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Determinant Factors of Disruptive Technology - Case Study of Web-Based Airplane Ticket Selling

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Abstract

Nowadays, airplane is a common transportation. There are so much airplane enterprises turn up to accommodate people. In case of there are many enterprises in airplane industry, local services called tour& travel taking roles for telling to the people so that they could buy a seat of their desire airplane.

Today, the services for directing people to choose and book an airplane ticket could be done also via internet, the result from technological development. Almost all of airplane enterprises provide this services. People then may choose either to go to the local tour& travel shop or get their own via internet in buying airplane tickets. There are so much factors will determine the possibilities of customers in choosing services for buying ticket and it will become the objective of this research, determine factors that influence the shaping of disruptive technology in web-based ticket selling.

The research methodology that the author use is quantitative statistics by using numeric calculation based on questionnaire and then uses it to find the correlation and significance level between independent and dependent variables. By using the methodology mentioned above, the authors found that web-based ticket selling is a threat to local tour& travel shops in Bandung.

Web-based is a present technology which is overtake the existing market created by local tour& travel shops. The author also found that ease of access is the main factor affect disruptive technology in web-based airplane ticket selling case.

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Keywords: determinant factors; disruptive technology; web-based; airplane ticket selling industries

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1. Introduction

Nowadays, airplane is a common transportation through cities and countries. People today is disposed to find the faster way for their activities. Airplane is the fastest public transportation compared to ship, train and car. Growth level of airplane users in Indonesia is about 10% - 20% annually. In 2014, the advancement of airplane industries is predicted to be more competitive (Indonesia, 2012).

In a row of airplane industries development, some companies started to turn up as the airplane enterprises. They are started to enter the competition to get passengers. The strategy is focused on their value. Some want the executive airplane, with complete facilities and high price, and other offer a really low fare with limited facilities. Then, people may choose which airplane they would like to use across cities or countries.

In case of so much enterprises in airplane industry, then, people also need a service for telling them about the whole airplane enterprises, so that people could buy a seat from their desire airplane. This service has already exist in Indonesia, it called “tour and travel agent service”. People could come to the shop and tell the employee there, where do they want to go, then the employee will find the best airplane company which is match to the customer needs and wants. In Bandung, there are not less than 100 tour & travel agents (myGetInfo.com, 2012)

Through the development in technology, the services for directing people to choose and book an airplane ticket are not only present at the shop. Today, people can also book and buy an airplane ticket by themselves via internet. Through the internet, there are some websites that also provide this services, either own websites from the airplane enterprises or other websites maintained by individuals or groups. The services through internet, might be called as disruptive technology, which may overtake the existing market of local tour& travel shops.

In fact, internet users in Indonesia in 2012 is around 63 million or about 24.23% of Indonesian citizens. In 2013, it is predicted to grow by 30% become 82 million users. (Noor, 2012). Beside the development of internet users, services for airplane ticket online also become excessively, either sale from the own enterprises or individual business which compare all of the enterprises into one website.

Finally, people may choose whether to go to the local tour and travel shop, or have their own via internet. There are so much factors will determine the possibilities of customers in choosing services for buying ticket. It is important to know about this disruptive technology, because it is concern about Indonesian small businesses (tour& travel agents). If those sustaining companies are disrupted and cannot compete, than Indonesia may lose their businessman. As we know if a country want to be a developed country, it needs at least 2% of their citizens become businessman. (Khairi, 2013). If tour& travel agents lose in competition with disruptive technologies in the future, Indonesia will found more difficulties in becoming developed country.

Based on the snapshot of Indonesian internet users, the problem is, people today are tend to buy airplane ticket through internet service. It is then categorized as disruptive technologies phenomenon. Author then want to know what factors that influence people to buy airplane ticket using internet. These factors will be explained and analysed in this paper.

