

PERCEIVED INFORMATION SECURITY, INFORMATION PRIVACY, RISK AND INSTITUTIONAL TRUST ON CONSUMER'S TRUST IN E-COMMERCE

by:

Frane Maorets Parengkuan

Faculty of Economics and Business,
International Business Administration (IBA) Program
University of Sam Ratulangi Manado
email: franeparengkuan@yahoo.com

ABSTRACT

E-commerce is widely being used in nowadays generation where the business entrepreneur from small to large institution, has widely taken advantage on the internet to promote business and deliver information about their product. Consumer trust is an important aspect of e-commerce, and understanding its antecedents and consequences is a prime concern. This research designed to find out the influence of Perceived Information Security, Privacy, Risk and Institutional Trust on Consumers Trust in E-Commerce at Manado. The location of this research took place in Manado and focused on the people who do online shopping or e-banking as their tools. The method used to analyze the data is the Multiple Regression Analysis which enables the researcher to analyze the influence of the independent variables to the dependent variable, which is Consumer Trust in E-commerce. The independent variables in this research are Perceived Information Security, Information Privacy, Risk and Institutional Trust. While the sample size are 100 respondents who have ever buy or exchange product thru internet. The result of this research shows that there is significant simultaneous and partial influence of Perceived Information Security, Privacy, Risk and Institutional Trust on Consumers Trust in E-commerce. Therefore, to enhance the Consumer Trust in E-commerce at Manado these are the proponents should be considered intensively.

Keywords: *perceived information security, consumer trust, e-commerce*

INTRODUCTION

Research Background

The growth of internet nowadays is unpredictable and the advantage of this technology can be seen in providing fast and more convenience way in performing daily activities. The true potential of Internet technology is now being exploited at a higher rate as a medium of selling and purchasing goods and creating a new economic ecosystem and electronic market place where it becomes the virtual main street of people around the world. Therefore, there is also a gain in initiative to get more number of people that will engage and placing more interest in this virtual electronic market place. The requirement for trust is mainly results from the existence of risk in the viral transaction environment itself and it is most agreed that e-commerce can achieve a wide success if general public trusts the virtual environment. Comparing the situation between traditional transaction with real environment where consumer will be satisfied with the products by experience it physically, e-commerce will require more consumer trust because the absence of human touch and communication.

Trust plays an important role in many social and economic interactions involving uncertainty and dependency. Since uncertainties exist in transactions over the Internet, many researchers have stated that trust is a critical factor influencing the successful of e-commerce. The concept of trust is crucial because it affects a number of factors essential to online transactions, including security and privacy. Moreover, although e-commerce brings benefits to both vendors and consumers, it also has limitations, such as the physical separation between buyers and sellers, and between buyers and merchandise. In order to reduce the barriers, vendors must develop a trustworthy relationship to foster customer loyalty.

Consumer trust is an important aspect of E-commerce, and understanding its antecedents and consequences is a prime concern for the following reasons. First, the antecedents' of trust enable us to know the relative importance of factor affecting trust. Understanding these factors would play an important role in devising appropriate measures to facilitate trust. Second, the consequences of trust would enable us to better understand the importance of trust and its effect on online buying behavior. The global nature of the Internet raises questions about the trust effects across cultures as well. Although trust may form in a variety of ways, whether and how trust is established depend on the cultural factors (e.g., societal norms, values, etc.) that guide people's behaviors and beliefs.

E-commerce is widely being used in nowadays generation where the business entrepreneur from small to large institution, has widely taken advantage on the internet to promote their business and deliver information about their product. e-commerce is the core technology of knowledge economy. Developing e-commerce is an inevitable choice to enter into the world market, participate in and ultimately penetrate the global market. Before starting to develop in e-commerce, understanding the background is the basic principle of the evolution and development history of e-commerce. There are extensive researches for examining the trust factors of E-commerce, which affect the level of trust need by purchasers for participating in an e-commerce transaction.

