Van Sinderen & Pereira Filho, 2004).

**Tools for implantation:** To create the application the service platforms, there are two major parts to consider, the mobile user interface, which is to draw and interact with customers, and the ecommerce platform, which is used to organize order and delivery. The mobile user interface, LINE application is selected as main interface to reach customers. This application is the chat application for smart phone users. Shop is also needed to be set up with LINE Official Account to put on all visual main menu with predefined auto-response messages including the link to main online store.

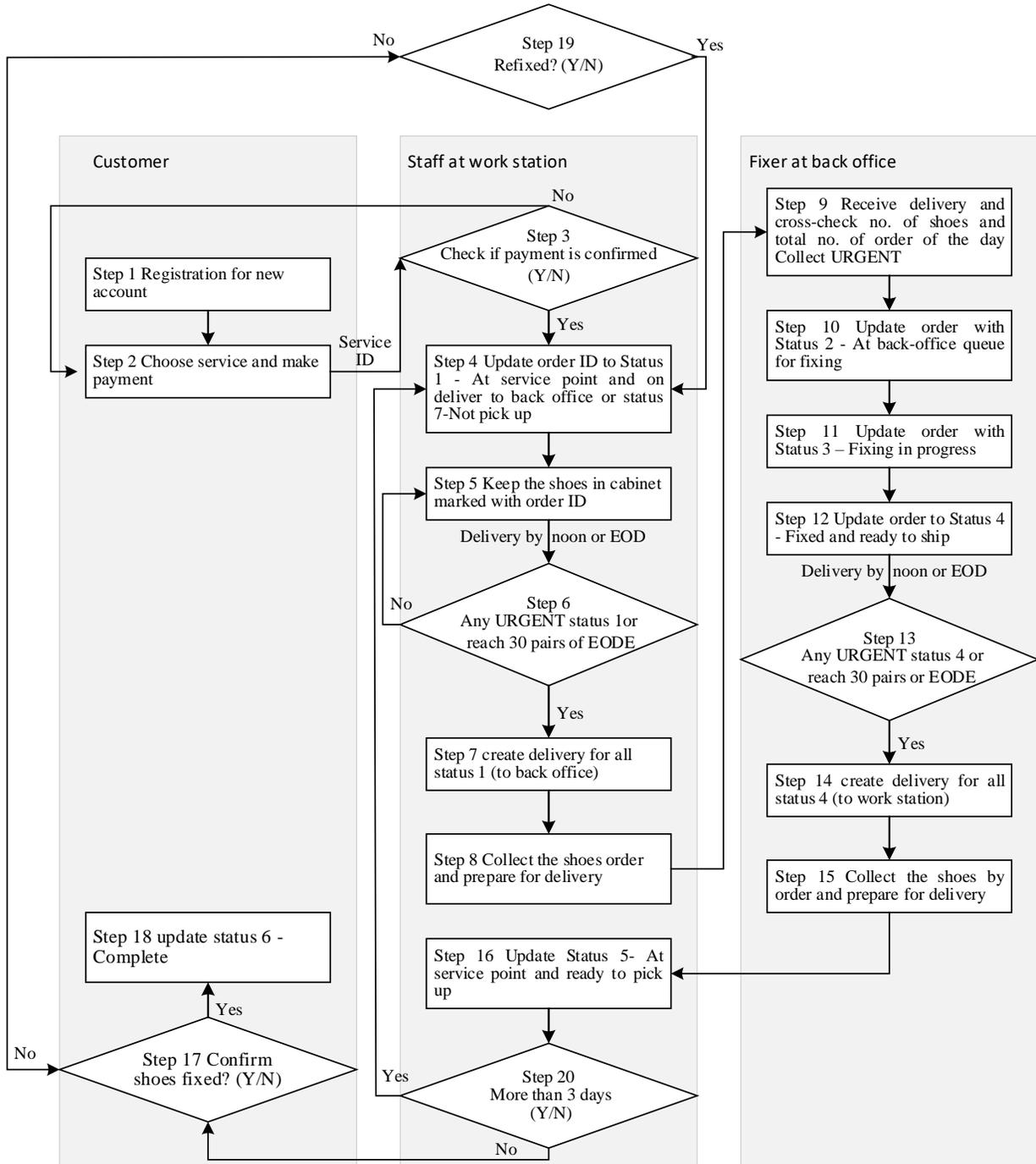
**Ecommerce Platform:** a free package does not provide all necessary features for service platform for maintenance portal. As choices are explored for the need to be an interface to BTS commuter

as maintenance portal and at the same time potentially connect to the shop at local area, the Shopify.com is picked. Look through Shopify features, the setting and configuration are highly configurable and major attributes focused on this project are customer registration and profile, stock and shopping cart, tracking system, and plugins. Major tools for this implementation are LINE chat application, LINE OA, Shopify, and smart phone.

