THE DEVELOPMENT OF B2B E-MARKETPLACE FOR DROPSHIPPING

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ABSTRACT

E-marketplace is an online market platform where business parties can register as buyers or sellers to conduct business to business transactions over the Internet. Dropshipment refers to the delivery of goods from a manufacturer to a buyer without passing through the retailer or dropship agents. The retailer or dropship agents are the ones who contribute in the generating, processing and marketing part of the sale. However, the major problems that can be foreseen in dropshipping are in the scope of interaction and the transaction process. The business parties might find it difficult to manage both personal and business interaction in a single application. In addition, the business parties would have to jump into several different websites to conduct a single transaction. Hence, a B2B e-marketplace to assist dropship agents and their suppliers for conducting business is proposed. The e-marketplace prototype (A&S.com) was developed by adapting the Waterfall model and was evaluated in terms of functionality and usability by three (3) expert users and thirty (30) other respondents.

Keywords: e-marketplace; dropshipping; agent and supplier e-marketplace; A&S.com

1. INTRODUCTION

In recent decade, autonomous dropship agent takes part in various e-commerce activities through tons of mediums provided on the net. The rapid and fast revolution of economic trends with inconsistent inflating and deflating currency value have now become the major concerns of the local citizens. Thus, many have taken the initiative to start-up their own business by becoming a dropship agent to various suppliers and promoting supplier's products on their page.

The efficiency of the agents is highly dependent on their supplier's efficiency as the suppliers control the inventory process [1].

Currently, there is no structured platform available for the dropship agents and their suppliers to conduct transactions and communicate. Most of the interactions happen through WhatsApp, Facebook, Twitter and Instagram. The risks of suppliers sending wrong items, size or address are still high because no specific system is used to generate versions of reporting in managing the quotations form. A preliminary survey has been conducted on 59 dropship agents and suppliers to gauge the need to a more structured way of communicating and completing order transactions between the dropship agents and the suppliers [1]. Findings from the survey are summarized in Table 1.

Table 1. Survey findings summary

Question	Response Percentage		
	Yes	Not really	No
As a start-up dropship agent, do you have any problem in searching for the right suppliers?	69.5%	18.5%	11%
As a dropship agent, do you have any trouble to instantly check the current stock amount of a particular product?	71.2%		28.8%
Would an auto-calculated quantity for the stocks amount be helpful to you?	96.6%		3.4%
Do you think that it is disturbing to have personal and business conversation in one single medium?	69.5%		30.5%
As a supplier, do you feel that it is hard to manage your dropship agents and respond to their message quickly?	71.2%		28.8%
Would a personal chat box be a helpful tool for you to manage business interaction?	91.5%		8.5%

2. REVIEW OF COMPONENTS FOR B2B E-MARKETPLACE

Similar existing systems are reviewed to gather information that are potentially useful for the development process. Five websites that have been analyzed are alibaba.com, globalsources.com, diytrade.com, indiamart.com and ioffer.com. The selected websites operate under Business-to-Business (B2B) e-commerce type and are using e-marketplace business model. The components of the e-marketplace are used to support front-end transactions and back-end transactions. The front-end transactions are defined as the presentation layers [2]. On the other hand, the back-end transactions involve the processing part of the system [3]. Table 2 summarizes the system's components in supporting front-end and back-end transaction.