Research Objectives

The objectives of this research are to analyze the influence of:

1. Perceived information security, perceived information privacy, perceived risk and institutional trust influence on consumer's trust of e-commerce, simultaneously.
2. Information security influence on consumer's trust of e-commerce, partially.
3. Information privacy influence on consumer's trust of e-commerce, partially.
4. Risk perception influence on consumer's trust of e-commerce, partially.
5. Institutional trust influence on consumer's trust of e-commerce, partially.

THEORETICAL FRAMEWORK

Consumer Behavior

Solomon et al (2006:6) consumer behavior is the study of the processes involved when individuals or groups select, purchase, use or dispose of products, services, ideas or experiences to satisfy needs and desires. Schiffman and Kanuk (2007:37) defined that consumer behavior is the behavior that consumers display in searching for, purchasing, using, evaluating, and disposing of products and services that they expect will satisfy their needs.

Marketing

Kotler & Keller (2012:27) marketing is about identifying and meeting human and social needs. One of the shortest good definitions of marketing is 'meeting needs profitably. McDaniel, Lamb & Hair (2011:3) stated in different view marketing is the activity, set of institutions, and process for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large.

Consumer Buying Behavior

Kotler & Keller (2012:173) stated that consumer buying behavior is study of how individual, groups, and organizations select, buy, use and dispose of goods, services, ideas, or experiences to satisfy their needs and wants. We must fully understand both the theory and reality of consumer buying behavior. A consumer's buying behavior is influenced by cultural, social, and personal factors. Of these cultural factors exert the broadest and deepest influence.

E-Commerce

Electronic commerce (EC) is the process of buying, selling, transferring, or exchanging products, services, or information via computer networks, mostly the Internet and intranets. Peter Drucker (2002:3-4) the truly revolutionary impact of the internet revolution is e-commerce-that is, the explosive emergence for the Internet as a major, perhaps eventually the major, worldwide distribution channel for goods, for services, and,

surprisingly, for managerial and professional jobs. This is profoundly changing economics, markets and industry structure, products and services in their flow; consumer segmentation, consumers' values and consumers' behavior; jobs and labor markets. But the impact maybe even greater societies and politics, and above all, on the way we see the world and ourselves in it.

Consumer Trust

Trust has always been an important element in influencing consumer behavior toward merchants (Schurr and Ozanne, 1985) and has been shown to be of high significance in uncertain environments such as Internet-based EC environments (Fung and Lee, 1999). Hoffman *et al.* (1999) have noted that consumers do not trust most Internet marketers enough to engage in relationship exchanges involving money and personal information. While a variety of factors such as store reputation and brand names may influence trust, one missing factor is the implicit comfort of face-to-face communication present in physical interactions.

Previous Research

Thaw, Mahmood , & Dominic (2009) a study on the factors that influence the consumers' trust on e-commerce adoption. Hosam El-Sofany, Turki Al-Malki, Abdul-Aziz AlZamel, and Abdul-Aziz Alharbi (2012), impact of trust factors in improvement and development of e-commerce in Saudi Arabia. Dan J. Kim, Donald L. Ferrin, H. Raghav Rao (2007), a trust-based consumer decision-making model in electronic commerce: the role of trust, perceived risk, and their antecedents.