### **3.1. Business Process Flow**

The process flow of application is illustrated by figure 1. From Figure 1 Service process is simple where customers can leave their shoes after checking service and price, registering, and making payment. Once service is completed, they can get back of their shoes fixed at the same place where they start.

Main features are customer registration and profile (all users will have their login and given access on LINE chat application, LINE OA, and Shopify), stock and shopping cart (some products need stock count and some do not whilst shopping cart is necessary as customers can buy many service at the same time), tracking system and history, and plugins for additional features needed.



**Figure. 1: Business Process**

### 3.2. LINE OA

This part goes through LINE OA configuration, its meaning, and why it is chosen in this study.

**Chat Mode:** There are two chat modes for the shop to interact with customers, AI responses which automatically reply with predefined messages and manual response which staff can type and send with additional options like pictures (limited to 20 images a time). AI responses is selected by default.

**Chat Setting:** In chat settings, shop can configure to receive LINE call and/or phone call, set up tags to manage group of customers or process, and quick replies which is pre-written message for staff to answer specifically to each process. For shoes repair service, the call function is turned off to avoid duplicate work.

Administrator can chat with customers with several functions. Even though mostly staff do not need to chat because messages are automatically responded by AI response mode, staff can switch from automatic to manual chat mode to send file, specific details, or initiate LINE call. The quick replies can be set up as template so staff can quickly answer with less human error. Each individual customer can also be marked with tag to group them or note with special instructions and can be marked as spam.

**Account:** This part shows details of shop such as shop name and ID.

**Greeting message:** In this greeting message, customers of shoes repair service are given with web address to register on Shopify.

**AI response messages:** Most of the predefined AI response messages are tied to keywords given by LINE not disclosed publicly. Therefore, the response returned from these messages is to be set up to direct customers to chat for this project.

**Gain friends:** Here the shop can share the link of online shoes fix shop on social media like LINE, Facebook, Twitter, or sending electronic direct mail. In PC, QR code, direct link, and interactive button are available.

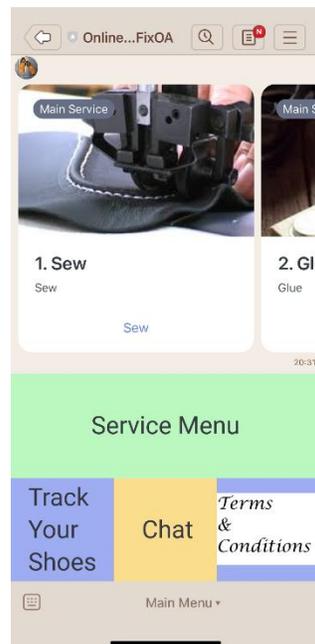
**Profile:** This part is the appearance of the LINE account. Shop owner can choose to display media, collection, delivery options, basic info, and other plugins available.



**Figure. 2. LINE OA Home**

### Sample Setting

The setting on the following three functions can be related together, rich menu, auto-response message, and card-based message. Rich menu is defined with input text to call auto-response message. The output of auto-response message is calling to card-based message which displays the service menu in carousel format in Figure 2.



**Figure. 3. Service Menu in Carousel Format**

**Rich Menus:** For this shoes repair shop, there are four menus, Service Menu, Track Your Shoes, Chat, and Terms and Conditions. Track Your Shoes and Chat will direct users to Shopify. After Shopify setup, link is copied here. Rich menu can display text and web address link.

**Auto-Response Messages:** Auto-response message status can be set to be on or off. Text displayed in Rich Menu can be used as input to auto-response message which calls the card-base message or other type of output such as image and link.

**Card-Based Messages:** Card-based message is message to display as interactive sequence. Selected format is the carousel format.

**Permissions:** Staff is set up as administrator for full access and as operator for limited access. For operator no function to manage user account (staff) and permission. For operator (sending restricted) staff cannot broadcast message to customer timeline.

**Response:** Response is set up to enable manual chat, auto-response messages, and smart chat.

### 3.3. Shopify

Shop can be set up with 14-days free trial version with free plugins. Cookies and cross-site tracking are required. After sign-up, select preferred plan, and verified email, there are several suggestions to go through. All items in the settings must be completed as it will define how the shop operates.

**Location:** For this shop there are two locations set up, BTS Wongwian Yai exit2 as the portal to take online orders, and Phra Pradaeng Market which is back office for future online schedule handling.

**Plan and Permissions:** The shop can assign administrator with full access or maintenance personnel for staff that do not manage accounts.