Table 2. Components of Front-End and Back-End Transaction

FRONT-END	
Component	**Descriptions**
Index Page [4], [5], [6], [7], [8]	Index page is referred to as the main page of the website where the market participants will be navigated to upon clicking on the website link. The content of the index page usually has many graphical features to attract the customers and increase their stickiness to the website. The components of the index page include logos, search items, navigation, shopping cart icons, contact numbers, promotions, log in or sign up button and how to buy.
Search Engine Box [4], [5], [6], [7], [8]	Search engine box will be provided on the top corner of the index page. The purpose is to assist the market participants to manually search for specific information within the e-marketplace. The existence of the search box enables the market participants to be directly navigated to their desired products, suppliers or agents. Plus, these features will be less time consuming as it disintermediates several interfaces of the e-marketplace.
Customer Sign Up/ Log in form [4], [5], [6], [7], [8]	The Log in and Sign Up buttons are provided for the random users to register as a member and for the members of A&S.com to log in. Upon registration and when the Log in process is completed, the market participants will be able to perform certain functionalities that unregistered users cannot do. For instance, the purchasing or selling process cannot be completed if the users are not registered to the site. The purpose is to reduce the possibilities of fraudulence or scamming activities and to protect the security of the market participants.
Information of the Company Page (About Us) [4], [5], [6], [7], [8]	The information of the company page will include general information of the company. As an example, the information of the company such as the address, the company profile, their contact numbers and their locations on map. The information of the company's page can be used as a tool to convince people. According to [9], common approach in gaining user's trust is to use formal, stiff-and-starchy corporate-speak.
e-Catalog Page [4], [5], [6], [7], [8]	An e-catalog of list of goods for sale is displayed on computer screen. The market participants can order or place the goods that is available using a computer device. E-Catalog provides an additional channel for sales where clients can browse products and place orders 24/7/365 with no effort required from the market maker's sales force.
Product Page [4], [5], [6], [7], [8]	The product page is one of the most vital elements on a website. A product page is an essential element in an e-commerce website. According to [10], the goal of the product page is to act as the salesperson for the products or service. In addition, the product pages are the main key to drive the visitors to make the purchase. Example of the key elements required in the product page are the quality of the image, alternative views for the image, zoom feature, review of the consumer, product comparisons, live chat and product demos.
System Chatbox [4], [6]	A chat box allows the agents and suppliers to directly interact with each other. The interactions will be conducted using natural language to reduce formality. Within the online channel, the chat feature has become the leading contact source, as 42% of full-service customers uses a live online chat feature vs. email (23%) or another social media forum (16%). Moreover, online satisfaction is the highest among customers who use the chat feature.
Promotions Page [4], [5], [6], [7], [8]	[11] found that promotional and marketing strategies help your organization to utilize the skills of your employees and stakeholders and can help you develop creative approaches to sales and customer services. Promotional activities will also indirectly give the positive impact on the sales where it will trigger the sense of urgency to immediately make the purchase before the promotions ends.
Profile of Supplier and Agents [4]	The profile for the Suppliers and Agents that stores information about the individual users. The information stored may include names, addresses, phone numbers and may also include personal information such as social networking site password. Plus, the profiles of the Suppliers and Agents enable several users to work on the same computer with their own desktop setup. These features can tell the users which file and folder they can access as well as what changes they can make.
BACK-END	
Component	**Description**
Admin User Profile	The administrator user profile will provide a dashboard interface where most of the features that can be performed by the admin will be placed in a single webpage.
Transaction History List	The transaction history will record all of the transaction from the completed payment made by the market participants in the e-marketplace.
Agents and Suppliers List	List of agents and suppliers involved in the market.
Search Engine Box	The search engine enables the administrator to search for a particular market participant.

