Infusion of e-Procurement at Indonesian Local Government

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Keywords: Problem-focus adaptation, emotion-focus adaptation, IS infusion, e-procurement (SPSE), and local government.

Abstract: This study examines information system (IS) Infusion Model of e-Procurement at City Government of Bengkulu. This study uses 68 e-Procurement's users distributed by self-administered questionnaire. Data examined using Partial Least Square (PLS) technique. The results show that the opportunity appraisal, threat appraisal, and secondary appraisal have an important role in improving problem-focused adaptation and emotional-focused adaptation. However, only opportunity appraisals have an important role in promoting problem-focused adaptation. Also, only problem-focused adaptation predict IS infusion. Implication for stakeholder and further research are discussed.

1 INTRODUCTION

E-government system has several advantages in implementing transparent, efficient and effective public services. Government-based information technology (IT) system, can provide affordable services and expand access information easily for community. One of the Indonesian government's efforts to create public transparency is President Instruction (Inpres) No. 3/2003 about Policies and National Strategies Development of e-Government. The real example of e-government is e-procurement.

Implementation of e-procurement begins with the issuance of Presidential Regulation No. 106/2007 about the Establishment of Government Procurement Policy Institution (LKPP) who develops and formulates government procurement policies. The concrete manifestation of such good practice is the Regulation of LKPP No. 2/2010 about Electronic Procurement Services which conveys that Local Government shall establish an e-Procurement system (LPSE) to facilitate Procurement Officer (ULP) in implementing electronic procurement.

Moreover, the high corruption cases around goods and services procurement (PBJ) of government institutions motivate the importance of e-procurement. Indonesia Procurement Watch states that 70 percent of corruption cases are sourced from the PBJ domain, both at the central and regional levels. The variation of cases are bribery, procurement of goods and services in the state administration, misuse of budgets and levies in public services, and licensing and money laundering cases (Corruption Eradication Commission [KPK], 2017) (see Table 1).

Table 1 . Data of Corruption Handling by Type of Case Year 2004-2017 (March 31, 2017)

Cases	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Procurement	2	12	8	14	18	16	16	10	8	9	15	14	14	7
Licensing	0	0	5	1	3	1	0	0	0	3	5	1	1	1
Bribery	0	7	2	4	13	12	19	25	34	50	20	38	79	16
Charges	0	0	7	2	3	0	0	0	0	1	6	1	1	0
Misappropriation of budget	0	0	5	3	10	8	5	4	3	0	4	2	1	1
Money Laundering	0	0	0	0	0	0	0	0	2	7	5	1	3	2
Blocking the KPK Process	0	0	0	0	0	0	0	0	2	0	3	0	0	0
Amount	2	19	27	24	47	37	40	39	49	70	58	57	99	27

Source: Anti Corruption Clearing House (ACCH)-KPK, May 30, 2017

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In addition, the results of the Indonesian Corruption Watch (ICW) study with the Potential Fraud Analysis (PFA) method, found the highest potential for fraud of Local Governments are Bengkulu Province (15.4 points), South Sumatera (15.1 points), followed by Central Kalimantan, North Kalimantan and Lampung (www.pedomanbengkulu.com, 2017). Thus, it is important to investigate e-procurement implementation by Indonesian local government.

2 METHODS

Implementation of reliable e-procurement system must fulfill six pillars, namely people, process, technology, strategy, governance and organizational interface. Unfortunately, the development of human resource competencies at Indonesia Local Government is not as extensive as technology and rules (KPK, 2017). Then, the digital divide issues becomes main challenge in the infusion of e-procurement (Nightisabha, 2010), such as unwished IS usage (Jogiyanto and Abdillah, 2011). Therefore, it needs guidance in using IS, such as ability to adapt an IT events (Tyre and Orlikowski, 1994; Orlikowski, 1996; Beaudry and Pinsonneault, 2005; Fadel, 2012). Coping Theory is a relevant concept to explain user behavior and adaptation outcomes. The conceptual model called coping models of user adaptation or CMUA (Beaudry and Pinsonneault, 2005; Lazarus and Folkman, 1984).

