FORMULATION OF SIMPANGDAGO.COM WEBSITE DEVELOPMENT PLAN USING MULTIDIMENSIONAL APPROACH FOR WEB EVALUATION

Farid Aulia Tanjung and Wawan Dhewanto
School of Business and Management
Institute Teknologi Bandung, Indonesia
farid.aulia@sbm-itb.ac.id

Abstract—The rapid growth of the Internet in Indonesia is creating rapid growth in e-commerce industry. In 2011, internet users are 68,5 million or around 25% of Indonesian population. In general, the average transaction per online users in Indonesia has reached US$ 68,3/year or US$ 5,69/month. Based on average transaction per user, Indonesian e-commerce industry predicted to continue to grow in line with growth of Indonesian internet users. Simpangdago.com created to be a part of rapid growth in Indonesia e-commerce factor. Using corporate strategy analysis, it can be identified that they need product development as corporate strategy. Development strategy is formulated using multidimensional approach for web evaluation based on web user satisfaction. Method that implemented in web user satisfaction is questionnaire survey. Target respondent, which is majority young people, is filled some question which constructed to identify satisfaction level. Result from survey is analyzed using multidimensional approach that consists of usability testing and user feedback. A main goal from analysis is identify innovation areas of opportunity to increase user satisfaction and create competitive values of company. Final result of this study is set of recommendation that should be implemented by Simpangdago.com to improve company performance. Recommendation consists of web concept formulation and web features formulation that needed to modify in web system.

Keywords: corporate strategy, web user satisfaction, muldimensional approach, usability testing, user feedback.

1. Introduction

The rapid growth of the Internet in Indonesia is creating rapid growth in e-commerce industry. In 2011, internet users is 68,5 million or around 25% of Indonesian population. In general, the average transaction per online users in Indonesia has reached US$ 68,3/year or US$ 5,69/month. Based on average transaction per user, Indonesian e-commerce industry predicted to continue to grow in line with growth of Indonesian internet users. Growth of e-commerce encourage many entrepreneurs and business creative person to innovate and create many model of services for customers in order to attract and satisfy market needs. Overall, there were 2 models of e-commerce website that known to the public as a place to trade: online store, and buy/sell website. Differences of each model lies in the management. Online store manage processes from product comes into delivered, while buy/sell website just create website to facilitate everyone sell products into their website.

In order to survive in e-commerce industry, Simpangdago.com, online store from Bandung, plans to create a new e-commerce format that suits the needs of the market. This company has launched in July 2012 but have difficulty in penetrating the market. Lack of human resources and capital to force them to make changes to the website, from online store into buy/sell websites or another innovative format, in order to create a system that doing business processes more effective and efficient.

Development of new web models is targeted to be customer oriented and focused on simplicity, both of users and systems. Web architectures for users will be identified using web evaluation method for customer satisfaction using multidimensional approach which scoped from different areas of web system. This new model will be implemented in 2013 and company management will be updated in order to achieve a better performance.

2. Business Issue Exploration

Figure 1. Conceptual Framework

Before developing a website development plan, it is necessary to determine feasibility of company's idea to launched new web system. Feasibility can be determined by external analysis using PESTEL (Political, Economical, Social, Technological, Enviromental, and Legal) and internal analysis using Organizational Capability Profile. This analysis resulting set of strategies which are corporate strategy that should be implemented.

2.1. Business Strategy Feasibility
2.1.1. External Factor Analysis Summary
External Factor Analysis Summary is analyzed using PESTEL analysis with the following result.
Political
- Government initiatives to increase tax limit.
- Online trading new regulation in 2013.
- Commitment to achieve 5,1% unemployment rate in 2014.
- Commitment to accelerate ICT infrastructure improvement.

Economic
- Stable economic growth and inflation rate.
- Growth of online transaction.
- Development of IT Infrastructure by National Broadband challenge.
- Initiatives to build IT entrepreneurship development.

