USERS' READINESS EVALUATION IN ADOPTING INTEGRATED INFORMATION SYSTEMS IN THE FINANCE FIELD

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Abstract

The adoption of Information and Communication Technology (ICT) in the integrated concept has already became a need to the company or organization that is willing to gain competitive advantages as a competitive weapon. However, this adoption is not always smooth because of facing challenges. One of the bigest challenge in adopting ICT is the readiness of ICT users. The users' unreadiness will create resistence toward ICT and further impact will fail ICT adoption itself. Moreover, it can create inharmony environment in the company or organization.The purpose of this research is also to evaluate the technology readiness of the users in the process of adopting ICT in economic field in Finance Directory UGM, estimated from the positive and negative belief of the users toward the technology with adopting method TRI. The result of this research shows that generally, the readiness of SI users in Finance Directory UGM is in medium level, eventhough the users tend to have no comfort feeling and high discomfort feeling toward technology users.

Keywords: technology readiness, technology adoption

1. INTRODUCTION

A. Background

The adoption of Information and Communication Technology (ICT) in the integrated concept has already became a need for a company or organization who wants to gain competitive advantages. The adoption of integrated ICT has to be done by a company or organization because of revolution in the way of doing business as a result of the remarkable ICT development, that cause fast growing changing in almost every business sectors [1]. The changing that has happened has fundamental characteristic because it is demanded by the needs fullfilment and has global characteristic. The fundamental changing had made the environment changing naturally.

ICT speed development always force people to balance their knowledge with ICT development. For most people, who can follow it, this is very positive. But, for some others, this is difficult [2], and this disturbs the convinience and causes the appearance of resistence inside the organization. Further impact of the resistency is the failure in adopting ICT itself and destroy the harmony in the organization.

ICT itself in the broad sense is not only cover hardware, but also software [3], and also brainware. The success of the implementation or new technology adoption mainly ICT in an organization is determined by internal and external factors [4]. The technical factors, such as hardware and software are not difficult problems to be solved because hardware and software if not suitable with perform can be subtituded easily by fixing or availability. However, brainware problem is a herendous complex problem. Each person has already had his/her own mental map. Therefore, it is likely that it will contradict.

Brainware in the capacity of user in most research has already mentioned as one of the success key in adopting ICT ([5], [6], [7], [8]). The importance of brainware readiness role in guarantee the success of adopting new technology become necessity to be research in adopting process of new technology, and even for ICT.

The purpose of this research is to evaluate the readiness of users in acepting and using ICT with adopting TRI method that has been depeloped by Parasuraman [9]. This method is choosed because (1) TRI is able to differentiate better between users and non users of technology. (2) TRI is able to grouping users based on positive and negative beliefs towards complex and futuristic technology and (3) TRI is able to identified groups of users that has

comfort and discomfort feelings significantly because TRI is formed by four variable personalities optimism, innovativeness, discomfort and insecurity.

B. Problem Limitation

Each organization has culture and characteristic that can be different in other organizations, including in adopting technology. This difference is because each organization has diferrent business process even though they are in the same field. Appointing to this unique characteristic, this research is limited to:

1. The research is applied to organization in education field, Gadjah Mada University (UGM). Therefore, the readiness condition and proposed recomendation are only applied in that organization or other organization which have similar characteristics.
2. Evaluation of users' readiness in this research is based on personality variable that has been researched in the previous research. Model and testing model are also researched in the previous researched ([2], [9], [10], [11], [12], [13]).

Points of questions/ statements that have been proposed in the form of questionairs are arranged based on the previous research that have been adjusted with the organization characteristics.

2. LITERATURE REVIEW AND THEORECAL REVIEW

A. Literature Review

The high failure on the implementation of Information Systems (IS) according to Shafaei and Dabiri [14] is because the implementation of IS is a very complicated process not only to the renewal of many different aspects that need consideration in the same time, but also because of the impact of the new system toward the organization. Meanwhile, Ptak and Schragenheim [15] state that one of the reasons of the failure of IS implementation is because lack of organization preparadness in the business process maturity, cultural aspect, technology and organization that take longer time in the implementation process according to the plan and also cause implementation team losing their spirit.

Ptak and Schragenheim [15] opinion is in line with the research result of Sheu and Kim [4]. In the research involving 50 organization as research objetcs states that the low readiness level is the cause of SI project failure. Especially because the users readiness have dominant influence toward the successfulness of SI implementation. Sheu and Kim research show that users readiness have strong influence toward the success of SI project compare to the users involvement in SI project.