Previous empirical studies have examined the CMUA model (Fadel, 2012; Sigalotang et al., 2014; Astriana et al. study, 2015). However, there are limited studies to examine CMUA model in context of local government institution. Thus, CMUA model are relevant to re-examined in the context of the use of similar mandatory systems, such as in e-procurement systems. This study examines the CMUA model in the context of e-procurement system at Indonesian local government institution.

The fundamental premise of CMUA is the introduction of a technology or a modification of an existing technology that can bring perceived new changes (Louis and Sutton, 1991) and improve disturbances in organizations (Lyytinen and Rose, 2003). By defining user adaptation as a coping problem, it can be learned various kinds of user responses including how users can restore emotional stability, modify tasks, reinvest, and adapt technology, or even reject it.

The process of coping can be done through two processes that constantly affects each others (Lazarus and Folkman, 1984). Both processes include process of assessing the consequences of an event that will result in a primary appraisal. Furthermore, individuals will take different actions to address the situation based on the results of the appraisal, called coping efforts. Individuals will combine cognitive and behavioral efforts, both of which are also categorized as problem-focused or emotion-focused (Folkman, 1992; Lazarus and Folkman, 1984; Stone, et al., 1992).

Opportunity appraisal is an appraisal of perceived IT events to have positive consequences. While problem-focused adaptation is directed to handle issues related to IT activities directly by adapting themselves, adapting their work, and adapting the technology. Furthermore, emotional-focused adaptations are oriented towards oneself and lead to a change in one's perceptions resulting from the consequences of an IT event or to reduce emotional tension.

The CMUA model concludes that an IT event assessed as an opportunity tends to effect on problem-focused adaptation and emotional-focused adaptation behavior (Beaudry and Pinsonneault, 2005). Primary appraisal is a situation where the consequences perceived from technological event information rated as an opportunity, effects on benefits satisficing, which is the less adaptation problem-focused efforts were minimal and limited (Lazarus and Folkman, 1984). Challenge appraisal which is also a characteristic of positive judgment has a significant effect on problem-focused and emotion-focused adaptation (Fadel, 2012). Thus, hypothesis 1 and hypothesis 2 are as follows:

H1 : Opportunity appraisal has a positive effect on problem-focused adaptation.

H2 : Opportunity appraisal has a positive effect on emotional-focused adaptation.

Threat appraisal is an appraisal of IT events that are perceived to have negative consequences. Based on the CMUA model, Beaudry and Pinsonneault (2005) also concluded that when individuals assess the event of IT as a threat, their efforts will be largely oriented to reduce emotional distress and reduce the perceived negative consequences associated with the event. Thus, this research formulates hypothesis 3 and hypothesis 4 as follows:

H3 : Threat appraisal has negative effect on problem-focused adaptation.

H4 : Threat appraisal has positive effect on emotional-focused adaptation.

Secondary Appraisal is user appraisal on how much control they have on IT event options for their adaptation to the specific resources available to them. In Coping's study, it shows that problem-focused adaptation attempts to effect when an

individual feels that he or she can do something to change his or her situation, while emotionally-focused adaptation has shown an effect when individual feel he or she has little or no control (Beaudry and Pinsonneault, 2005). This is what underlies hypothesis 5 and hypothesis 6 proposed as follows:

H5 : Secondary appraisal has positive effect on problem-focused adaptation.

H6 : Secondary appraisal has negative effect on emotional-focused adaptation.

Problem-focused adaptation is directed to address issues related to IT events by adapting themselves, their work, and IT. CMUA model predicts users with problem-focused adaptations will more easily achieve effective and efficient results in IS utilization. The empirical results by Fadel (2012) support the model and find problem-focused adaptation behavior to be a single strong predictor of IS infusion. This is in line with the empirical results by Sigalotang, et al. (2014) which found a significant positive effect problem-focused adaptation on IS infusion. Thus, this research proposes hypothesis 7 as follows.

