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Malang, November 27, 2014

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Sekolah Tinggi Informatika dan Komputer Indonesia

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November 27, 2014

Editors & Reviewers:

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GREETINGS

Head of Committee IC-Itechs

For all delegation participants and invited guest, welcome to International Conference on Information Technology and Security (IC-Itechs) 2014 in Malang, Indonesia.

This conference is part of the framework of ICT development and security system that became one of the activities in STIKI and STTAR. this forum resulted in some references on the application of ICT. This activity is related to the movement of ICT development for Indonesia.

IC-Itechs aims to be a forum for communication between researchers, activists, system developers, industrial players and all communications ICT Indonesia and abroad.

The forum is expected to continue to be held continuously and periodically, so we hope this conference give real contribution and direct impact for ICT development.

Finally, we would like to say thanks for all participant and event organizer who involved in the held of the IC-Itechs 2014. We hope all participant and keynote speakers got benefit from this conference.

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LIST OF CONTENT

CROWDSOURCING WEB MODEL OF PRODUCT REVIEW AND RATING BASED ON CONSUMER BEHAVIOUR MODEL USING MIXED SERVICE-ORIENTED SYSTEM DESIGN

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Abstract

The existence ofinternetdrives many consumer behavior changes. Purchaseonline(e-commerce) isgrowing rapidlyled tothe assumption ofbehavioral changesprior tomaking a purchase. Consumerbehaviormodelsare5phasesfromneeds identification, information search, alternative evaluation, purchase decision, andpost-behavior. This model is phasesof before and after purchase includingonlinepurchasing behavior. Product informationhas spread on the internetin the form ofblogs, web commerce, orother. Buyer candidate needa lot of timetosearch product informationfrom previous users. Therefore, we need web as a bridge that canbring togetherthe information from experiencedusers and the need of product from buyer candidate.

The concept ofcrowdsourcingis the right solutiontobethat bridge web.This studyaimedtofindthe crowdsourcingmodelof productreview andratingbasedon consumer behavior model. Research methodsinclude surveys, interviewsand literature studies. Results ofthe research is acrowdsourcingmodel ofwebof product reviewandrating using the concept ofa mixedservice-orientedsystem.This conceptis a blend ofSoftware-Based Services (SBS) and Human-Provided Services(HPS). The design ofthis model can be appliedin the developmentof web-based crowdsourcing.

***Key Words**: crowdsourcing, product review, product rating, consumer behaviour.*

1. Introduction

The Internet has a huge influence on many things. One of these change is the behaviour of the purchase. Consumer behaviour model is not changing in the internet era, but the change is on the medium and the method used in purchasing behaviour itself. In this internet era, they used internet to look for the product information rather than the conventional way.Buying process based on the existence of a costumer need that has not been fulfilled. According consumer behaviour model, there are 5-phase buying behaviour. They will find a lot of things to consider before making a purchase. It is based on consideration of the search process and compliance considerations before choosing and buying products.The buying decision based on the information gathered and the result of product selection.Product information distributed throughout the internet in the form of blog, web commerce, or other. To understand the product, buyer candidate should read the specs, features, comments, reviews, and more. It will be a complicate process. the buyer candidate will spend more time to select the products. Buyer candidate need to explore the information from the experienced user and compare its manually. Therefore, a portal needed that can bridge the information needs from experienced users and the need of candidate buyer to search and compare. Internet allows a medium to bring together people who have experience of use and people that will make a purchase. The concept ofcrowdsourcing is becoming very appropriate as a method to solve this problem. At issue is what kind of crowdsourcing model can be a workaround for the person whowill make the purchase of the product.

2. Research Method

Research methods used are as follows.

a. Online survey: system for collecting information through internet.
b. Interviews (face-to-face interviews, telephone interviews, computer-assisted interview) : Un-structure interviews, structured interviews, and reviews through existing sources of information will help us to narrow the broad problem area and to define a specific problem statement.
c. Literature Review: a step-by-step process that involves the identification of published and unpublished work from secondary data sources on topic interest, the evaluation of this work, in relation to the problem, and the documentation of the work. A survey of the literature also facilitates the creative integration of the information gathered from the structured and unstructured interviews with what has been found in previous studies.

3. Theoritical Framework

3.1 Need Analysis

The problems encountered by the buyer are to explore the web in order to get an overview of all the products to be purchased. It will require time a very much. To be able to build a model, then it needs to be understood about consumer behaviour model. The following is the model of consumer behaviour in making a purchase (Fig. 1)

Fig. 1Five Stage Model of Consumer Behaviour(Kotler, 2006)

a. Problem Recognition.
The initial stages is recognizing the problem needs as a matter of necessity to be met by the buyer. The introduction of the issue is knowing the difference between expectations and current conditions.

b. information searching
Pre-purchase search include activities seeking information on where consumer search behaviour refers to all actions taken the consumer to identify and obtain information about product information. There are two types of search process: internal and external search. Internal search is an attempt to call the consumer back long-term memory of the product or service . The external search isa search covering the acquisition of information from outside sources, such as friends, advertising, packaging, "Consumer Reports" and sales personnel.

c. Alternative Evaluation and Choice
At this stage of the evaluation process of the acquisition of alternative or acquisition, consumers compare selections are identified as a way that is potentially capable of solving the problems that led to the decision.

d. Purchase Decision
Candidate buyer choose the product to buy.

e. Evaluasi Pasca Akuisisi
Post acquisition process (post acquisition) refers to the post-election evaluation of consumption, consumers generally express satisfactionor dissatisfaction over consumer purchases.

