Exploring the Pattern of Voters’ Characteristics: Partial Least Square Analysis

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Abstract. Understanding of characteristics can be assessed either by public decision-makers, who have been the primary concern of political actors or by voters themselves, who have participated directly in the process of election. Therefore, this study focused on the voters’ self-evaluation to look out on the voter decisions with survey questionnaire have been used as the tools to collect the data independently in relation to create formative measurement model. In addition, major influences to the public also involves the role of emotion, political socialization and tolerance to the diversity of media views. This study investigated gender-based patterns of 790 samples using PLS as a data analysis tool, which found interesting result, which suggested that Social Norm (SNorm) have strongest effect to both PCon and PBen with 0.179 and 0.066 respectively followed by Technology Solution (TSol) with 0.057 and 0.022 as well Legal Regulation (LReg) with 0.043 and 0.020 accordingly. Thus, in the developed model, the researcher recommend that social factors can lead to determination of demand and participation in the voting to have public confidence and good behaviour in the protective manner.

1. Introduction

As the result of different organizational governance, behaviour and culture, unlike other types of institutions, committee must adopt different approaches for leadership, strategies and change management. The administrative attributes should be prioritized, given more attention and improved beyond the others operational quality as attracting more voters to participate to deliver satisfaction that in the long terms have significant relation increase the trust. Political should be aligned with economical context and social culture in which providing proper service and facilities to easily select the known candidate, either through background, opinion or polling result in sense of promotion. Therefore, the lack of application of a time-tested method to distribute the responsibility to committee members is resulting in many non-productive committee meetings to keep update the trend and advancement. Different teams working on the same project usually receive various agendas and priorities. When voters do not feel safe and secure with the offered service, they will choose to stay at home instead go to polling station. Meanwhile, government should prepare every possible program to raise the awareness among society to avoid mismanagement that can disrupted the further implementation. This effort requires the support of media and community group to reduce human errors for privacy protection. Recognizing the important value of personal data will increase the voters’ participation, anticipation measures and security response in running the election. Inefficiency of voting process as the accumulated problems in managerial aspect such as long tabulation and calculation process, delays in election result announcement, difficulties in post-election audit process, many duplication of voters registration reports and lastly, the increased cost in ballot printing, logistics and outsourcing salary.
2. Literature Review

The privacy issue is a stakeholder-specific problem that is driven by the risk of losing privacy, for example, the risk that the enemy will be able to identify the subject of data without the subject's consent; therefore, this privacy issue must be stated from the perspective of stakeholders using the words of the stakeholders themselves [1]. On the other hand, the existence and extent of the issue of voting depends on the effectiveness of the communication mechanism [2]. First, voters must have the necessary information on key issues of the day and candidate positions on those issues. Second, voters must not only receive information, they must be able to understand the message. Furthermore, there is also hard evidence of a trade-off between consumer valuation for personalization and concerns for privacy [3]. The invasion of privacy concerns is the result of an increase in privacy concerns about service technology, indicating the construction of public privacy concerns tending to be a dynamic process [4]. There is an assumption that sharing with close friends does not cause any harm, while privacy and security only appear on the agenda, as networks get bigger; a kind of privacy issue often has to be handled as an add-on rather than by design so it often leads to complicated problems later [5]. On the other hand, people from different demographics have a tendency to behave differently on the same SNS with the same privacy issue and implied that cultural differences create differences in user usage behaviours [6]. Regarding privacy, the results show that most people are aware of privacy issues, but they are less concerned about actually implementing them even if they also object if their privacy is interrupted [7]. In order for informed consent to be meaningful, it is generally recognized that individuals who give consent must understand about the informed consent they would give, one way is to ask the important questions about that informed consent, which will not mean anything if individuals do not have a choice about giving their consent [8]. Socialization primarily as one facet of social structure and crucial to society because it is the means by which political values perpetuated themselves across generation. The important assumptions about socialization are that it is a process, in which social institutions inculcate political values, rather than as a process of learning with completely different individuals develop their own brand of political orientation; then as the consequences of social institutions change more slowly than individual, political socialization must act as a brake for political change. In particular, it defines socialization as a model of social learning that deals with the particular issues of social positions mediated through various community institutions [9].