H7 : Problem-Focused adaptation effects IS infusion.

Emotionally-focused adaptation orients toward individual itself and leads to changes in one's perception as a result of the consequences of the IT event to reduce emotional tension. Emotion-focused adaptations minimize consequences of IT events, selective attention, positive comparisons (Lazarus and Folkman, 1984), and passive acceptance (Tyre and Orlikowski, 1994). Empirical results of Sigalotang, et al. (2014) found positive effect of emotional-focused adaptation on IS infusion. Thus, hypothesis 8 is formulated as follows.

H8 : Emotionally-focused adaptation has positive effect on IS infusion.

Figure 1 presents the proposed model tested in this study.

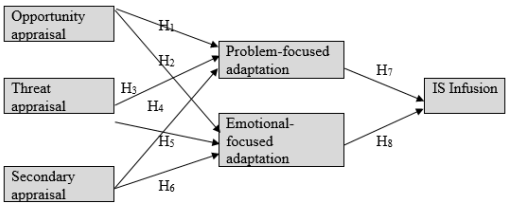

Figure 1 . Research model (Source:Adapted from Beaudry and Pinsonneault (2005), Fadel (2011), Fadel (2012) and Astriana, et al. (2015))

3 METHODS

This research is quantitative with survey questionnaire as the instrument of data collection. All constructs measured using 5 Likert scales from strongly disagree to strongly agree. The population is e-procurement users of City Government of Bengkulu Province, which are The Committee Procurement and Vendors. All of vendors were selected as sample. Primary data collected by self-administered questionnaires during January-May 2018. All data were tested using the Partial Least Square (PLS) method. Testing phase consists of evaluation of measurement model for construct validity and reliability, and evaluation of structural model for hypothesis testing.

4 RESULTS AND DISCUSSION

68 Respondents in this study are individuals who are active users of SPSE or who use the e-procurement application of LPSE Bengkulu City Government who served as a procurement committee of goods and services or members of the working group Procurement Unit (ULP) and winner vendor in e-tendering of Bengkulu City Government Year Budget 2017.

Table 2. The Characteristics of Respondents

Category	Number of Respondents	Percentage (%)
Gender		
Male	54	79
Female	14	21
Number of Respondents	68	100
Last education		
High Education	9	13
Diploma	3	4
Undergraduate	50	74
Postgraduate	6	9
Number of Respondents	68	100
Age		
25-30 Years	12	18
31-35 Years	20	29
36-40 Years	13	19
> 40 Years	23	34
Number of Respondents	68	100
Position		
The working group of the procurement services unit (ULP)	17	25
Vendor of goods/services	51	75
Number of Respondents	68	100
Period of using SPSE		
< 1 Year	3	4
1-3 Years	21	31
4-6 Years	31	46
> 6 Years	13	19

Number of Respondents	68	100
Conduct SPSE Socialization		
Yes	57	84
Never	11	16
Number of Respondents	68	100
Frequency of SPSE Socialization	49	67
1x	19	33
> 1x		
Number of Respondents	68	100

Source: Own elaboration, 2018

Based on Table 2, it can be seen that the respondents are mostly male. This indicates that the heavy workload and pressure of various parties in the scope of work of the procurement process of government goods and services require the respondents to have a high intensity that causes women often feel reluctant for a career in the procurement of government goods and services. Also, this condition is caused by the characteristics of work are more technical that requires more technical capabilities owned by men.

Respondent's education indicates that the respondent who is responsible for the operation of SPSE application has adequate formal education. Education is closely related to the abilities and skills possessed by the respondent as a stock to be able to run the job well. While the age of respondents shows the majority of respondents in the productive age category so that the respondents tendency more familiar and responsive to new technology.