Social
- Better welfare and education of Indonesian people.
- Increasing of goods and services consumption.
- Median age structure.
- 62,9 million Indonesian internet subscriber.
- Digital trends (1 of 3 young people is connected with internet.)
- 6% of internet users had been done online shopping.

Technological
- Significant development of cloud technology and CRM.
- Mobile and video era.
- Significant improvement of payment gateway facility.
- Emerging of augmented technology and voice assistant technology.
- Demand for same day delivery.

Environmental
- Prediction of ecological disaster in Indonesia.

Legal
- Stricter enforcement-related exchange of information, documents, and online trading.

2.1.2. Internal Factor Analysis Summary

Internal factor analysis is used from internal company data interview and summarized in the follorwing result.

Marketing
- Pricing strategy is not effective.
- Merchant has unique products with strong positioning in customers.
- Effective promotional activity to market segment.
- Low intensity of promotional activity.
- Unintegrated marketing communication.

Operational
- Robust and attractive web system.
- Development of new web features and services.
- Development of new website features running very slow.
- Stocks can not be monitored and controlled.
- Dependency in delivery processing.
- Limited capacities of web system.

Human Resources
- Solid teamwork with distributed workload and skilfull personel.
- Cannot be able to pull out the best of each personell.
- Good company relationships with strategic places.
- Shortage of personnel for web development team.
- Corporate culture has not formed.

Financial
- Lack of funds as capital for business development.
- Profit margins are low that it is difficult to save cash to played back for transaction management.

2.1.3. SWOT Analysis

In this study, SWOT analysis is formulated using variable that included in PESTEL analysis as opportunities and threats, meanwhile organizational capability profile as strentghs and weaknesses.

SWOT analysis is expected to identify impact level of each level that can be used into corporate strategy formulation. Result of calculation from each factors in SWOT is depicted in following result.

Table 1. SWOT Analysis Weighted Score

Factor	SWOT Analysis		Total Weighted Score
External Factor	Opportunities	Threats	2,74
Internal Factor	Strenghs	Weaknesses	1,99

2.1.4. Corporate Strategy

Corporate strategy can be identified using internal-external matrix as shown in figure 2.
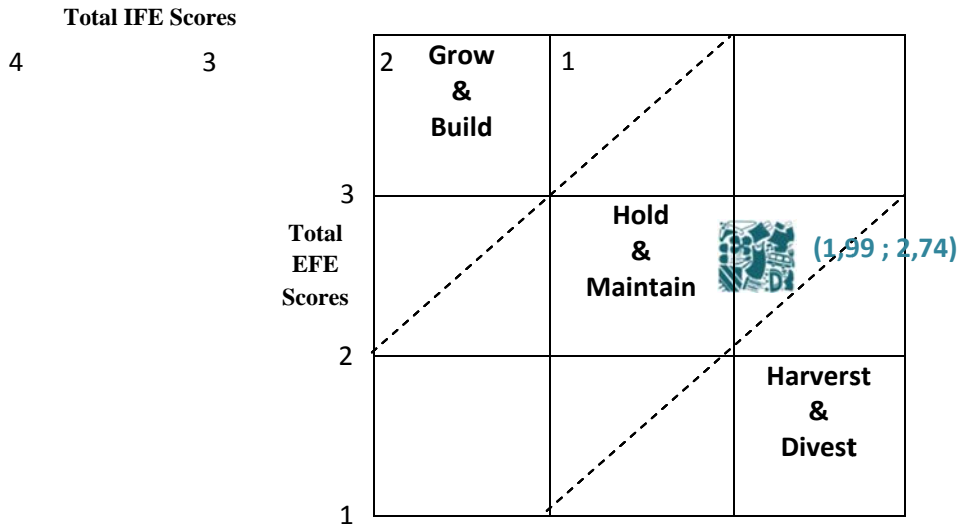

Figure 2. IE Matrix of Simpangdago.com

IE Matrix showed that hold and maintain strategy is the most suitable strategy to be implemented during this situation and condition. While using hold and maintain strategy, suggested corporate strategy that need to be implemented are market penetration, and product development. Using Ansoff matrix, most optimal strategy that should be implemented for Simpangdago.com can be identified as the following result.