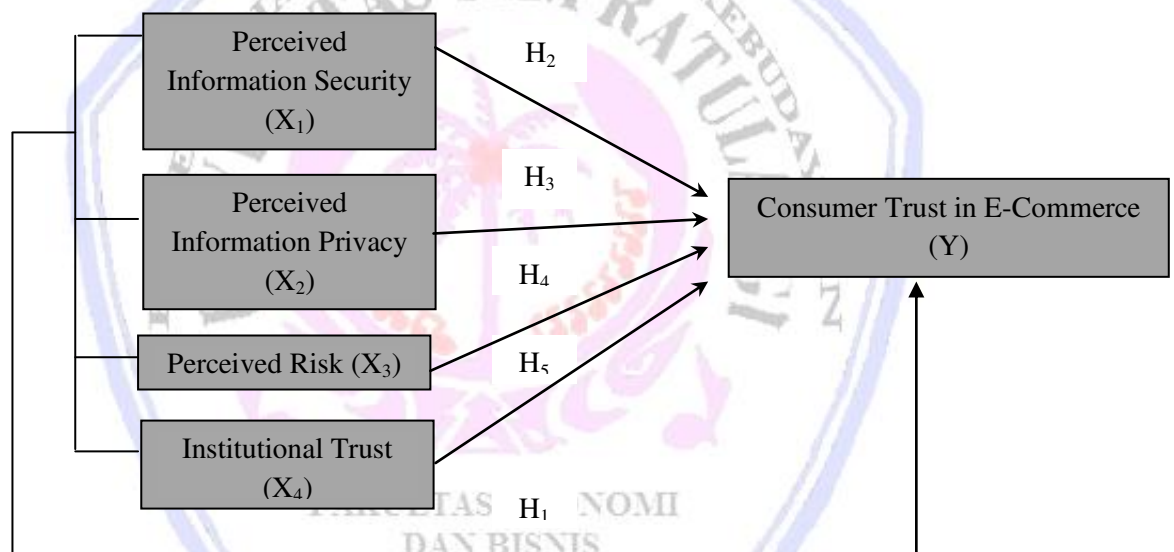


Figure 1. Conceptual Framework

Source: Processed data 2014

Hypothesis

- H_1 : Perceived Information Security, Perceived Information Privacy, Perceived Risk and Institutional Trust have significant influence on Consumer's Trust of E-Commerce, simultaneously.
- H_2 : Information security has significant influence on Consumer's Trust of E-Commerce, partially.
- H_3 : Information privacy has significant influence on Consumer's Trust of E-Commerce, partially.
- H_4 : Risk perception has significant influence on Consumer's Trust of E-Commerce, partially.
- H_5 : Institutional trust has significant influence on Consumer's Trust of E-Commerce, partially.

RESEARCH METHOD

Type of Research

This research is the causal type of research where it will investigate the influence of elements on consumer trust. There are four elements that relate each other to determine one variable of elements can influence with another variable.

Place and Time of Research

This research was study in Manado, North Sulawesi during the period of October to November 2014.

Population and Sample

Population is the entire group or people, events, or things that the researcher desires to investigate (Sekaran and Bougie, 2010:443). The population in this research is the consumer who had ever purchased via online store in Manado. The sample of this research is 100 respondents of Manadonese with Stratified sampling. Sekaran and Bougie (2009:271) stratified random sampling helps to estimate population parameters, there may be identifiable subgroups of elements within the population that may be expected to have different parameters on a variable of interest to the researcher.

Data Collection Method

The data used in this research consist of two types between primary data through questionnaires and secondary data taken from books, journals and relevant literature from library and internet to understand of theoretical support on this research.

Operational Definitions and Measurement of Research Variable

Operational definitions of research variables are:

1. Perceived Information Security (X_1) is the information in which will not be viewed, stored or manipulated.
2. Perceived Information Privacy (X_2) is the privacy of personal information and usually relates to personal data stored on computer system.
3. Perceived Risk (X_3) is the level of uncertainty regarding the outcome of a purchase decision.
4. Institutional Trust (X_4) is the key element that differentiates supply alliances from collaborative relationships.
5. Consumer Trust (Y) is the faith to believe that something is true or correct.

Data Analysis Method

Validity and Reliability Test

The reliability of a measure is established by testing for both consistency and stability. Consistency indicate how well the items measuring a concept hang together as a set, Cronbach's alpha is a reliability coefficient that indicates how well the items in a set are positively correlated to one another (Sekaran, 2006:177). Since reliable scale are not necessarily valid, researchers also need to be concerned about validity. It assesses whether scale measure what is supposed to be measured.