The use of SPSE shows that most of the respondents have long worked as procurement committee or vendor so that there is enough experience level in SPSE context. This is also supported by the majority of respondents (84%) have followed the socialization, although the majority only one time.

Measurement Model Results

Measurement model is used to test the validity of the construct and the reliability of the research instrument (Abdillah and Jogiyanto, 2015).

Table 3. Output of Measurement Model

Variables	AVE	Composite Reliability	R-Square
Emotional-Focused Adaptation	0,614	0,889	0,461
Problem-Focused Adaptation	0,700	0,845	0,362
IS Infusion	0,702	0,823	0,217
Threat Appraisal	0,525	0,921	
Opportunity Appraisal	0,582	0,864	
Secondary Appraisal	0,618	0,874	

Source: SmartPLS Output, own elaboration, 2018

After elimination of the PK1, PS4, AM6, AM7, AE1, AE3, AE4, AE5, AE7, AE3, AE4, AE5, AE5, AE7, AE3, and IS3 indicators, all variables have sufficient convergent validity (see Table 3).

Table 4. Cross Value Indicators with Constructions in Model

Indicator	Emotional-Focused Adaptation	Problem-Focused Adaptation	IS Infusion	Threat Appraisal	Opportunity Appraisal	Secondary Appraisal
AE10	0.914	0.049	-0.124	0.586	-0,227	-0.352
AE12	0.690	0.006	-0.096	0.537	-0.155	-0,019
AE2	0.572	0.248	0.029	0.407	-0,095	-0.153
AE6	0.538	0.124	0.084	0.221	0.055	-0.164
AE8	0.864	0.037	0.078	0.427	-0,053	-0.154
AE9	0.903	0.211	0.124	0.511	0.004	-0,251
AM1	-0.038	0.614	0.185	0.059	0.404	-0.024
AM2	0.049	0.799	0.353	0.061	0.486	0.237
AM3	0.202	0.760	0.371	0.063	0.309	0.096
AM4	0.185	0.774	0.295	0.042	0.301	0.029
AM5	0.125	0.657	0.431	-0,055	0.438	0.060
IS1	0.016	0,500	0.910	-0,170	0.570	0.208
IS2	-0,026	0.319	0.851	-0.179	0.583	0.309
IS4	0.063	0.141	0.549	0.024	0.345	0.339
PA1	0.591	0.095	-0,040	0.843	-0.260	0.082
PA2	0.340	0.075	-0.069	0.705	-0.291	0.150
PA3	0.465	0.028	-0.177	0.870	-0,230	-0.002
PA4	0.555	0.162	-0.105	0.897	-0.192	-0.109
PA5	0.537	-0.184	-0.338	0.856	-0.370	-0.123
PK2	-0.039	0.449	0.558	-0.261	0.804	0.263
PK3	-0.152	0.460	0.493	-0.207	0.804	0.317
PK4	0.003	0.424	0.587	-0,300	0.805	0.338
PK5	-0.177	0.381	0.387	-0,227	0.718	0.131
PS1	-0.148	0.105	0.482	-0,057	0.425	0.699
PS2	-0.298	0.116	0.137	-0.006	0.207	0.938
PS3	-0.097	0.068	0.283	0.048	0.299	0.858

Source: SmartPLS Output , own elaboration, 2018

Table 4 shows that all values of cross-loading indicators are higher in constructs than cross loading in other constructs. It can be concluded that the model has sufficient discriminant validity. Additionally to construct validity test, validation of measurement model, reliability testing is done by Composite reliability method. The results in Table 3 show that all constructs are reliable with the criterion of reliability test value> 0.7.

Structural Model Results

Hypothesis testing in this study using inner model with 95% confidence level and error analysis (α) = 5%. The test was performed using bootstrapping method in SmartPLS 3.2.7 software to obtain path coefficients (β). Based on the coefficient value of each path in Table 5, four hypotheses are accepted.