Table 2. Ansoff Matrix for Simpangdago.com

	Current Products	New Products
Existing Market	Market Penetration	Product Development
New Market	Market Development	Diversification

Based on the result, Simpangdago.com recommended to do product development as corporate strategy. It is indicating that company decision to do product development is the feasible and right thing to do.

2.2. User Feedback Analysis
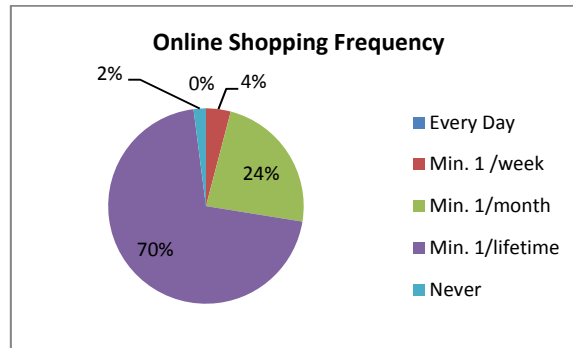### 2.2.1. User Profile Analysis

Figure 3. User Profile Result

As much as 70% of respondents has been tried shopping online at least once a lifetime and 2% respondents had never doing shopping online. Results showed 24% of respondents have made online shopping routine per month which indicates there is a group of respondents who routinely shopping online. These results indicate that online shopping system is currently only a routine requirement for a group of people and it takes the format of e-commerce the right to increase the frequency of online shopping.

2.2.2. Demographics Analysis

Figure 4. Demographic Result

Majority of respondents shopped in buy/sell forums (67%), and followed by social media (51%). These results indicate respondents prefer shopping online and connect with your fellow shoppers may interact with other buyers. Social activities that are likely to buy more for the needs of the respondents.

2.2.3. Satisfaction Analysis

Satisfaction of Shopping Online

5%	0% 4%
39%	
	52%

■ Very satisfied
■ Satisfied
■ Indifferent
■ Unsatisfied
■ Very unsatisfied

Comfortness Rate in Using E-commerce Web

0% 3%	3%
37%	
	57%

■ Very comfort
■ Comfort
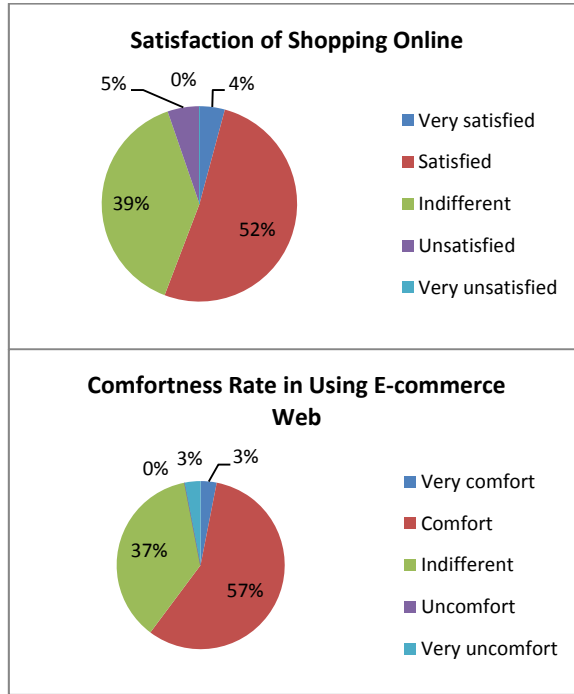■ Indifferent
■ Uncomfort
■ Very uncomfort

Figure 5. Satisfaction Result

As many as 52% of respondents claim to be satisfied online shopping. These results showed a good acceptance by the respondents to the online shopping there are in Indonesia. 4% of respondents admitted very satisfied online shopping. Results comfort level e-commerce web access does not vary much with the percentage rate of online shopping. Some 57% of respondents claimed to comfortably access the web e-commerce, and 3% of users are very comfortable accessing web e-commerce.