Multiple Regressions on Analysis Method

Linear regression is used to model the value of a dependent scale variable based on its linear relationship to one or more predictors. Regression analysis has at least three functions, namely for the purpose of data or description of the phenomenon being studied cases, for control purposes, as well as prediction purposes. The formula of multiple linear regressions is as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Where :

- Y = Consumer Trust
- X₁ = Perceived Information Security
- X₂ = Perceived Information Privacy
- X₃ = Perceived Risk
- X₄ = Institutional Trust
- α = Constant
- β₁, β₂, β₃, β₄= The regression coefficient of each variable
- e = standard error

RESULT AND DISCUSSION

Validity and Reliability

The validity test of Perceived Information Security (X₁) is 0.534, Perceived Information Privacy (X₂) is 0.619, Perceived Risk (X₃) is 0.638, Institutional Trust (X₄) is 0.619 and Consumer Trust (Y) is 0.626, are above 0.3 which mean that all indicator are valid. The reliability test using Alpha Cronbach. The Cronbach’s Alpha parameter, with ideal score more than 0.6. The variable are reliable because the value of Cronbach’s Alpha is bigger than 0.6.

Classical Assumption

Multicollinearity

Table 1. Multicollinearity Test

Model	Collinearity Statistics	
	Tolerance	VIF
X ₁	.790	1.265
X ₂	.914	1.095
X ₃	.856	1.169
X ₄	.992	1.008

a Dependent Variable: Y (Consumer Trust)
 Source: SPSS Data Analysis, 2014

The calculation of Multicollinearity. Moreover, it can be known through the VIF and tolerance, whereby if the value of VIF and tolerance to be around the number <10 then the regression model above are free from multicollinearity. Based on the results in the table above can be seen by SPSS output does not occur because the symptoms of multicollinearity VIF value of X₁ until X₄ was below numbers < 10, this means that there is no connection between the independent variables. Thus, multicollinearity assumptions are met (free of multicollinearity).

Heteroscedasticity

A good regression model is free from the case of heteroscedasticity. Basis for decision-making of a regression model said that heteroscedasticity occur if there is no clear pattern, and the point spread above and below the number 0 (zero) on the Y axis, does not occur heteroscedasticity.

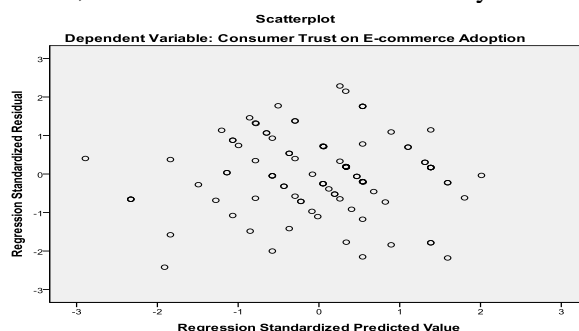


Figure 2. Heteroscedasticity Results

Source: SPSS Data Analysis, 2014

Figure 2 shows that there is no established pattern, in other words the graph describing the plot spread above and below the number 0 (zero) on the Y-axis. This proves that the independent variable X_1 until X_4 on Y are free of Heteroscedastisity.

Normality

Testing the normality assumption is to test whether the regression model, the independent variable X_1 until X_4 and Y has a normal distribution or not. Regression model is good if the data distribution is normal or near normal, if the data is spread around the diagonal line and follow the direction of the diagonal line, then the regression fulfill the normality assumption.

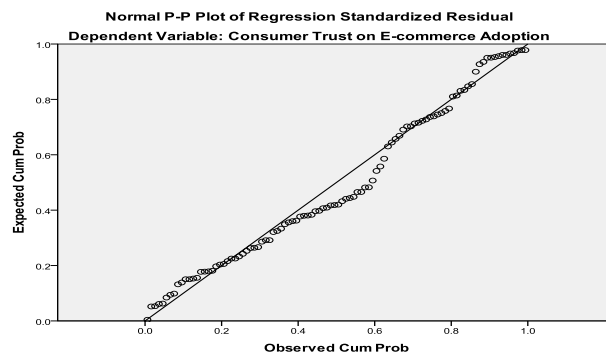


Figure 3. Normality Results
 Source: SPSS Data Analysis, 2014

Figure 3 shows that the points spread and spread around the diagonal line in the direction diagonal lines. This proves that the model Regression of The Influence of X_1 until X_4 on Y in test normality assumption was met.