Table 5. Structural Model Results

Path		Original Sample	T-Statistics	P Value	Conclusion
PK	AM	0,661	6,209	0,000	Accepted
PK	AE	0,198	1,043	0,298	Rejected
PA	AM	0,251	1,656	0,098	Rejected
PA	AE	0,667	2,605	0,009	Accepted
PS	AM	-0,099	0,657	0,511	Rejected
PS	AE	-0,312	2,302	0,022	Accepted
AM	IS	0,471	4,611	0,000	Accepted
AE	IS	-0,057	0,346	0,729	Rejected

Source: SmartPLS Output , Data Processing, 2017

This study found that opportunity appraisal positively affects the problem-focused adaptation. This finding indicates that the ability of the SPSE system to provide positive consequences, such as supporting user tasks. Internet-based SPSE system causes faster process and delivery of information in the form of *aanwijzing* media and online clarification can be accelerating response to questions and clarification of auctions. SPSE placement also reduces user and vendor fees for goods or services because the auction requirement of hard copy is only requested to the winner at the end of the auction process.

According to CMUA, users are first involved in a primary appraisal when users assess whether an IT event is an opportunity or a threat. IS becomes an opportunity appraisal arising from belief that the IS will bring positive consequences (Beaudry and Pinsonneault, 2005). If users view the IS positively, then the users will conduct an adaptive behavior attempt to deal with the situation, by anticipating the need to learn new skills, overcoming difficulties, and adapt to working procedures.

Adaptive users behavior to face situation due to the implementation of this SPSE system is a problem-focused adaptation effort. The problem-focused adaptation behavior aims to manage disturbing events by altering the external aspects of situations such as environmental stress, constraints, resources, or procedures (Lazarus and Folkman, 1984). Efforts made procurement committee and vendor transform external aspects of situation due to SPSE implementation to realize user's expected benefits of IS, for example, attempts to change work adapted habits to the procedures that must be done in following e-procurement. Thus this problem-focused adaptation behavior can lead actions to improve efficiency and effectiveness in using IS, which tend to affect the user's performance positively.

The result also show that no positive effect of opportunity appraisal on emotion-focused adaptation. This result indicates that users who evaluate a positive SPSE will not require drastic adaptive responses, such as less engagement either restoring emotional stability or altering the environment. Emotion-focused adaptation behavior is carried out through positive reappraisal by means of users having to accept the SPSE system as an opportunity to gain a better profit when compared to the manual system. User adaptation efforts are directed at restoring to emotional stability and reducing the tensions caused by IT events, tending to ask for social support from spouses or family members. This situation indicates that users have limited control of SPSE as mandatory system, with less choice and necessity to understand procedures in operating SPSE electronically. Otherwise, users are less likely to agree with the consequences of implementing the SPSE system and reduce their involvement in work.

This result does not support Coping Theory (Lazarus and Folkman, 1984; Fadel, 2012). Combination of problems and effort to cope with user's emotions depends on the appraisal of the situation due to the implementation of the SPSE. Logically, positively assessed events are more likely to require problem-focused adaptation rather than emotional-focused adaptations because there is no threat to emotional stability. These results indicate that SPSE's rating system does not affect emotional-focused adaptations, which mean that if the system are qualified, then users will use the system continuously (Seddon and Kiew, 1996). Referring to that opinion, it is very important to maintain and improve the quality of SPSE so that users are not reluctant to interact with SPSE. Thus it is expected that improvements made to the quality of the SPSE will be able to improve emotionally focused adaptation users of SPSE System.

This research also found threat opportunity has no effect on problem-focus adaptation. It indicates that average users are productive, experienced and have participated in SPSE socialization. This means that the capabilities of the SPSE users will be able to overcome the perceived negative consequences associated with IT events. However, a problem-focused adaptation can address issues related to IT activities directly, such as developing new standards of behavior, increasing interest in using IT, and seeking training for self-improvement.