ICT adoption according to Totolo [16], it needs sufficient readiness level because many new things that have to be learnt and many changes/ adjustment that have to be done. Meanwhile, changes and adjustments more often loosen users' comfort and more often ICT is not an easy thing to learn.

B. Theorrecal Review

1) Adoption of Information and Communication Technology: ICT as a technology that can be used as a competitive weapon to get competitive advantages to win the competition is proven to be able to influence until corporate level in determining the business direction. However, will ICT always be the solution in business problems? The reality is based on the data that is presented by The Standish Group [17], that the success of ICT project is only 32%. In the enterprise level in Indonesia, the project that is considered to be successful is only 16,67% [18]. The rest is regarded as failed because it is exceeding the budget, the accomplishment is exceeding the target time and even complete failure. This failure happens because of resistency and the poor brainware readiness.

2) Integrated information systems: Integrated IS is the group of information systems that integrated each other in order to support institution activities in an enterprise [19]. The character of integrated SI is the high level of integration to accommodate data needs and also integrated information.

3) Technology Readiness (TR) and Technology Readiness Index (TRI): Parasuraman [9] defines TR as"people's propensity to embrace and use new technology for accomplishing goal in home life and at work". Meanwhile, TRI is an index to measure the users' readiness toward the new technology. TRI uses a set of trust/belief statements in conducting the survey to measure the level of individual readiness comprehensively and as a tool in technology adoption

study. TRI is used to measure the users' readiness in using the new technology by four personality variable indicators. They are (1) optimism, positive attitude toward technology and belief that technology will increase control, flexibility and efficiency in life (2) innovativeness, tendency attitudes for the first one to use the product or new technology service (3) discomfort, tend to have difficult attitude to control and tend to be unconfident, having suspicion toward the safety of technology and private security reasons.

C. Research Questions

Questions that is being foundation to do the research:

- Does optimism influence TR?
- Does innovation influence TR?
- Does discomfort influence TR?
- Does insecurity influence TR?
- What is the main factor to determine TR?
- Is it possible to group people based on TR level?
- How is to recommend an organization based on TR level in adopting ICT?

3. RESEARCH METHODOLOGY

A. Research Materials

The data that is used in this research is primary data in the form of subject and secondary data. According to Sanusi [20], primary data is the data that is first recorded and collected by the researcher. Secondary data is data that is available and collected by another party. Subject data is data that is obtained from the result of questionair from the respondents. According to Indriantoro and Supomo in Dewi [21], self report data is the type of research data in the form of attitudes, opinions, experiences or the characteristics of individual or a group that become the research subject/ respondent.

B. Research Tools

- This research uses computer equipment with software Microsoft Windows and Microsoft Office.
- Questionaire with Likert scale of 5levels.
- Data analysis software: IBM SPSS AMOS 20 and smartPLS 2.0 ME.

C. Research Model

TRI Model (Fig. 1) has 4 exogen/independent variable that can influence significantly toward users readiness or influence significantly toward endogen/ engaged variable TR. Two of the four free variable is positive perception toward technology that can raise users TR, they are optimism and innovation variable. The other two free variable are negative perceptions toward technology that can press or lower TR users. Two variable of negative perceptions are discomfort and insecure variable.

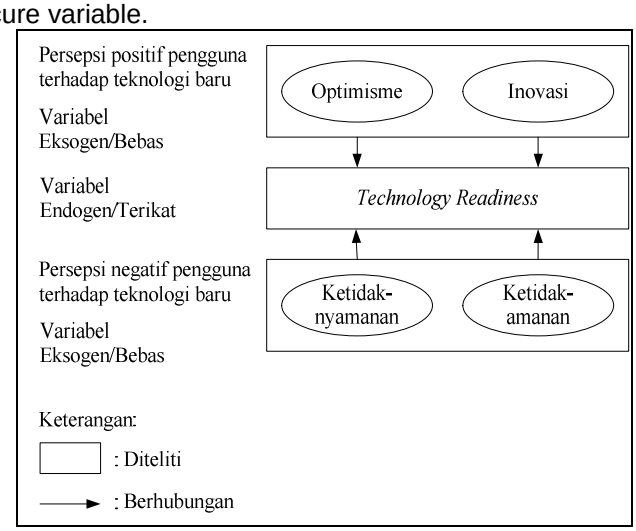

Figure 1. Research Model

4. RESULTS AND DISCUSSION

155 questionairs is distributed to 12 unit working users of budget in UGM. 113 questionairs from 155 is received or 72,90% by the researcher. 17questionairs or 15,04% are not completed, however the data is still usable because the missing data is only on variable that is used for grouping by the researcher. On the other hand, data in the questionairs itself is being completed by the respondents.