2.2.4. Use and Impact Analysis

Accessing E-commerce Web Reason

■ Respondents

want to shop specific product	79%
finding information of…	57%
looking at new or…	57%
looking at brand product…	31%
find while googling	23%
interested friend…	23%
just curious	11%
interested in web/blog…	10%
doing research	7%
interested from media…	5%
others	2%

Figure 6. Use and Impact Result

Online Shopping Decision Factor

■ Respondents

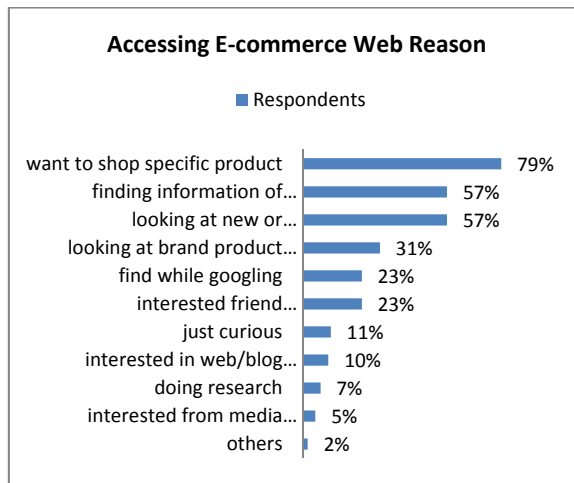| Factor	Percentage
practical and fast	68%
cheap prices	64%
trusted reputation	42%
product only available…	34%
promotional offering	32%
free delivery charge	26%
after seeing product…	22%
helping work	18%
satisfactory services	17%
just trying	9%
populer brand in online	9%
others	2%

As many as 79% of respondents access the e-commerce web shop because they want a particular product. Meanwhile, 57% of respondents access the e-commerce web because they want to see the latest items or discounts and 57% of respondents would like to find for specific product information. Results showed that in order to meet the needs of users, web e-commerce should be able to have a collection of products that the user liked or needed as a prerequisite. In addition, the new collection and discounts, as well as detailed information on specific products must be met in order to meet the user access patterns of e-commerce web. As many as 68% of respondents claimed to shop online because it is practical and fast. While 64% of respondents shop online for cheap prices. Online web store system is practical, simply with a click, making it encourages users to shop online. Trading forum format makes many sellers can join in online web store with a wide variety of products and prices. This makes buying and selling forum format is very appropriate to be applied to e-commerce in Indonesia given the factors causing online purchases in Indonesia are related to low prices.

2.3. Usability Testing Analysis

Based on multidimensional approach, usability testing analysis were divided into 4 areas:

1. Design
2. Navigation
3. User friendliness
4. Functionality

Usability analysis is done by asking questions on the 5 point Likert scale questions related parameters analysis design, navigation, user friendliness, and functionality. Usability analysis results will be used in the next section is combined analysis of dimensional structure in accordance Guidelines and Standard Human Computer Interaction (Guidelines and Standards for Web Usability, Nigel Bevan, 2005). Result of analysis could be references for company to determine main features that need to be developed or need to be discarded because did not have significant impact. Usability testing parameter is described in question number as listed below.