3.2 Crowdsourcing model

Crowdsourcing has emerged as an important paradigm in human problem solving techniques on the web. More often than noticed, program outsource task to human which are difficult to implement in software. Service-oriented crowdsourcing enhances these outsourcing techniques by applying these principles of service-oriented architecture (SOA) to the discovery, composition, and selection of a scalable human workforce. (Schall D. , 2012)
Service-oriented architecture (SOA) is an emerging paradigm to realize to extensible large-scale systems. As interactions and compositions spanning multiple enterprises become increasingly commonplace, organizational boundaries appear to be diminishing in future service-oriented system. In such open and flexible enterprise environments, people contribute their capabilities in a service-oriented manner. Mix service-oriented system (Schall D., 2011)based on two elementary building blocks: (i) Software-Based Services (SBS), which are fully automated services and (ii) Human-Provided Services (HPS) (Schall D. , 2008) for interfacing with people in flexible service-oriented manner. (Schall D. , 2012)

A motivating scenario for discovering members of the crowd in process-centric flows is despicted in Fig. 2. The scenario can be seen with the following line:

1. The process flow maybe composed of single task that are either processed by corresponding web services or are assigned to responsible persons. In this scenario, a task (task D) may be outsourced to the crowd.
2. This is done by preparing a request for support (RFS) containing various artefacts to be processed by the crowd and additional metadata such as time constraints and complexity of the task.
3. Step in crod flow (CFL) crowdsourcing:
   a. Discover a suitable Human Provide System (HPS),
   b. Select a suitable Human Provide System (HPS).

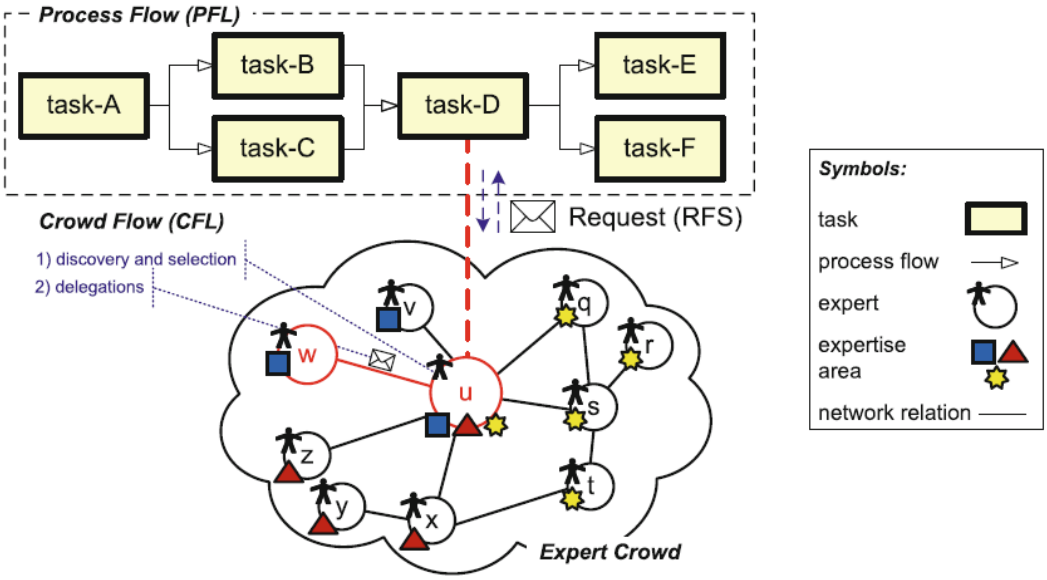

Fig .2 Utilizising crowdsourcing in process flow (Schall D. , 2012)

3.3 Review Process

In the pre-knowledge-based economy, the purpose of education was to reduce illiteracy so that citizens could become contributing members of the society. However, in the present-knowledge-based economy, education has taken on a new dimension because of the pervasive presence and influence of information technology (McNaught, 2006). Information technology made the flow of information or knowledge increasing heavily.

The distinction between information and knowledge is central to understanding the meaning of information literacy, and the relationship between information literacy and elearning. The model that is described is based on that developed by the American Association for school librarians (AASL) and moves information literacy into a place beyond that information retrieval and evaluation. The model emphasizes that and information literate person actively uses information to further personal learning and growth with respect to all facets of her life or his life, and also is an active and participatory member of human society (McNaught, 2006).

4. Result And Discussion

4.1 Need Analysis

To know the behaviour of the buyer before making a purchase online, then conducte dan online survey of the market. Implementation of surveys done to 1000 respondentsin Indonesia. This Survey is aimed at knowing the behaviour with regard to the plan ofpurchases over the internet. This identification is based on the consumer behaviour model. Some description of the behaviours that are obtained from the thesurvey are as follows.