A. Respondents Demographic

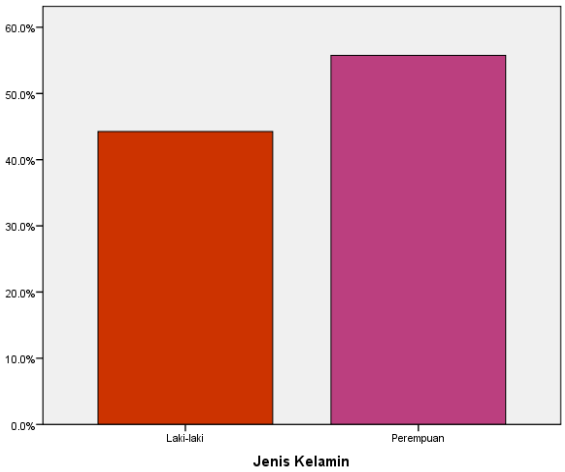

Figure 2. Gender

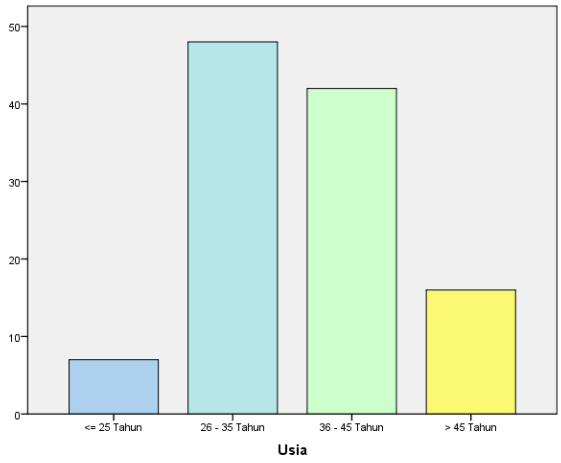

Figure 3. Ages

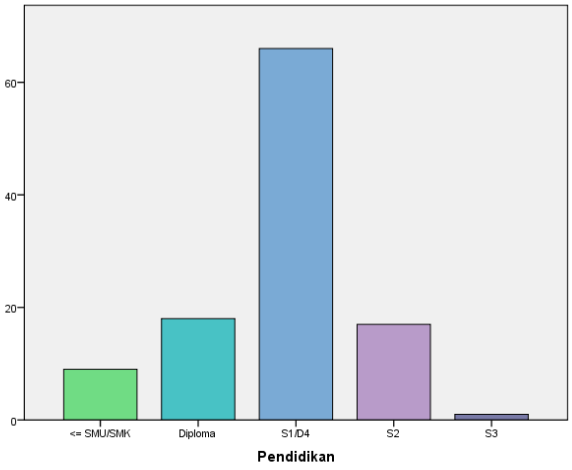

Figure 4. Education

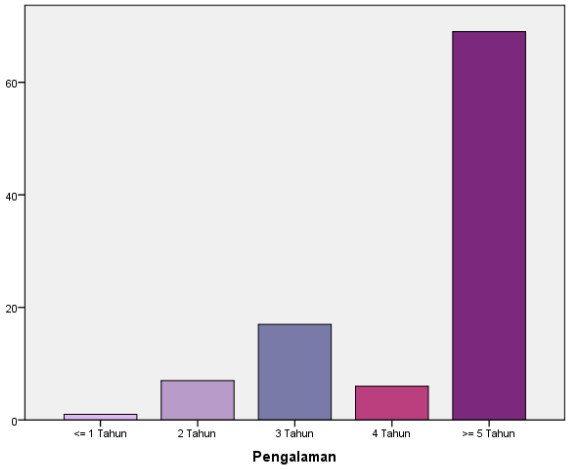

Figure 5. Respondents' experiences in using ICT

B. Analysis

Data analysis process shows that the available data cannot be analysed with the AMOS supporting device because is not fulfil normality assumption data. Therefore, the analysis is conducted with smartPLS supporting device because PLS approach does not require data normality.