Table 4. Usability Testing Result

No	Question	Average Score	Validity Test	R Table Score
6.1	Layout dan Graphics	3,28	0,482	0,361
6.6	Product Collection	3,88	0,518	0,361
	Design Average	**3,58**		

No	Question	Average Score	Validity Test	R Table Score
6.9	Security and ease of transaction	4,11	0,508	0,361
6.10	Payment method	3,88	0,520	0,361
	Navigation Average	**3,99**		

No	Question	Average Score	Validity Test	R Table Score
6.3	Mobile Access	3,03	0,419	0,361
6.8	Customer services	3,49	0,609	0,361
6.9	Security and ease of transaction	4,11	0,508	0,361
6.10	Payment method	3,88	0,520	0,361
	User Friendliness Average	**3,63**		

No	Question	Average Score	Validity Test	R Table Score
6.2	Data Security	3,66	0,478	0,361
6.4	Price	4,11	0,396	0,361
6.5	Discount and Gift	3,32	0,398	0,361
6.6	Product Collection	3,88	0,512	0,361
6.7	Brand Partner	2,92	0,610	0,361
6.9	Security and ease of transaction	4,11	0,508	0,361
6.10	Payment method	3,88	0,520	0,361
	Functionality Average	**3,70**		

2.4. Web User Satisfaction Analysis

Development plan of Simpangdago.com is focused on features that can be improved and differentiated from existing e-commerce in Indonesia. It can be formulated using depth analysis of usability testing

which known as dimensional structure for web user satisfaction. Question 7, 8, 9, 10, and 11 is conducted to solve formulation of dimensional structure for web user satisfaction. Dimensional structure for the web user satisfaction is related dimensional structure developed web usability. In this study, the dimensions of language are not included as variables examined through a questionnaire related to the use of the website is limited to areas in Indonesian language. Dimensional structure on the part of the study consisted of a Layout, Information, Connection. The data processing is divided into 3 parts: processing index average (using a 5-point Likert scale), the influence of processing scores, and processing scores expectations.

Table 5. User Satisfaction Result

Layout Average	3,59
Information (Relevancy) Average	3,87
Information (Accuracy) Average	3,89
Information (Computability) Average	3,85
Information (Comprehensiveness) Average	3,89
Connection (Ease of Use) Average	3,18
Connection (Structure) Average	3,37
Connection (Speed) Average	3,41
Connection (Entry Guidance) Average	3,43

Table 6. Features Influence and Expectation Score Result

Features	Influence Score	Expectation Score
Price nego	2,57	2,27
Promotion	2,43	2,20
Product collection	2,75	2,73
Free shipping	2,39	2,14
Contact center (email)	1,79	2,06
Contact center (chat)	2,15	2,17
Handle of complaint	2,11	2,01
Navigation	1,69	1,73
Speed of access	2,26	2,04
Rate dan review	2,17	2,07
Login	1,61	1,78
Credit card payment	1,67	1,84
Paypal payment	1,52	1,72
Connect social media	1,65	1,76
Mobile version layout	1,55	1,72

2. Business Issue Exploration

Methodology Development

Formulation of Simpangdago.com development plan will be synthesized from previous data and analysis. Focus of methodology is new website models for simpangdago.com. Detail steps that will be taken to formulate development plan describing in figure 7.

Figure 7. Methodology Development

1.1 Priority Follow Up Matrix

Priority follow up matrix is tools that designed to help identify correlation between factors and impact on web user satisfactions. There are 4 steps that can be summarized by using priority follow up matrix:

1. Maintain or improved.
2. Top priority.
3. Status quo required.
4. Monitoring.

Following table describes the relationship between web usability evaluation with web satisfaction dimension structure based on score and impact. It will be used in formulating follow up action.

Table 7. Relationship of Web Usability Evaluation and Web Satisfaction Dimension Structure

Score	Impact
Dimensional Structure	**Usability**
Layout	Design
Connection (Structure) Connection (speed)	Navigation
Connection (Easy of use) Connection (Entry guidance)	User friendliness
Information (Relevancy) Information (Accuracy) Information (Computability) Information (Comprehensiveness)	Functionality