2. Literature Review

2.1 Disruptive

Disruptive technology is an emerge innovations that is usually has type of product like cheaper, simpler, smaller, and frequently, more convenient to use. Disruptive technologies typically are first commercialized in emerging or insignificant markets. We can translate also disruptive technology as an innovation that creates new market by some different values, which eventually are going to overtake the existing market (in this case market of tour& travel agent). Internet, is one thing that may become disruptive technologies to suppliers using personal computer hardware and software (Christensen, 2000).

Product that do not appear to be useful to our customers today (that is, disruptive technologies) may squarely address their needs tomorrow. Recognizing this possibility, we cannot expect our customers to lead us toward innovations that they do not now need. Therefore, while keeping close to our customers is an important management paradigm for handling sustaining innovations, it may provide misleading data for handling disruptive ones. (Christensen, 2000).
New-market disruptions follow a remarkably consistent pattern, regardless of the type of industry or the era in history when the disruption occurred. Dozens of companies today making the same predictable mistakes, and the disruptors capitalizing on them. (Christensen C. M., 2003)

Technology does not appear to disruptive before larger groups of users begin to adopt the technology. (Klang, 2006).

3. Methodology

3.1 Location of study

This study was carried out in Bandung City. Author do this study at Bandung Institute of Technology and surroundings. It use consideration of domicile which is highly variable in Bandung Institute of Technology. The college students there, are come from some cities outside Bandung, which means they always buy airplane ticket on holiday.

3.2 Selection of Respondents and Data Collection

The data in this study come from undergraduate students, postgraduate students, and lecturers of ITB, also families of the students of ITB. So, author collected some variants type of jobs. In result, author get respond from 100 respondents.

Interview technique was used to classified factors that influence people who tend to buy airplane ticket through internet. After that, author spread questionnaires to measure in quantitative ways. The questionnaires itself spread online (using www.surveymonkey.com) and offline (in a form of hand out paper).

3.3 Data Analysis

Data analysis conducted in this study was analysed using SPSS software programme. Research variables consist of dependent variable and independent variable. The dependent variable is disruptive technology, while the independent variables are ease of access, time cutting in getting digital printing ticket, ease of payment, complete data, and security level.

The dependent variable, disruptive technology, will be measured by people’s frequency of buying ticket using internet. This measurement indicated how people tend to use internet rather than tour & travel to buy airplane ticket. The independent variables received from interview method. Ease of access means simplicity in accessing airplane websites to buy the airplane ticket; time cutting means shorter time got in buying through internet because people will get directly digital copy of the ticket; ease of payment means simplicity offering of payment method, such as using ATM, e-banking, debit and credit card; complete data means completely data provided in the airplane websites about the airplane ticket; security level means how secure people are to buy airplane ticket using internet, will they really get the ticket or not.

After determine the variables, author use some tools in SPSS, which are validity test, reliability test, and multiple linear regression tools. Validity test functioned to know which variables are valid to be used in this research and which is not. Reliability test used for show how big an instrument could be trusted and used as data collection tool. The more reliable an instrument, the more we can get same result in same objects on future research. Multiple linear regression used to see the correlation between dependent variable to independent variables.

Equations and formulae should be typed in Mathtype, and numbered consecutively with Arabic numerals in parentheses on the right hand side of the page (if referred to explicitly in the text). They should also be separated from the surrounding text by one space.

4. Result and Analysis

4.1 Respondent Identification, Airplane Ticket Purchase Frequency, and Choice of Where to Buy Airplane Tickets

Author collect 100 questionnaires from 100 respondents. In gender identification, author find that from 100
respondents, 58 are male (58%) and 42 are female (42%). Those respondents come from undergraduate students (86 people), postgraduate students (2 people), civil servants (2 people), private employees (4 people), employee of state-owned enterprises (1 person), and 5 from other jobs. In case of frequency level in buying airplane ticket, most of respondents answer less than 3 times each year (60%), 29 people said 3 – 5 times each year (29%), 7 people are buying airplane ticket 6 – 15 times each year (7%), and the rest buying airplane ticket more than 15 times each year (4%).