In the outer model evaluation is found 2 indicators that has loading value under cut off price. Therefore, it is not fulfillconvergent validity. So, those 2 indicators are deleted from the diagram flow chart. The result as shown in Fig. 6.

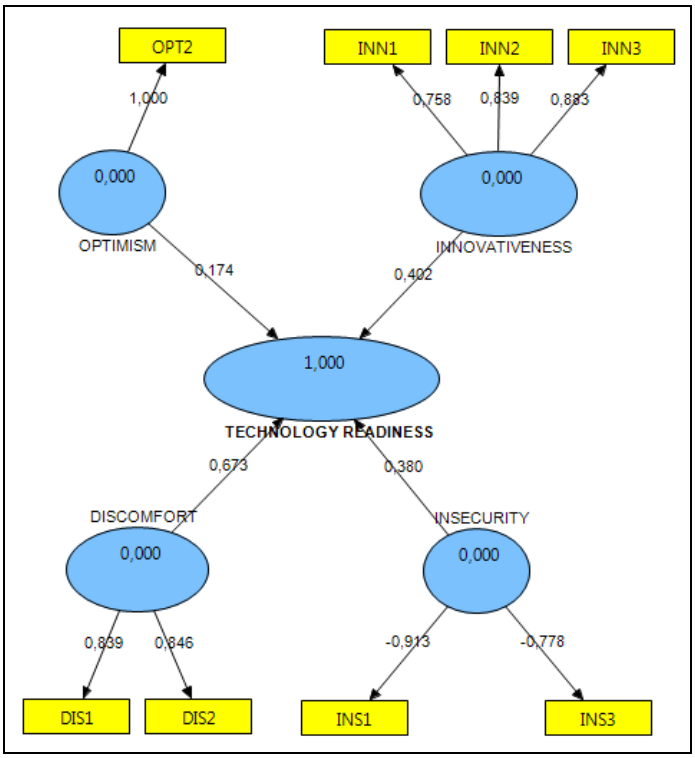

Figure 6. Outer model result

The result in the discriminant validity test is model has high discriminant validity level. Root value AVE of each variable is bigger than the correlation between contruct (Table I).

TABLE I. CONSTRUCT' CORRELATION AND ROOT AVE

	Discomfort	***Innovativeness***	***Insecurity***	***Optimism***
Discomfort	0,843*			
Innovativeness	0,2077	0,828*		
Insecurity	-0,1807	0,3203	0,848*	
Optimism	0,0025	0,3417	0,3345	1,000*

TABLE II. QUALITY CRITERIA

	AVE	***Composite Reliability***	***R Square***	***Cronbachs Alpha***
Discomfort	0,70991	0,83035		0,59140
Innovative-ness	0,68625	0,86730		0,76938
Insecurity	0,71907	0,83572		0,62370
Optimism	1,00000	1,00000		1,00000
Technology Readiness			1,00000	

Composite reliability test is shown in Table II. The result is satisfying because the whole composite reability value that measures construct is bigger than 0,60. Therefore, it can be concluded that each construct has high reability.

R-square model test research shows that the value of R-square variable technology readiness is the same with 1 (Table II). This indicates that exogen variable in the research model affects perfectly or explain 100% toward endogen variable that is technology readiness variable. The result of the test is the same with the result in Table II.

TABLE III. T TEST RESULT

	T Statistic	***T Table (p = 0,002)***	***Result***
Discomfort -> Technology Readiness	5,703453	3,55181	Influence
Innovative-ness -> Technology Readiness	3,589042	3,55181	Influence
Insecurity -> Technology Readiness	3,703694	3,55181	Influence
Optimism -> Technology Readiness	1,651745	3,55181	Does not influence

1) Optimism: Respondent perception toward optimism variable is optimism does not influence significantly toward users readiness Financial IS of Ditkeu UGM. It means the height or the low of users optimism level does not influence users readiness. Reseach data shows that generally, respondent perception toward optimism variable in quite high in Likert scale.

2) Innovation: Responden perception toward innovation variable in the significant level is 0,002 (2%). It states that innovation has positive influence significantly toward users readiness of Financial IS of Ditkeu UGM. It means, the higher innovation level, the higher readiness level of users readiness Financial IS of Ditkeu UGM.

3) Discomfort: Users perception toward discomfort factor is very dominant in the users Financial IS of Ditkeu UGM society. Analysis test shows that users perception toward discomfot factor has positive influence significantly toward users readiness Financial IS of Ditkeu UGM. It means the higher discomfort level, the higher users readiness of Financial IS of Ditkeu UGM.