3. Research Methodology

Inferential statistical analysis involves using information from a sample to make inferences, or estimates, about the population, which has two types, namely test of group differences and test of association to generalize about the populations. Inferential statistics appear originated from the fact that the sampling naturally raises the sampling error so that the sample obtained cannot be perfectly representative of the population. This study address the problem through inferential statistical methods, which are parameter estimates and statistical hypothesis testing for estimating the relationship among variables. Therefore, there are two main limitations of this study by using inferential statistics [10, 11, 12, 13] with smartPLS as the tools for data analytic [14]. Firstly, due to estimation of population measurement, there will be always a degree of uncertainty in this study especially if the sampling techniques do not represent the population properly in certain aspects. Secondly, this limitation is related to the first limitation where some, but not all, inferential tests require users (i.e., researchers, translators) to make initial predictions (based on theory) to run inferential tests. Again, there will be some uncertainty in this process, which will have an impact on the certainty of the results of some inferential statistics. Therefore, this study used two motivations namely “try e-voting as new experience” and “expectation of privacy as only tabulation result revealed” in the context of social norm. At last, here are 10 items of personal data protection (PDP) as the constructs for the measurement in the understanding of voters’ pattern of electronic voting:

a. PDP1 = I expect quick result nationally when using electronic voting.  
b. PDP2 = the use of e-voting will increase the accuracy of PI to prevent multiplication of voters’ list and vote content.
c. PDP3 = everybody should keep silent and be quiet on queue time in election process.
d. PDP4 = I want to know the mechanism to report the privacy violation in electronic voting.
e. PDP5 = the use of e-voting can save national budget a lot.
f. PDP6 = the use of e-identity will enhance the protection of privacy in e-voting.
g. PDP7 = the encryption of vote content to coded data will prevent unauthorized party gain advantages.
h. PDP8 = I am confident to cast vote freely if the electoral machine was proved in its credibility and eligibility through international standard.
i. PDP9 = Interface simplicity is the attribute needed in the e-voting.
j. PDP10 = I am exciting to see Indonesia one-step closer in implementing e-voting like the other countries.

4. Result and Discussion

Blindfolding is a sample reuse technique that allows evaluation of criteria for the cross-validate predictive relevance of the PLS path model. It also systematically deletes data points and provides a prognosis of their original values. Because the procedure must eliminate and predict each data point of the indicator used in the measurement model of the latent variable selected. Therefore, the number of rounds of blindfolding is always equals to the omission distance [11]. The result indicated PDP4, PDP5 and PDP6 have become the significant indicator in the reflective measurement model. Based on chi square test, it has $X^2$ table equal to 11.0705 that can be calculated by writing the formula $X^2 = \text{chiinv}(\text{probability}/0.05, \text{degree of freedom}/5)$ in Excel column. In this case, the degree of freedom can be obtained by multiply total row minus 1 and total column minus 1.

**Figure 1. Partial Least Square with Bootstrapping**

The result shows the gender dependent and there is no obvious difference with the pattern from PDP1 until PD110 between male and female in responding with the e-voting initiative. Meanwhile, likelihood ratio is a test to compare the goodness of fit of two statistical model or a null model against an alternative model. On the other hand, contingency coefficient is a measure of association that the value ranges between 0 and 1, with 0 indicating no association between the row and column variable, while the value of 1 in Lambda means that the independent variable perfectly predicts the dependent variable. Furthermore, in interpreting the correlation (R), the standard often used the range of 0-0.199 (very weak), 0.2-0.399 (weak), 0.4-0.599 (average), 0.6-0.799 (strong) and 0.8-1 (strong). Based on table 2, it shows that PDP10 has average correlation to t value in experience and tabulation, with contribution 23.2% from both independent variables, while the 76.8% have been explained by other variables. For F
table, it can be calculated by writing the formula =finv(probability/0.05, df1/2, df2/787). For the df1 can be obtained by reduce the variable total with 1, while the df2 based on total cases minus total independent variables and 1.