To prove the disruption presence in case of web-based airplane ticket, author got result show that 30 people are using tour& travel to buy airplane ticket (30%) and 70 people are using internet to buy airplane ticket (70%). It is a big gap to see that people now are tend to buy airplane ticket using internet rather than via tour& travel agent. Between those 30 people who always buy airplane ticket using internet, there are 4 of them who ever bought airplane ticket using internet. So, in the next test, there are 74 respondents measured, which ever use internet to buy airplane ticket.

4.2 Validity Test

Validity used to measure how valid every single question is. A question categorized as valid if it is do and measure what it should be. If the question is not valid, it means, it is not useful for researcher, cause it is not measuring what it should be. (Sunyoto, 2012).

Author do this validity test through the dependent and independent variables to measure whether it is valid or not using SPSS software programme. Below is the result.

| Correlations                        | Frequency of BUI | Ease of Access | Time cutting in getting digital printing ticket | Ease of Payment | Complete Data | More secure | Total |
|-------------------------------------|------------------|----------------|-----------------------------------------------|-----------------|---------------|-------------|-------|
| Frequency of BUI                    | Pearson Correlation (2-tailed) | 1 | .328** | .245* | .150 | .254* | .243* | .637*** |
|                                    | Sig. (2-tailed)   | N   | .004  | .035  | .202 | .029  | .037  | .000   |
| Ease of Access                      | Pearson Correlation (2-tailed) | 1 | .526** | .234* | .350* | .139 | .195** |
|                                    | Sig. (2-tailed)   | N   | .000  | .045  | .002 | .239  | .000  |
| Time cutting in getting digital printing ticket | Pearson Correlation (2-tailed) | 1 | .010*  | .009  | .74  | .74  | .74  |
|                                    | Sig. (2-tailed)   | N   | .000  | .000  | .000 | .000  | .000  |
| Ease of Payment                     | Pearson Correlation (2-tailed) | 1 | .74*  | .033  | .74  | .74  | .74  |
|                                    | Sig. (2-tailed)   | N   | .000  | .000  | .000 | .000  | .000  |
| Complete Data                       | Pearson Correlation (2-tailed) | 1 | .249** | .349* | .865** | .673** |
|                                    | Sig. (2-tailed)   | N   | .000  | .000  | .000 | .000  | .000  |
| More secure                         | Pearson Correlation (2-tailed) | 1 | .529** | .379** | .349* | .349* | .349* | .349* |
|                                    | Sig. (2-tailed)   | N   | .000  | .000  | .000 | .000  | .000  |
| Total                               | Pearson Correlation (2-tailed) | 1 | .637** | .595* | .751* | .672* | .613* | .678** |
|                                    | Sig. (2-tailed)   | N   | .000  | .000  | .000 | .000  | .000  |

** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.05 level (2-tailed)

Fig 1. Table of Validity Test Output

Based on the test, we could see that all of the variables are valid with a high significant level (at the 0.01 level). Frequency of BUI is frequency of buy using internet, which is the dependent variable, it is valid with correlation coefficient 0.637. The rest is the independent variables which also has a high correlation coefficient. So, after using validity test, we conclude that all of variables are valid.

4.3 Reliability Test

Reliability is showing level of consistence and stability from the data. It is showing how big an instrument could be trusted and used as data collector. The higher reliability of instrument is, the higher it is reliable and can be trusted. The more reliable an instrument is, the more possible we can get the same result in measuring the same object. (Nugroho, 2011). Reliability tested to both dependent variable and independent variables and author get result
as following.

|                | N  | %  |
|----------------|----|----|
| Cases Valid    | 74 | 100,0 |
| Excluded*     | 0  | 0  |
| Total          | 74 | 100,0 |

Fig. 2. Table of Case Processing Summary

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|------------------|------------|
| 0,714            | 6          |

Fig. 3. Table of Reliability Statistics

Figure 2 shows us that the respondents answer that is valid is (N) = 74 data with percentage of 100%, while excluded data is (N) = 0 with percentage of 0%. It means, the whole data is valid. Figure 3 shows the reliability statistics. The Cronbach’s Alpha value is 0,714 or 71,4% which means the data is reliable. (Nugroho, 2011).