3. DEVELOPMENT OF THE B2B E-MARKETPLACE (A&S.COM)

A&S.com is developed by adapting the Waterfall Model. Five phases involved in the model are planning, analysis, design, development and testing & evaluation. Figure 1 illustrates the database design that is later implemented in the system development.
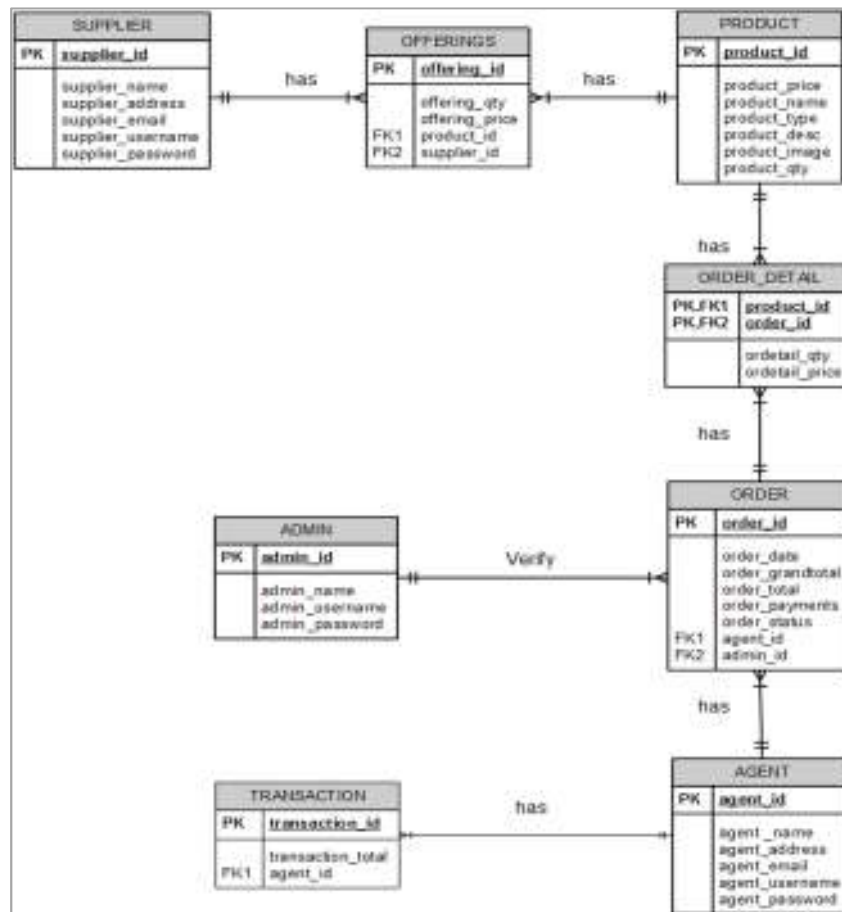
Fig.1. Entity Relationship Diagram for A&S.com

In Electronic Commerce, Dropship Agent & Supplier e-marketplace is categorized as Business-to-Business (B2B). An e-marketplace can either sell a specific product and service or act as a hub that sells a variety of products and services from miscellaneous sellers [12]. The administrator will monitor and control the content of the marketplace as well as the participants. A&S.com participants are dropship agents, suppliers and administrator. Figure 2 illustrates how these participants are interconnected to each other.
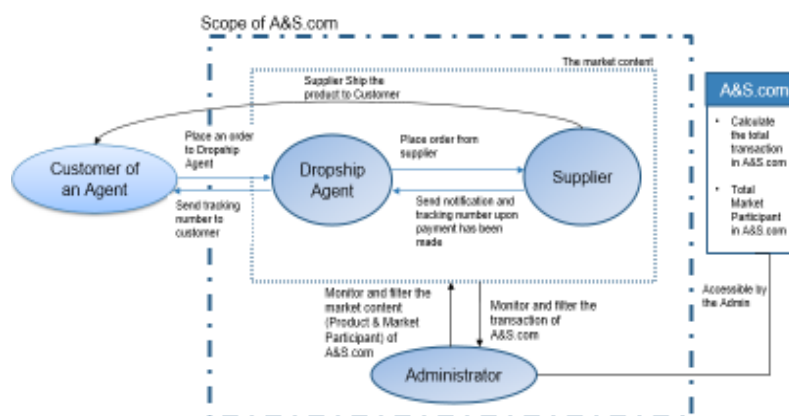

Fig.2. Conceptual Framework

The dropship agent would have to send contact request and must be approved by the supplier before being able to conduct any form of transactions. In addition, A&S.com has dashboard features for dropship agent that will show the information such as their previous order, supplier list, list of pending transaction and also their personal details. Figure 3 illustrates dropship agent dashboard. The supplier will be able to view the new contact request from agents, shipment reminders, product details, previous transactions and their agent list on their dashboard interface.
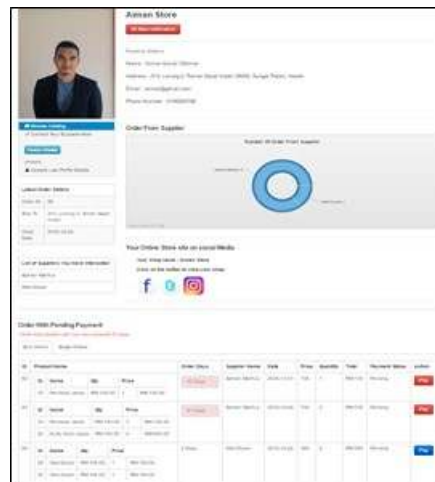

Fig.3. Dashboard for Dropship Agent

In addition, the shipment details for each of the product is also recorded in the system. A&S.com records the detail of each shipment which consist of the tracking number, shipment address, date, recipient's name as well as the sender's name. The recorded details are stored and are traceable for future references. A&S.com also provides suppliers with the analytic tools. Analytic tools allow the suppliers to view and analyze their overall performance in terms of sales. The data of the product's sales is presented in a line graph as well as bar graph which indicates the sales performance based on specific criteria such as monthly sales.