### Table 1. Chi Square Test

| Patterns | Pearson Chi-Square | Asymptotic Significant PCS | Minimum Expected Count | Likelihood Ratio | Asymptotic Significant LR | Contigency Coefficient | Lambda |
|----------|--------------------|-----------------------------|------------------------|------------------|---------------------------|------------------------|--------|
| PDP1     | 2.501              | 0.286                       | 0.58                   | 3.048            | 0.218                     | 0.056                  | 0.01   |
| PDP2     | 6.517              | 0.038                       | 1.06                   | 6.473            | 0.039                     | 0.091                  | 0.029  |
| PDP3     | 1.122              | 0.571                       | 0.8                    | 1.915            | 0.384                     | 0.038                  | 0.000  |
| PDP4     | 2.679              | 0.262                       | 0.74                   | 1.990            | 0.37                      | 0.058                  | 0.000  |
| PDP5     | 1.883              | 0.757                       | 0.01                   | 3.197            | 0.525                     | 0.049                  | 0.000  |
| PDP6     | 1.604              | 0.808                       | 0.01                   | 1.975            | 0.74                      | 0.045                  | 0.002  |
| PDP7     | 2.953              | 0.566                       | 0.01                   | 4.363            | 0.359                     | 0.061                  | 0.002  |
| PDP8     | 0.833              | 0.659                       | 0.62                   | 0.798            | 0.671                     | 0.032                  | 0.000  |
| PDP9     | 7.27               | 0.026                       | 0.93                   | 7.236            | 0.027                     | 0.096                  | 0.032  |
| PDP10    | 4.224              | 0.121                       | 0.58                   | 2.902            | 0.234                     | 0.073                  | 0.000  |

### Table 2. Analysis Simple Linear Regression

| Variable | R         | R Square | Adjusted R Square | Std. Error of the Estimate | ANNOVA F | experience | t tabulation |
|----------|-----------|----------|-------------------|---------------------------|----------|------------|--------------|
| PDP1     | 0.393     | 0.155    | 0.152             | 0.216                     | 71.885   | 8.809      | 6.784        |
| PDP2     | 0.348     | 0.121    | 0.119             | 0.290                     | 53.993   | 9.496      | 2.812        |
| PDP3     | 0.233     | 0.055    | 0.052             | 0.264                     | 22.660   | 4.952      | 3.801        |
| PDP4     | 0.325     | 0.105    | 0.103             | 0.247                     | 46.299   | 7.168      | 5.322        |
| PDP5     | 0.308     | 0.095    | 0.093             | 0.285                     | 41.273   | 7.996      | 3.120        |
| PDP6     | 0.237     | 0.056    | 0.054             | 0.309                     | 23.455   | 5.895      | 2.603        |
| PDP7     | 0.233     | 0.054    | 0.052             | 0.306                     | 22.583   | 5.172      | 3.503        |
| PDP8     | 0.384     | 0.148    | 0.146             | 0.223                     | 68.177   | 9.534      | 5.302        |
| PDP9     | 0.278     | 0.077    | 0.075             | 0.279                     | 32.945   | 6.137      | 4.376        |
| PDP10    | 0.482     | 0.232    | 0.23              | 0.206                     | 118.935  | 13.983     | 4.429        |