By using a 4x4 matrix prioritize follow-up, the relationship dimensional structure and usability yield spreads as figure 3.2. Limit point of the matrix is the expectation value of the expected. This questionnaire using 5-point Likert scale and the expected threshold is important scale on average. Therefore, the threshold used for the use of this matrix is 3.4.
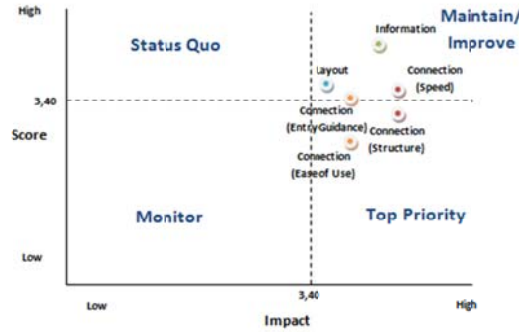
Figure 8. Matrix Prioritize Follow-up for Relationship of Dimensional Structure and Web Usability

Recommendation from a 4x4 matrix prioritize follow-up are listed in the following table.

Table 8. Web Usability Matrix Prioritize Follow Up

Recommendation	Information	Dimension
Top Priority	Repair and create differentiation	Structure Ease of use
Maintain/Improve	Maintain, improve if necessary	Layout Relevancy Accuracy Computability Comprehensiveness Speed Entry guidance

Same with the previous result, priority follow up action is used again in identifying recommendation for features. By using a 4x4 matrix prioritize follow up on each feature listed in the questionnaire based on the value of the impact and influence of the expectation value as a score (questions 8 and 9), the obtained details on the policies adopted by the entire web development features to plan new e-commerce as the picture below.
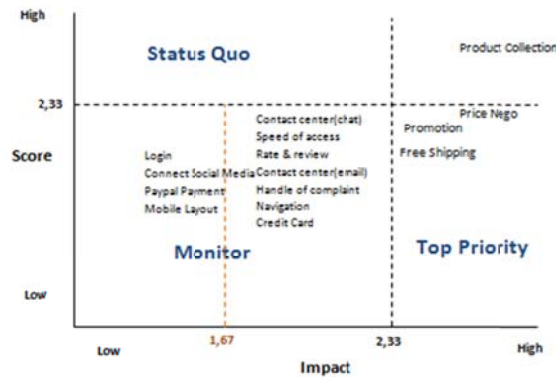

Figure 9. Matrix Prioritize Follow-up for Features Analysis

Threshold in Figure 3.3 are on a scale of 2.33 due to the questionnaire consists of 3 choices. Recommendations for each of the features listed in the following table.

Table 9. Features from Matrix Prioritize Follow Up

Rec.	Information	Dimension
Monitor	Perform regular monitoring to detect changes in the dimensions of the market impact.	**Impact > 1,67** Contact center(chat) Speed of access Rate & review Handle of complaint Contact center(email) Credit card Navigation
		Impact ≤ 1,67 Login Connect social media Paypal payment Mobile layout version
Top Priority	Repair and create differentiation	Promotion Free shipping Price nego
Maintain/ Improve	Maintain, improve if necessary	Product collection

1.2 Features Selection

Features for web development is selected by including maintain/improve and top priority recommendation, and eliminating the less significant impact features. Features that should be eliminated is features that has significant impact less than 1,67, and did not linked with connection (structure) and connection (ease of use) factor in web usability. The recommendation of features that has significant impact less than 1,67 is listed as follow.

Table 10. Recommendation List for Less Impact Features

No	Features	Impact Score	Connection Feature	Rec.
1	Connect social media	1,65	Yes	Repaired
2	Login	1,	Yes	Repaired
3	Paypal payment	1,61	Yes	Repaired
4	Mobile version layout	1,55	Yes	Repaired

Features that included in top priority should be improved and becoming key added features that could be competitive value of Simpangdago.com. Meanwhile, features that categorized as monitoring but not included in table 3.5 should be maintained since it still had impact although not significant. Detail results for simpangdago.com recommendation features are listed as follows.