Multiple Regression Analysis

Coefficient Regression Result

As has been pointed out in the previous section that the objective of this study to know the effect of X_1 until X_4 on Y and to test the truth of the hypothesis used quantitative analysis with linear regression method. Based on the statistical software SPSS Version 19.0, of the data processing on the attachment is as follows:

Table 2. Unstandardized Coefficient Beta

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.951	.576		2.435	.007
	X_1	.348	.097	.024	2.360	.047
	X_2	.371	.043	.052	2.858	.039
	X_3	.632	.084	.099	2.967	.012
	X_4	1.107	.080	.810	13.795	.000

a. Dependent Variable: Y

Source: SPSS Data Analysis, 2014

From the analysis, obtained by linear regression equation as follows

$$Y = \alpha + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e$$

$$Y = 2,951 + 0,348 X_1 + 0,371 X_2 + 0,632 X_3 + 1,107 X_4$$

From the multiple linear regression equation above, it can inform the interpretation as follows:

1. Constant value of 2.951 means that if the variables in this research of Variable $X_1 - X_4$ simultaneously increased by one scale or one unit will increase the Y at 2.951 point.
2. Coefficient value of 0.348 means that if the variables in this research of X_1 increased by one scale or one unit, it will improve and increase Y at 0.348.
3. Coefficient value of 0.371 means that if the variables in this research of X_2 increased by one scale or one unit, it will improve and increase Y at 0.371.
4. Coefficient value of 0.632 means that if the variables in this research of X_1 increased by one scale or one unit, it will improve and increase Y at 0.632.
5. Coefficient value of 1.107 means that if the variables in this research of X_2 increased by one scale or one unit, it will improve and increase Y at 1.107.

Coefficient Correlation (r) and (r^2)

Table 3. R and R^2

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.822 ^a	.676	.662	.28096	2.000

a. Predictors: (Constant), X_4 , X_3 , X_2 , X_1

b. Dependent Variable: Y

Source: SPSS Data Analysis, 2014

Based on the analysis of correlation (r) is equal to 0.822 indicating that the Correlation of The Influence of X_1 and X_2 on Y has a strong relationship. To determine the contribution The Influence of $X_1 - X_4$ on Y can be seen that the determinant of the coefficient (r^2) in the table above. r^2 value of 0.676 in this study may imply that the contribution of Perceived Information Security, Perceived Information Privacy, Perceived Risk and Institutional Trust on Customer Trust in E-Commerce of 67.6 % while the remaining 32.4% is affected by other variables not examined in this study.

Simultaneously Testing

Table 4 F-Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.616	4	3.904	49.456	.000 ^a
	Residual	7.499	95	.079		
	Total	23.115	99			

a. Predictors: (Constant), X_4 , X_3 , X_2 , X_1

b. Dependent Variable: Y

Source: SPSS Data Analysis, 2014

Value of 99.229 of F_{Count} significant 0.010. Because the sig < 0.05 means the confidence of this prediction is above 95% and the probability of this prediction error is below 5% which is 0.010. Therefore H_0 is rejected and accepting H_a . Thus, the formulation of the hypothesis that The Influence of $X_1 - X_4$ on Y Simultaneously, accepted.

Table 5. Partial Test Analysis (t-test)

Model	t	Sig.
1 (Constant)	2.435	.007
X_1	2.360	.047
X_2	2.858	.039
X_3	2.967	.012
X_4	13.795	.000

a Dependent Variable: Y

Source: SPSS Data Analysis, 2014

Partial test is used to test the effect of each independent variable $X_1 - X_4$ in Partial Impact on Y by performing comparisons between the t_{count} values with t_{table} value at $\alpha = 0.05$ or compare the probability of the real level 95% of the partial coefficient (r) so that it can be seen the influence of the independent variables individually. Using the criteria of hypothesis testing by t test as follows:

$t_{\text{count}} \leq t_{\text{table}} (0,05)$, then H_0 is accepted and rejecting H_a .

$t_{\text{count}} > t_{\text{table}} (0,05)$, then H_0 is rejected and accepting H_a .