4.4 Multiple Linear Regression Test

Linear regression is a test to see how the independent variables influence the dependent variable. (Nugroho, 2011). In this paper, we use multiple linear regression because we have some independent variables which we want to know the relation to the dependent variable. We have disruptive technology (frequency of buy using internet) as the dependent variable. Independent variables consist of ease of access, time cutting in getting digital print ticket, ease of payment, complete data, and security. Author also used SPSS software programme to analyze it and below is the result.

![Regression Test Output](image)

Based on Figure 4, with level of confidence 94% (error level is 6%), we found that the significant variable which influence the dependent variable is Ease of Access with significant level below 0,06. It means that, the regression function is Y = 0.52X. Y itself is disruptive technology (frequency of buy using internet), while X is Ease of Access. It shows that any increase in X of one unit, then the prediction of Y is up by 0,52 unit.

Based on the result above, author get result that determinant factor of disruptive technology in case of web-based airplane ticket selling is ease of internet access (simpler). According to what Christensen said about characteristic of disruptive technology, simpler is one of the disruptive technology cause. So, the theory is proven in this paper.

5. Conclusion and Recommendation
The result showed that people are tend to use internet in buying airplane ticket. It means that disruptive technology in this case is exist. Other result showed that Ease of Access had high and positive relationship with disruptive technology (frequency of buy using internet). This positive relationship showed that disruptive technology (frequency of buy using internet) increase as internet’s ease of access increased. In other words, web-based airplane ticket selling is a disruptive technology and the determinant factor of disruptive technology was highly determine by ease of access of the internet.

The findings of the research suggested tour& travel agent as the sustaining companies must be first right identify in what might be potential become the disruptive technologies. In this case, we found internet as the potential one. Next, tour& travel agent should invest on that potential disruptive technologies, such as using internet also as the sales system, because the results already shown that people are tend to buy airplane ticket via internet rather than via tour& travel agent. Beside that, tour& travel agents also can develop the new technology quickly to compete with the smaller one. For example, Tour& travel Agent probably can make a web-based system that is simpler or more convenient to use, in order not to lose the customers. By doing that, author wish the small business in Indonesia could stay sustainable compete with any disruptive technologies and lead Indonesia become a developed country.

References

Christensen, C. M. (2000). The Innovator's Dilemma. New York: Harper Business.
Christensen, C. M. (2003). The Innovator's Solution. United States of America: Harvard Business School Publishing Corporation.
Klang, M. (2006). Disruptive Technology, Effects of Technology Regulation on Democracy. 234.
Indonesia, H. S. (2012, August 26). Indonesia Bisa Jadi Produsen Pesawat. Retrieved from Site of Seputar Indonesia: http://www.seputar-indonesia.com/edisicetak/content/view/521349/
Khairi, R. (2013, March 17). CT: Indonesia Butuh 5 Juta Pengusaha Supaya Jadi Negara Maju. Retrieved from site of suarapengusaha: http://suarapengusaha.com/2013/03/17/ct-indonesia-butuh-5-juta-pengusaha-supaya-jadi-negara-maju/
myGetInfo.com. (2012, April 16). Daftar Tour Travel Agent di Bandung. Retrieved from site of mygetinfo: http://mygetinfo.com/2012/03/daftar-tour-travel-agent-di-bandung/
Noor, A. R. (2012, December 12). Potret Pengguna Internet Indonesia. Retrieved from site of detik.com: http://inet.detik.com/read/2012/12/12/170223/2116808/398/ini-potret-pengguna-internet-indonesia
Nugroho, Y. A. (2011). It's Easy Olah Data dengan SPSS. Yogyakarta: PT Skripta Media Creative.
Sunyoto, D. (2012). Analisis Validitas & Asumsi Klasik. Yogyakarta: Gava Media.