4) Insecurity: Users perception toward insecurity factor has positive influence significantly toward the readiness of users Financial IS of Ditkeu UGM in the significant scale 2%. It means, the higher the level of insecurity, the higher the level of readiness of users Financial IS of Ditkeu UGM.

5) Technology readiness: Condition of users' readiness toward technology in SI Financial Ditkeu UGM has sufficient readiness generally. Event though, they tend to have discomfort and insecure feeling in the high level and tend to be resistant toward changes. In some working units, the level of users' readiness toward technology is higher compare to other working units.

4. CONCLUSIONS, SUGGESTIONS AND RECOMMENDATION

A. Conclusions

- Users' perception toward optimism factor does not influence significantly toward TR in the users of Financial IS of Ditkeu UGM society.
- Users' perception toward innovation factor has positive influence toward TR in the users of Financial IS of Ditkeu UGM Society.
- Users' perception toward discomfort factor has positive influence significantly toward TR in the users of Financial IS of Ditkeu UGM society.
- Users' perception toward insecure factor has positive influence significantly toward TR in the users of Financial IS of Ditkeu UGM society.
- Research result shows that the score of discomfort factor is in the highest rank. It means that discomfort factor is the main determiner of TR in the users of Financial IS of Ditkeu UGM society.
- Based on the TR score, users of Financial IS of Ditkeu UGM are individuals with high optimism. However, they have high discomfort and insecure feelings. Therefore, it can be concluded that the users of Financial IS of Ditkeu UGM society are in the paranoid category. It means that they believe toward category and have high optimism level, but they do not have tendency to innovate. Moreover, those who have high discomfort and insecure feelings are in above average age with the lower income and education and mostly are female employees ([9], [13]).

B. Suggestions

- It is better to use more indicators usage as variable measure device than the one that is used in this research for each variable. Therefore, the result of variable measurement is more precise and stronger.

- It is better that Pilot Study is not only conducted by reading test, but also by filling questionnaire test to the real respondents and also by analysing data from the result of the trial.
- The choice of research object regarded with the amount of population and research sample needs to be considered. Population with big amount is highly recommended to anticipate the abnormal data distribution cases. If the researcher takes the same research object, it is highly reccomeded that he uses different analysis device from the one that is used in this research.

C. Recommendations

- To increase ICT development in UGM, especially in the development SI Financial UGM based on innovation. This needs to be increased because the innovation level discovered in the research is quite low. Innovation that can be conducted in developing SI Financial application is to integrate the whole process and to support users' mobility. If it is possible one application can fulfil the needs of users in finishing their work. Moreover, the application is made as attractive as possible, so that the users are willing to use it and even competing to be the first application user. Application is developed by following trend and omitting rigid impression. Rigid impression shows that application should be formal, only in the data level and report format is also formal. To omit rigit impression, for example, is by adopting social networking or collaborating application with social networks that are already existing and trending nowadays. Moreover, there are many users are delighted to use these social networks.
- The development of ICT in UGM is better to consider discomfort factors of the users, such as user friendly that is easy to be learnt and used. It is better that the application has complete features that can fulfill the users' needs. It also has attractive appearance that makes the users comfortable and delighted to use it. This development is collaborated with innovation factor. Furthermore, it follows the trend whenever possible. The innovation and trend that are mentioned here is for example the trend of social networking. Therefore, the application that is developed is able to adopt social network concept or to collaborate with the existing social network. Besides, to make it easier for the users to study, usage documentation should be made clearly and well structured.
- ICT service provider in giving services must be cooperative and friendly toward the users so that the users feel comfortable and free form anxiety feeling when having problems. The provider also must give quick attention and facility toward users when they ask technical help.
- ICT development in UGM must pay attention to the safety of the users included the safety of confidential data. Therefore, the users do not hesitate to use ICT services especially that are connected to confidential data. In the implementation, for example, with the authentication and authorization to access ICT sources (data, internet network and local) and the encryption implementation to protect confidentiality and data integrity and also adopt nonrepudiation concept.
- Socialization about ICT safety toward users of SI Financial Ditkeu UGM is included demonstation tips and tricks to manage ICT resources in the personal level.
- There should be training or mentoring continuity in the development process of ICT toward the users. Moreover, there should be proper documentation guidance for ICT usage.
- In the frame of supporting the development of integrated ICT, the rules of standardized included definition, data, business process and Operation Standart Procedure should be formulated.