The calculations in the table above, the interpretation as follows:

1. t_{count} for X_1 2.360 bigger than the value of 1.984 t_{table} means X_1 has no significant influence partially on Y. The sig. value at 0.047 means that prediction of X_1 influence on Y doing errors is more than 5% which is 4.7%, thus the confidence of this prediction is below 95%. Therefore, H_a accepted.
2. t_{count} for X_2 2.858 greater than the value of 1.984 t_{table} means X_2 has significant influence partially on Y. The sig. value at 0.039 means that prediction of X_2 influence on Y doing errors is 3.9%, thus the confidence of this prediction is above 95%. Therefore, H_a accepted.
3. t_{count} for X_3 2.967 bigger than the value of 1.984 t_{table} means X_3 has no significant influence partially on Y. The sig. value at 0.012 means that prediction of X_3 influence on Y doing errors is more than 5% which is 1.2%, thus the confidence of this prediction is below 95%. Therefore, H_a accepted.
4. t_{count} for X_4 13.795 bigger than the value of 1.984 t_{table} means X_4 has no significant influence partially on Y. The sig. value at 0.000 means that prediction of X_4 influence on Y doing errors is more than 5% which is 0.0%, thus the confidence of this prediction is below 95%. Therefore, H_a accepted.

Discussion

Perceived Information Security, Perceived Information Privacy, Perceived Risk and Institutional Trust have significant influence on Customer Trust in E-Commerce. The amount of consumer perceptions about the risks affecting the magnitude of their confidence in online shopping so when processing information online, consumers often assume that there is a high risk although the actual risk is low. More experienced online consumers have more information on the website to apply online shopping system so that they assume the risk is low and therefore they have more trust in online transactions. From this description it can be concluded that the perception of risk can be used to measure confidence. Risk perception has an impact on the attitudes and behavior in transactions with other parties. The level of risk is an important factor in shaping consumer attitudes and behavior in all kinds of business transactions. A high level of risk that will make consumers are not comfortable in using e-commerce even make buying and selling.

Consumer risk perception is the first thing to be considered in relation to online purchases. The risk of having an impact on attitudes and behavior in transactions with other parties. The level of risk is an important factor in shaping consumer attitudes and behavior in all kinds of business transactions. A high-level of risk that will make consumers is not comfortable in using e-commerce.

Consumer trust is an important aspect of E-commerce, and understanding its antecedents and consequences is a prime concern for the following reasons. First, the antecedents' of trust enable us to know the relative importance of factor affecting trust. Understanding these factors would play an important role in devising appropriate measures to facilitate trust. Second, the consequences of trust would enable us to better understand the importance of trust and its effect on online buying behavior. The global nature of the Internet raises questions about the trust effects across cultures as well. Although trust may form in a variety of ways, whether and how trust is established depend on the cultural factors (e.g., societal norms, values, etc.) that guide people's behaviors and beliefs.

This result is supported by other research conducted by Thaw, Mahmood and Dominici (2009) their research about A Study on The Factors That Influence The Consumers' Trust On E-commerce Adoption. They found that while trustworthiness of Web vendors is a critical factor in explaining consumers' trust to adopt e-commerce, it is important to pay attention to the consumers' risk concern on e-commerce transactions. Though in previous researches, security and privacy appear to be the top main concerns for consumers' trust in e-

commerce adoption, the empirical results indicate that there is a poor correlation between perceived security and perceived privacy with consumers' trust.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

There are five constructive findings that can be concluded from the overall result in this research, which are listed as follow:

1. Perceived Information Security, Perceived Information Privacy, Perceived Risk and Institutional Trust have significant influence on Consumer's Trust in E-Commerce.
2. Perceived Information Security has significant influence on Consumer's Trust in E-Commerce.
3. Perceived Information Privacy has significant influence on consumer's trust in E-Commerce.
4. Perceived Risk has significant influence on Consumer's Trust in E-Commerce.
5. Institutional Trust has significant influence on Consumer's Trust in E-Commerce.