The role of administrator is to monitor and manage the supplier as well as the dropship agent in A&S.com specifically in terms of transactions, market content and the participants of e-marketplace. Figure 5 shows the notification and analytic tool features.

Fig.4. Shipment Form

Fig.5. Notification and Analytic Tool Features

4. RESULTS AND DISCUSSION

An evaluation process has been conducted to verify the e-marketplace prototype's functionality and usability. Functionality test is conducted by the developer and a tester. Test plan was used as an instrument to collect findings. The test plan contains list of functionalities available for the dropship agent, supplier and administrator in the system. Upon completion of the testing, the developer has made a conclusion that the system is well functioned and is ready to be tested by the users. The users can be classified into two distinct groups which are experts and other users. Expert users are the ones who have achieved certain milestones within their academic achievement, industrial exposure and specific knowledge in the related fields. Users on the other hand, are randomly selected from the dropship agents, suppliers as well as other potential users. There are three (3) expert users and thirty (30) users involved during the evaluation process of A&S.com.

Overall, the experts agree that the e-marketplace components for both suppliers and dropship agents are very helpful in terms of transactions, interactions and shipment processes. In addition, the experts have also agreed that the A&S.com is useful to the market participants in

terms of task accomplishment and job productivity. The user's interface format is also consistent, character reading on the screen is easy for the users and the error message on the A&S.com is very helpful to the users.

Furthermore, experts have validated that the system is easy to be learned and performing task is straight forward. In conclusion, the experts are satisfied with A&S.com and have agreed that the system fulfills the needed requirements. Overall, the users are also satisfied with A&S.com. The data are presented in the graph format which summarizes the data in six distinctive constructs. The feedback samples from the experts and mean of all constructs are depicted in Figure 6.
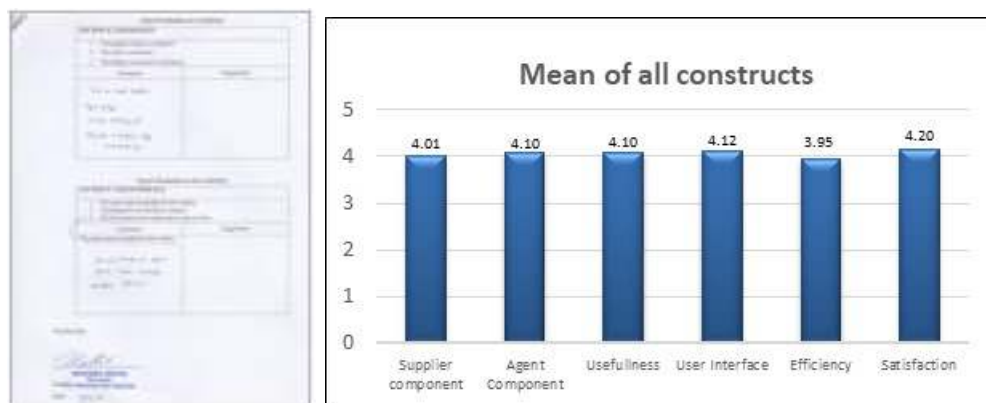

Fig. 6. Expert Feedback Sample and Mean Summary

5. CONCLUSION

A&S.com, a Dropship Agent and Supplier of B2B e-marketplace is still in its early stage. The reason for the development is to provide options to suppliers and their dropship agents to have a more structured platform to communicate and embark on business transactions. The problems faced in current business process involving disintegrated communication and ordering features are the driving force to the development of the e-marketplace proposal. The e-marketplace development has adapted the front-end and back-end components from various reviews on similar existing websites. The evaluation results have provided positive indicator to enhance the e-marketplace in the near future.

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