**Payments:** The payment will be set up as bank deposit and PromptPay which will need manual verification on individual bank account. So the payment capture is set as manual capture. Automatic verification can be performed if set up with credit card or PayPal.

**Notifications:** Shop owner can manage how related parties can receive notification. In this part shipping and local delivery are ignored as the online shoes repair service only provide local pickup at BTS Wongwian Yai exit2. For order notification, the email can be set up regardless of staff access.

**Checkout:** This part defines information to receive when checkout and what to perform after order is confirmed. The checkout information will be sent through email. For abandoned cart, email is set up to send to remind customer at specific time.

**Shipping and Delivery:** It is important to set shipping from the portal with 'no zone' to ship to, and a local pickup. Also, the product inventory must be managed by Shopify to enable local pickup.

**Files:** This zone is for shop owner to upload images used for products.

**Legal:** This section states the rules of service to declare to customers which are refund policy, terms of services, and shipping policy. Each of these items has a template to start off.

**Taxes:** By selected Thailand, tax rate is automatically retrieved by Shopify. This is used to calculate product price.

**Sales Channels:** The first portal at BTS is planned to take orders from both online (LINE OA, and Shopify) and portal. These are set up as sales channels.

### 3.4. Plugin

This section shows additional applications that were developed by other parties to use on Shopify. They are free of charge, free during trial period, or paid plan. Below are selected applications that were explored and seen suitable for the online shoes repair service.

**Uplinkly Language Translate:** English is used as default language in all set up for the purpose of study. Shopify itself does not provide auto-translation to other languages. Hence Uplinkly Language Translate is installed. After configuration users can select from Thai, English, Chinese, Japanese, French, Italian, or other language up to 10 languages.

**Store Importer:** This plugin is used for uploading csv files. Products, customers, and stock quantity are input data that can be uploaded in bulk.

**Shopify Chat:** There are several chat plugins available in Shopify. Shopify Chat is selected as it asks for clients email and order ID by default. This requires Shopify Ping to install and all staff must accept email invitation.

Shopify Chat has a direct link which owner can paste to LINE OA Chat or anywhere else to draw all messages to Shopify. This is to combine messages from all sources into one place and chat will be responded mainly by administrator. It will need very least effort from staff at portal in order to reduce human work and for future enhancement for vending machine.

#### **Terms and Conditions Plus+**

This applies the tick box before checkout so customer acknowledge the rules.

**Custom Fields:** This plugin is useful when given theme from Shopify does not cover needed fields. The customer email address is added in account details section otherwise customer may not realize the email address used. Coding section is available for amendment too. This field is now existed for shop to display email address for customers in Account Details section. New fields can also be added using JSON.

**Parabola:** This application is useful to setup custom reports for the shop. For online shoes repair, daily Low Stock Report is set up. Because there are two main parts to manage stock, Non-W311 product and W311 product are set up. Frequency can be chosen such as daily or weekly as well as output type such as email or csv file.

By adding products, creating key pages, completing theme of online store, customizing shipping, setting tax and payment, store is ready to launch.



**Fig. 4.** Launch Your Store

## 4 Results

With attempt to cross those typical constraints of maintenance service shop in local area, the requirements seem tragic to overcome physical barrier to reach online customers, the investment cost for physical infrastructure, the scarce human resource and time, and scalability thrive.

Coming to result, the system works smoothly from LINE chat displayed with menus which linked to Shopify. Now service platform for maintenance portal can operate without setting another work station or hiring more technical fixer. Especially during COVID-19 situation, this system allows service business to potentially strive through this harsh time with very least investment, effort, and time.

Below shows sample flow of creating transactions. As customer, one starts from visiting shop via LINE where later brought to Shopify to complete order. As a shop, Shopify feed shows outstanding orders to manage.

### Customer

1. Customer starts from scan QR (or click LINE link). This step refers back to Step 1 in business process.
2. Greeting message brings user to Shopify registration. At this stage user may continue register on Shopify or come out to LINE menu.
3. Customer goes through main menu.
4. Customer goes through service list.
5. Customer chooses service, agree to terms of service, and checkout. In case customer do not have an account, the order can still be proceeded and tracked. When the cart is abandoned without checkout, email is sent to customer.
6. User complete order and make payment. This step refers back to Step 2 in business process.
7. Customer tracks status via chat.