1. The level of product search before buying, 83% often, 17% sometimes, and 0 never.
   This shows that the market is going through a small observation and search products that are needed. All respondents said it will look for the product before making a purchase.
2. Source of information search products: 41% internet, 24% friends/brother/colleagues, 18% print media, 13% television, 3% Radio, and 1 percent.
   Information used came from the internet sources, a friend/relative/colleagues, print media, television, radio and others. Most media which is used in the search product information is derived from the internet. This can be understood cause of the growing of internet use and the number of channels which is very easy to find product information.
3. Place to look for the products: 25% e-commerce web, 24% web ad, 24% blog, 14% web sport equipment, 9% web product, 3% web music equipment, and 1 percent, other
   Only 9% of those using the web product review because not many of these media in Indonesia. So the information they get is largely from selling online and advertising web.
4. Motivation to search products: 34% for decision making in purchasing better, 24% are looking for alternative product pricing consideration, 23% due to a limited budget, a17% increase satisfaction for purchasing , and 2% other.
   The primary motivation in doing a product search is for a purchase to be made. They hope to make a purchase that is better and more satisfactory. In addition, they also conduct a search to find alternative products because of some other considerations such as price, and others. They require the information to compare different products and find out information on the experience of others.

Based on the survey results, the conclusion that can be drawn is that the market requires external information from experience after using the product as a consideration of selecting products to be purchased. The existence of the internet which provide ease in building a medium of communication between users of experience and buyer candidate.

4.2 Mapping Activity to the model

The right Model to assist the establishment of the communication media is a model of crowdsourcing. Internet-based crowdsourcing model will allow for the sharing and the sought information markets. Thus, it will help to select the products needed. Mapping of consumer activity in media crowdsourcing as follows.

Table 1 Crowdsourcing Review Model Need Analysis

Phase	Use	Experience User	Buyer
Need/Problem identification	-	Internal search	
Information Searching	✔		• Seek appropriate product category • Looking for a specific product
Alternative Evaluation	✔		Select and compare product in which • Product alternatives in a same category • Alternatives based on expert user • Considering product from review and rating
Buying (making decission)	--	Internal search	
Evaluation After Sales	✔	• Give product Review • Give product Rating • Give the recommendation or not	

Generally, crowdsourcing needed in order to:

1. Looking for the product,
2. Comparing the product alternatives,
3. And reviewing the product after used.

Reviewing experience will be used to looking for between the alternatives. Experiences of others will help buyer candidate before buying.Therefore, Crowdsourcing is becoming the perfect solution for helping the market before making a purchase.

4.3 Proposed Model Designbased on Crowdsourcing

Based on the study of literature and information from the survey results, thecrowdsourcing model reviews and rating is as Fig. 2.

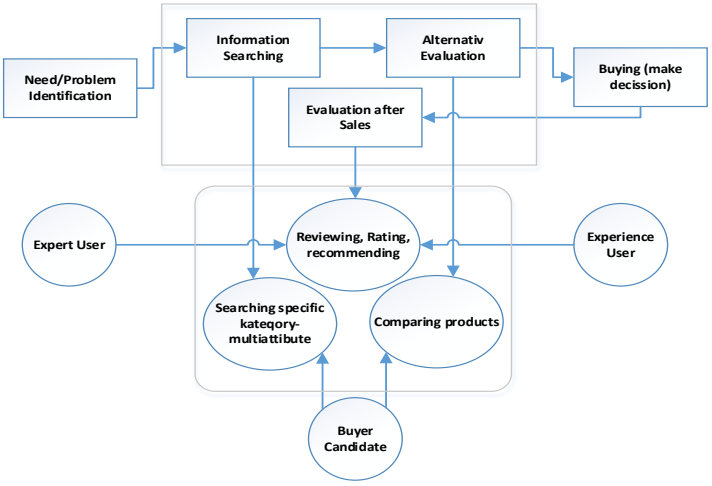

Fig. 2 Crowdsourcing Model of Product Review and Rating

Following process that share to community are:

1. Experience user: Reviewing, Rating, Recommending product
2. Expert critic: review dan rating from the expert
3. Buyer Candidate: looking for the products and comparing product alternatives

Shared process that shared to community will be functions of web portal. That process can be a help for buyer candidate for selecting product. Experience user will give review as qualitative assessment and can give rating as quantitative assessment to the product. Quantitative assessment can be used to compare products in a same category.

5. Conclussion

According to the research above, there are many conclusion to be taken.

1. Phases that used from consumer behaviour model to be outsourcing are information searching, evaluation the alternatives, and post-purchase behaviour.
2. Crowdsourcing concept can be used as information stored from experienced user to buyer candidate.
3. Community of this web-product review and rating involved experienced user, buyer candidate, and expert user.
4. Three phases in point 1 will outsource the function of reviewing, rating, and recommending; searching specific product category, and comparing the product.
5. The function can be developed as web-product review and rating to help buyer candidate finding the product information before buying.

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