Recommendation

There are three recommendations that can be concluded from the overall result in this research, which are listed as follow:

1. E-commerce will be trusted by consumers when given a variety in facilities services that enable customers to perform activity relationship / transaction with the company.
2. Information through online stores are well presented and properly will give a good image to the store, therefore seriousness in managing an online store is emphasized.
3. This study only discusses about consumers trust. Purchase intention and consumer buying decisions yet seen. Further research can be done by purchasing decisions online.

REFERENCES

- Alfa, L. Andries. 2014. The Influence of Korean's Celebrity Endorsement and Youth Buying Behavior On Youth Apparel Purchase Decision in Manado. *Jurnal Emba*. ISSN 2303-1174, Volume 2. No. 4. Retrieved from: <http://ejournal.unsrat.ac.id/index.php/emba/article/viewFile/6374/5892.pdf>. Accessed on January 12th 2015. Pp. 602-611
- Fung, R., & Lee. M. 1999. E-Commerce trust exploring the antecedent factors. *Proceedings of the 5th Americas Conference on Information Systems*. United States.
- Hoffman, D. L., Novak. T. P., and Peralta., M. 1999. Building Consumer Trust Online Communications of the ACM. *Journal of Consumer Trust*. Volume. 42 No. 4. Retrieved from: http://onemvweb.com/sources/sources/building_commerce_trust.pdf. Accessed on July 25th 2014. Pp. 80-85.
- Kotler, P., & Keller, L. K., 2012. *Marketing Management*. 14e. England: Pearson Education Limited. United Kingdom. New Jersey.
- Kotler, P., & Keller, K. L., 2009. *Marketing Management* 13th edition. Pearson Education International, Prentice Hall, New Jersey
- Lamb, C.W., Hair, J. F., & McDaniel, C., 2011. *Essentials of Marketing Cengage Learning*, China.
- Peter Drucker., 2002. *Electronic Commerce* 7th edition. A managerial and social networks perspective. Pearson. United Kingdom.
- Schiffman, L. G., Kanuk, L. L. 2007. *Consumer Behavior*, 9th edition, Pearson Education, Singapore.

- Schurr, P. H., and Ozanne J. L. 1985. Influences on Exchange Processes: Buyers' Preconceptions of a Seller's Trustworthiness and Bargaining Toughness. *Journal of Consumer Research*. Volume. 11. No. 4. Retrieved from: http://www.marketing.pamplin.vt.edu/facultyFolder/julieOzanne/01_socialwebsite/professional/researchpapers/1985_JCR_Trust.pdf. Accessed on August 9th 2014. Pp. 939-953.
- Sekaran, U., & Bougie, R. 2009. *Research Methods for Business*. 5th edition. Wiley. United States, New York.
- Solomon, M. R., Bamossy. G., Askegaard. S., Hogg. M. K. 2006. *Consumer Behaviour: A European Perspective*. 3rd edition. Harlow: Prentice Hall. New Jersey.
- Thaw., Mahmood., Dominic. 2009. A Study On The Factors That Influence The Consumers' Trust On E-Commerce Adoption. *Journal of E-Commerce*. Volume. 4. No. 1&2. Retrieved from: http://arxiv.org/pdf/0909.1145.pdf%3Forigin%3Dpublication_detail. Accessed on July 22th 2014. Pp. 1-7.
- Yishak, G. G. Wowiling. 2014. The Analysis of Environmental Attitudes, Functional Value and Price toward Green Purchasing Intentions Handicraft Product in Manado. *Jurnal Emba*. ISSN 2303-1174, Volume. 2. No. 4. Retrieved from: <http://download.portalgaruda.org/article.php?article=273836&val=1025&title=THE%20ANALYSIS%20OF%20ENVIRONMENTAL%20ATTITUDES,%20FUNCTIONAL%20VALUE%20AND%20PRICE%20TOWARD%20GREEN%20PURCHASING%20INTENTIONS%20HANDICRAFT%20PRODUCT%20IN%20MANADO.pdf>. Accessed on January 12th 2015. Pp. 214-224.