### **Online shoes fix shop**

1. Shop staff see the feed showing recently updated products.
2. Incoming orders are queue and payment are being verified. This step refers back to Step 3 in business process.
3. After manual payment verification, orders are marked as paid and waiting for fulfillment. This step refers back to Step 4 to step 11 in business process.
4. After service and schedule arrangement, orders are marked as fulfilled. This step refers back to Step 12 to step 18 in business process.
5. In case order cannot be completed or part is out of stock, the order can be marked as ready for pickup without payment. Where order needs to rework (with agreement from shop) order is duplicated with open status. Where customer left the shoes more than 3 days the 80 THB fee will be charged. This step refers back to Step 19 and Step 20 in business process.
6. Shopify Ping displays incoming text from customers. Shop owner can reply to them or assign other staff whilst can still see ongoing chat. Chat can be transferred among staff.

Since most of the tasks are manageable on Shopify, the system can enhance further and ready to take challenge to another step when business owner sees its opportunity.

In terms of infrastructure investment, there is very little system requirement since LINE is already used by major part of Thai population and Shopify is available on standard browser without extra installation. This can easily introduce the service to customer and at the same time put all staff into manageable stations that can be easily monitored.

### **Analytics & Reports**

Both LINE OA and Shopify provide dashboard and built-in reports. Since data in this study is in testing version, available features are adequate at launching phase of small-scale business of 2-5 staff and it would be useful for further study.

#### **LINE OA**

The overall insight is about message delivered, friends, timeline, and chat in different length period. Some items on the left-side menu can be displayed for more details. Shop owner can export data or send survey to get more input.

#### **Shopify**

Shopify shows active sessions relate to marketing and campaign. There are also dashboard in various view point and reports. More actively shop owner can see ongoing map live view for each country.

## **5 Conclusion**

This study is initiated to for local maintenance service shop like shoes repair service to occupy a service platform for maintenance portal. First, it tries to strive in today business and to capture

more orders, then to switch to online channel with variety of tools. This can change typical way of service business. From original brick-and-mortar shop, online tools can enhance the features beyond what has been available in history. With their own customization following individual goal and budget, shop owner can have their unique shop just right to their needs.

By completing this study, the platform and all selected tools are used with one month payment. All selection for this implementation is already based on free plugin. As low cost as 29\$ per month, after 14-days trial period the shops in Shopify may pay this fee to take advantage of various tools that both already available and which are inventing, either offered by Shopify or other external developers, without having to worry about building their own systems and infrastructure. Shopify platform itself is also highly configurable and scalable so the shop can establish more branches easily in the future. All are possible with ease, much less cost and time. In terms of marketing, it is very easy to share the link and QR onto other places or to use dashboard and reports to understand and reach target market using offering packages.

This implementation of service platform for maintenance portal is seen yielding several values to business owner. It charges low cost and less time compared to other choices. At the same time this solution is scalable, equipped with various tools for great performance, and also gives marketing advantages in this online era.

It is shown that local maintenance service shop like shoes repair service can also reach traffic online and gain orders. It can be easily got familiar by client just scanning QR from mobile phone and work process can be efficiently managed. No construction nor software development is required.

At very first stage of launching online portal trying to minimize cost, there are several tasks that opted to be performed manually such as updating status, verifying payment, and creating delivery schedule. At later stage where business runs smoother, shop owner may consider additional plugins and third-party company like Grab to automate necessary tasks. The owner might consider together with vending machine to fully operate services by system without staff.

Since platforms are developed by other firms, in this case LINE chat, LINE OA, and Shopify and third parties, the quality and stability must be kept an eye on. Most of the features must be examined in ongoing basis. Where there are new tools provided, it will need cautious attention whether the tool really performs what stated and expected and not crash already configured store. In a future shop owners have a choice to develop need features and plugins themselves too.

For security, it is important to carefully go through usage condition as noticed by provider. Even though platform and plugins are already developed and tested, but varied usage environments and configuration may still introduce uncovered flaws. On the other hand, some untrusted developers may hide serious defects meant to damage software users rather than stated purpose. Hence shop owner may explore vast options of tools whilst keep in mind for security as first priority which may worth conduct purely on their own later on when applicable.

The system will help business owners to gain more profit in small investment and less time than it is thought as typical one. More than that work process can be fasten, shorten, and effectively arranged with transparency. It will bring value to customers that it is never been as reliable and trustworthy as before. Whilst it requires least human effort and intervention, the communication is made clear and consistent to provide promised service. On top of that its scalability and

effectiveness will equip owner of service platform for maintenance portal with potential capability to grow rapidly in this competitive online landscape.

Further to this study, it is recommended to shop owners, not just the maintenance service but of any kind of business, to research on customer behavior in order to understand population traffic and how to draw them to shop. This suits to the time after online store launch for certain period, available broadcast, coupons, reward cards, dashboard, and analytics and reports will be very handful to dig into real live traffic.

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