Table 11. Detail Results for Simpangdago.com Recommendation Features

No	Features	Recommendation
1	Price nego	Improved
2	Promotion	Improved
3	Product collection	Copied
4	Free shipping	Improved
5	Contact center (email)	Copied
6	Contact center (chat)	Copied
7	Handle of complaint	Copied
8	Navigation	Copied
9	Speed of access	Copied
10	Rate dan review	Copied
11	Login	Repaired
12	Credit card payment	Copied
13	Paypal payment	Repaired
14	Connect social media	Repaired
15	Mobile version layout	Repaired

1.3 Website Development Plan

New simpangdago.com web concept can be formulated based on user feedback and recommendation from usability testing. Since questionnaire had included user demographics and user satisfaction question identification, user feedback variable can be summarized to formulate new web concept with variables as state below.

Table 12. Variable Collected from User Feedback Result

Variables	Best Results
Online shopping place	- Buy and sell forum (67%) - Social media (51%)
Access tools for online shopping	- Laptop (82%)
Reason for shopping online	- Below market price (56%)
Uncomfortness factors	- Product quality not like in a picture (61%) - Complex navigation (58%)

Result of web concept formulation using this two analysis tools shown in following table.

Table 13. Web Concept Fomulation

Requirements	Connection (structure)	Connection (ease of use)
- Buy and sell forum - Social media	Web facilitating users to buy or sell	Web have many customization with ease of use.
- Laptop	Web should be running smoothly in all browser	Web should be easily to access and does not have many additional information
- Below market price	Web must easy to access and give many advantages for seller to manage their product	-
- Product quality not like in a picture - Complex navigation	Web is interactive with simple navigation	Users can be easily update and manage content

Features is improved to give great experiences for users. Based on method that used in this study, features that recommended to improve is feature that has a good influence score but has medium or low expectation score. Set of specific action plan that need to be taken in improving each features is described in following table.

Table 14. Improved Web Features Plan

Features	Improved Plan
Price nego	• Buyer can decide whether they want to open nego or not. • Creating button (similar like) called 'buy'.
Promotion	• Create button/menu to facilitate customer reporting annoying seller. • Create 'resell' button to help buyer get their products spread by worth of mouth.
Free shipping	• Create group seller where users can offered another users to manage business operation in different places.

Besides improved features, it need to do repairement for features that recommended to be repaired. Repairement formulation can be joining two features into one functionality, copying from websites outside e-commerce, or proposing new solution that can fixed current features problem. Specific action plan for repaired features is described in following table.

Table 15. Repaired Web Features Plan

Features	Repaired Plan
Connect social media Login	• Joining features so users have to login using social media without filling additional form that take a much time.
Paypal payment	• Create multiple payment method including paypal as the latest option. • Joining Indonesian paypal partner which creating payment gateway that connected with Indonesian bank.
Mobile version layout	• Creates apps version that only has main features inside website.

References

AVN Research (2009). The Channel Marketing Guide. United Kindom: AVN Research

Brooks, F. P (1987),; "No Silver Bullet / Essence and Accidents of Software Engineering," United States: IEEE Computer.

Burns A, Burns R (2008),; "Basic Marketing Research (Second ed.)," New Jersey: Pearson Education

Hunger J.D, Wheelen T.L (2004),; "Strategic Management," United States: Prentice Hall.

Lang M (2001),; "Issues and Challenges In The Development of Hypermedia Information Systems," Ireland: National University of Ireland..

Muylle S (2004),; "Information and Management 41," United States: Information & Management..

Muylle S, Moenaert R, Despontin M. (2003),; "The Conceptualization and Empirical Validation of Web Site User Satisfaction," United States: Information & Management..

Siegel E.R, Wood F.B. (2007),; "Customer Satisfaction and Performance Metrics," United States: US National Library of Medicine..

Siegel E.R, Wood F.B. (2003),; "A Practical Approach to E-Government Web Evaluation," United States: Information Technology Professional.

U.S Departement of Health and Human Services, U.S General Service Administration (2006),; "Research Based Web Design and Usability Guideline," United States: U.S Departement of Health and Human Services, U.S General Service Administration