According to Fadel and Brown (2010), threat perceptions are strongly influenced by the extent to which users perceive IS to be difficult to use. This means that LPSE can reduce threat perception by ensuring support to help users to cope with IS problems. In addition, it should periodically monitor system and coordinate with developers in Central LKPP to anticipate the existence of anomalies and various threats. It is thus expected that efforts to overcome difficulties in the use of the SPSE system will affect problem-focused adaptation efforts.

The study also found a threat appraisal has a positive effect on emotion-focused adaptation. User's perceived SPSE has several advantages in the process of procurement such as ease of use, save the cost of procurement administration and cost of use of consumables (e.g. stationery), and speed up the procurement process. However, users also feel the application of the SPSE system as a threat when certain parties want to take advantage of the SPSE system for a particular interest. Therefore, LPSE should fostere employees's responsibilities for managing the SPSE through clear procedures of recruitment, transfer and dismissal, training, and paying attention to unsatisfied employees with the organization which may lead to negative actions.

This study also found that secondary appraisal had no positive effect on the problem-focused adaptation. It indicates that users generally had sufficient IT capabilities but insufficient ability to perform tasks related to electronic auctions, starting from registration, procurement documents, and uploading bidding documents. This finding also indicates users have job autonomy in but less control on technology features and functions of e-procurement as mandatory system.

Furthermore, this study found a negative effect of secondary appraisal on emotional-focused adaptation. Procurement committees and vendor are not able to deny the existence of a dilemma in the procurement process that will affect their emotions. Thus, bidding in the auction must be ensured in accordance with requirements as outlined in the auction document as a specification or technical requirement. In order to achieve these objectives, it must be ensured that the vendor will be able to complete the work according to the contract, such as vendors should have appropriate experience, financial and personnel capabilities adequate, so that work can be done according to the contract. Both technical requirements and qualification requirements must be equally fulfilled.

Furthermore, this study found that problem-focused adaptation has positive effect on IS infusion. It indicates that users maturity level (e.g. experience) are considered as capability in managing disturbing events due to SPSE implementation by changing the external aspects, such as environmental stresses, obstacles, resources, or procedures. This finding supports Coping Theory which shows the form of user adaptation as a problem-solving in response to disturbing events occurring in the environment (Lazarus and Folkman, 1984). The CMUA model predicts users who have problem-focused adaptations will more easily achieve effective and efficient results on deep system utilization.

Finally, this study found that emotion-focused adaptation has no effect on IS infusion. It indicates that even though users perceive dissatisfied regarding to technically disadvantage of e-procurement as mandatory system, users are quite capable to adapt the IT events consequences by attempting to reduce emotional tensions. User initiates efforts by soliciting moral support from colleagues, family members and superiors, further motivating oneself with positive thinking towards e-procurement (Davis, 1989). Thus, it is important to improve user's perceived benefits of e-procurement by increasing user's emotion-focused adaptation.

5 CONCLUSION

This study found that opportunity appraisal, threat appraisal, and secondary appraisal have an important role in improving problem-focused adaptation and emotional-focused adaptation. However, only opportunity appraisal has an important role in improving problem-focused adaptation. Furthermore, both problems-focused and emotion-focused adaptation play important role in increasing IS infusion. Problem-focused adaptation is the most dominant variable in influencing IS infusion. These findings are meaningful when problem-focused adaptation and emotion-focused adaptation improved, it will increase e-procurement infusion. Theoretically, this study confirms the role of the CMUA model and Coping Theory in explaining the

IS infusion process in the context of local government organizations.

Practically, these findings underscore the need for stakeholders to continuously develop user capabilities (problem-focus adaptation) for handling technical disturbances and optimize organizational control through separation of duties and responsibilities. Also, regarding to security issues, Local governments should involve users in IS development process due to improve users's ownership and provide sufficient job autonomy.

Methodologically, further researches need to be expand generalization in the context of other Government agencies, such as ministries and Institutions. Also, nonprobabilistic sampling need to be deepen the research context by exploring the research subjects better.

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