REFERENCES

[1] Hidayat, Y. Rianto, L. Hutabarat, U. Halomoan, A. Fatony, T. Surya, P. Pariyaman, V.R. Prasetyas, and Agusalim, Studi Adopsi TIK oleh IKM dalam Proyek TATP: Faktor-Faktor yang Berpengaruh terhadap Keberhasilan Adopsi TIK oleh IKM, PAPPIPTEK - LIPI, Jakarta, 2003.

[2] S.-C. Chen, Understanding The Effects of Technology Readiness, Satisfaction and Electronic Word-of-Mouth on Loyalty in 3C Products. Australian Journal of Business and Management Research, 2011, vol. 1.

[3] P. Hamburger, D. Miskimens, and S. Truver, It is Not Just Hardware and Software, Anymore! Human Systems Integration in US Submarines. Naval Engineers Journal, 2011, vol. 3.
[4] M. Sheu, and H. Kim, User Readiness for IS Development: An Examination of 50 Cases. Wiley InterScience, 2008.
[5] R. Amaranti, Faktor Kritis Dalam Proyek Implementasi ERP Dan Pengaruhnya Terhadap Perubahan Dalam Organisasi (Studi Kasus: PT Telekomunikasi Indonesia Tbk), Magister Teknik dan Manajemen Industri, Institut Teknologi Bandung, Bandung, 2006.
[6] T.R. Bhatti, Critical Success Factors for The Implementation of Enterprise Resource Planning (ERP): Empirical Validation, The Second International Conference on Innovation in Information Technology, 2005.
[7] E. Wijayanti, Analisis Faktor-Faktor yang Mempengaruhi Keberhasilan Enterprise Resource Planning (ERP) pada Perusahaan, Pascasarjana Bidang Ilmu Teknik, Universitas Indonesia, Jakarta, 2008.
[8] Rotchanakitumnuai, and Siriluck, Success Factors of Large Scale ERP Implementation in Thailand. World Academy of Science, Engineering and Technology 64, 2010.
[9] A. Parasuraman, Technology Readiness Index (TRI): A Multiple-Item Scale to Measure Readiness to Embrace New Technology. Journal of Service Research, 2000, vol. 2.
[10] S.-C. Chen, and S.-H. Li, Consumer adoption of e-service: Integrating technology readiness with the theory of planned behavior. African Journal of Business Management, 2010, pp. 3556-3563, vol. 4.
[11] C. Quintanilla, and E. Ayala, Employees' Technology Readiness and Service Quality in Mexican Call Centers. Multidisciplinary Business Review, 2011, vol. 4.
[12] L.M. Ling, and C.M. Moi, Professional Students' Technology Readiness, Prior Computing Experience and Acceptance of An E-Learning System. Malaysian Accounting Review, 2007, vol. 6.
[13] J. Rose, and G. Fogarty, Technology Readiness and Segmentation Profile of Mature Consumers. Academy of World Business, Marketing & Management Development, 2010, vol. 4.
[14] R. Shafaei, and N. Dabiri, An EFQM Based Model to Assess an Enterprise Readiness for ERP Implementation. Journal of Industrial and Systems Engineering, 2008, pp. 51-74, vol. 2.
[15] C.A. Ptak, and E. Schragenheim, ERP : tools, techniques, and applications for integrating the supply chain, St. Lucie Press, New York, 2004.
[16] Totolo, An analysis of information technology adoption situation in Botswana secondary schools and its impact on digital scholarship initiatives in institutions of learning. 2005.
[17] S. Group, The CHAOS Report 2009, 2009.
[18] G.R. Dantes, and Z.A. Hasibuan, Comparison of ERP Implementation Process of Two Organizations: An Exploratory Research 2011 International Conference on Social Science and Humanity, IACSIT Press, Singapore, 2011.
[19] H. Pangaribuan, Sistem Informasi Yang Terintegrasi dan Akuntasi Manajemen. Jurnal Ekonomi dan Bisnis, 2008, vol. 2.
[20] A. Sanusi, Metodologi Penelitian Bisnis, Salemba Empat, Jakarta, 2011.
[21] S.T. Dewi, Analisis Pengaruh Orientasi Pasar dan Inovasi Produk Terhadap Keunggulan Bersaing Untuk Meningkatkan Kinera Pemasaran, Program Studi Magister Manajemen, Universitas Diponegoro, Semarang, 2006.