5. Bridging the Gaps for Privacy Protection

In certain election, young adults have shown significant levels of increased engagement while older age have typically had voting rates [16]. The involvement of citizens in the elections depends on many things, the urgency of the current problems faced by citizens, the relevance of the issues being addressed, their previous engagement with the government, ways of thinking and trends of today's society, which trigger them in making decisions. This type of engagement usually occurs in the form of interaction between civil servants and citizens who demand a series of attributes. For a sensible and respectable public dialogue to occur, citizens must be well-informed and independent-minded contributors and facilitate the contribution of others. The citizen engagement in e-voting can increase the quality while it also prevents opportunities for privacy violation to occur internally and externally. However, it takes challenges and complicated negotiation to align the vision between government, society and organization in administration and technical aspect of e-voting. They require the bravery and courage to articulate the opinion and idea clearly while simultaneously defend their views and perception. Meanwhile, the possibility to change needs the attempts to not only justifies the importance but also to seek every possible scenario that considers contrary views. Thus, the relevant organizers must have reasoning ability to weigh evidence and assess claims. They should also have the capacity to defer personal needs or preferences for the benefit of long-term benefits or outcomes, or the public interest. Such attributes rely heavily on citizens' social status, education, and many aspects of seemingly relevant and related demographics. Therefore, critical role of massive online media to shape the mind of citizen in the needs of election to fulfill the right of expression and freedom of choice. On the other hand, citizens
viewed election as the people party wherein they can meet the other and show their stand with casting a vote as their responsibility to determine the future of countries. A high pitch expectation to have good quality of election that does not merely safety but also secure and quick tabulation result that was free from fraud and cheating.

Figure 2. The Aspects Influence the Social Community

Underestimating and neglecting these problems can cause disasters in the electronic voting implementation such as blackmailing, stalking, bullying or improper use of personal data, which might either deliver huge loss to institution financially or trust reduction [15]. To what extent that legal, social and technology product understood by the citizen as the safeguard to protect their personal data, can be summarized as:

1. Potentially provide extensive and detail description of restriction on contribution and expenditure then provision of campaign requirement that prohibited involuntary involvement of citizen.
2. Additional protections that could limit the unnecessary impact on the data subject, privacy-enhancing technologies, data minimization, increased transparency, general and unconditional right to opt-out and data portability.
3. The nature and source of the legitimate interest related to the data processing required for the implementation of fundamental rights, contrary to the public interest or benefits from the recognition in the society concerned.
4. The lack of a consistent approach may result in a lack of legal certainty and predictability, which could undermine the position of data subjects and impose unnecessary regulatory burdens on implementations and other activities operating across the electoral bodies with related responsibilities.
5. Clarification of the ambiguous consent requires the use of mechanisms that leave no doubt and confuses of the data subject’s intention to consent.
6. Fulfil all relevant conditions to make the obligation valid and binding or comply with other related law, including the requirement of necessity, proportionality and purpose limitation.
7. Empower the data subject or eligible voters to have control of their own data by available mechanism for further process.
8. The complexities of legal regulation to be understood by citizen have been directed by the lack of accessibility of specific law information to be learnt properly by relevant agency lead to failure of principle practices and awareness in personal data protection.
9. The lack of public participation and discussion in drafting the legislation before regulation enactment resulted to an increase of citizen passiveness towards government attempt in enhance personal data protection in election.
10. More cooperative and courteous of legal institution to convey the message in creating uniformity of best election practice have positive influence to help citizen better understanding of legal product implication and function.
11. Provide more convenience way to celebrate the election that can maintain the trust level of citizen by delivering high promises in the long-term scale.
12. High level of curiosity to experience the new trend for its feature and capacity become really dominant in the citizen mind that can attract their cooperation to the new policy.
6. Conclusion
Communities are often defined as groups or networks of people who share or have common background, interest or understanding such as regional, work, religion or ethnicity. As the role of money arises significantly together with crucial government position, once the candidates and political party achieve victory, they owed huge debt to the large contributors that supplied the means to be champion. Actually, this political and social cycle have been trapped the players and beneficiaries to be dependent on power of money in the demand and supply situation with crucial position of government. Thus, the distinction between the campaign distribution and a bribe is almost a hair's line difference that the verse of legal regulation can be interpreted one way another. Furthermore, there is good news based on the statistic, it showed that citizen value their personal data more than the intrinsic value of money, therefore, such circumstances and situation can posit the challenge to accept the money against their will. Citizen want the development of e-voting policy have proper platform and respect fundamental and concept of privacy to be more than the others, such as the protection of voting time, the expression of the voter, fulfilment of human rights, consent notice, etc. Constructing the relevant criteria to define privacy requirement is essential part of e-voting system.

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