

The Effect of E-Commerce Towards Sales Growth on Social Media among Students in Indonesia

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Abstract—With increasingly advanced technological developments, the huge impact on the social field can be seen wherein users usually interact and communicate with each other, especially to promote the products sold or the content created. Therefore, it is interesting to know whether the effect of e-commerce content on social media on information technology students will be the same as on other users in different segments in terms of the effectiveness of educational information content related to promotions and costs. This research then develop the instrument through exploratory analysis of various literature by classifying several indicators into four group of variables consisting of content, promotion, price and growth. Then, reliability and validity analysis was conducted to evaluate the instrument used before linear regression analysis take place. The contribution to this research is to provide views regarding the factors that are of concern to users in utilizing social media that are not found on other platforms so that the optimization process is carried out in making marketing strategies.

Keywords— *Social media, E-Commerce, Content, Linear Regression, Autocorrelation*

I. INTRODUCTION

Indonesia's disruptive technology growth is constantly increasing year by year due to problems and the willingness to win more clients by serving needs based on demands. Unfortunately, due to the tremendous development that is time consuming and costly compared to the initial investment, very few organizations can use it to win the market competition. Another factor is the lack of focus on business process and payment gateway method models. In addition, start-ups are commonly referred to as "burning money" in the first steps of their journey. This is aimed at controlling the market with single or double winners in the long run, but this strategy is very risky and a huge investment in the long run. Attempts to carry out the plan are limited to budgets, so funding usually comes originally from members and the community in the form of donations or service fees. In product development, the time taken to complete all features is very important due to the companies may not be able to complete all jobs quickly, thus reducing the value of product development effectiveness and destroying noise for the target audience. When the effectiveness value is high, the firm can control some aspects such as production and development costs to meet the appropriate timing and market readiness. Enabling the system with specific best practice,

model, standardization or framework template is one way to provide an initial explanation of mechanisms, processes, and procedures. Therefore, developers can understand and choose the right way to start with relevant units and partners, from idea generation to product launch. To initiate production, developers select criteria that replicate certain features of the best products on the market, a set of dynamics associated with circumstances that might arise from a product launch, and company-specific standards. In general, it is important to be aware of the risks and cultural developments affecting the organization condition and environment.

The existence of e-commerce content on social media allows the transactions to be conducted via the internet easily and vastly, which is accessible for anyone, anywhere and anytime. Comparing the burden in development cost in creating application, it is common sense that many people choose social media over other open source project. Interestingly, many students take their spot and position in this process especially utilizing the function of social media for promoting and offering their product and service with various type of price. They also generate several strategies to attract potential buyers such as through cashback, point, bonus, reward, naming invention or even simple likes. Interestingly, Medan as one of biggest city in Indonesia play important role in the national growth economy, which can be said briefly as supported by trade, agriculture and processing industries, that social media become the technology enable to automate, integrate, customize and personalize the process. In, short, e-commerce can be defined as a type of business mechanism that focuses on distribution, trading, purchasing, selling, and marketing of products based on electronic systems such as TV, Internet, and information retrieval networks [1].

E-commerce has complete features, provides maximum security and provides assistance and support in shopping [2]. The high intensity of human needs forces the business community to respond effectively to the need for services and goods to meet demand [3]. E-commerce has an important role in meeting daily needs [4]. Social media is the largest source that includes a text and content involving many information technology students [5][6][7][8]. On the other hand, content created by social media and Internet users can generate or illustrate a creative result in the form of promotional content in the field of ecommerce on social media networks [9][10]. In a content containing creative ideas produced, one of which is the creation of content that involves online shopping and

retail or e-commerce in Indonesia, which is used to convey messages to consumers on social media [11][12].

As we can see briefly right now that content creation is slowly taking over the internet with new kind of application such as TikTok that helping the growth tremendously especially among teenager or students. The power that contents creators in actual can influence significantly the turn event or situation especially related to the trend and perception among society, which further prove become more and more popular by the minute compare to the other line of mass media. On the other hand, the benefits are important for companies involved in creating exciting and important content. Both inside and outside the company, content creators can provide a wealth of new value to their business, but at a very low cost and consistent compared to traditional media that is very seamlessly associated with marketing campaigns. In this study, the effect should be seen to the extent that can provide insight of the importance of social media toward the collaboration process with the e-commerce on students' environment. It can give the direction in term of education approach, which should be analysed more deeply to infer the interpretation on whether the e-commerce effect on social media implicate self-expression or exposure can bring benefit to students' future competence later on.

II. RELATED WORK

Social media is a new alternative that is gaining popularity in implementing marketing by implementing promotional content in businesses and organizations and helping to publish news, making friends. promotion usually implements it in an advertisement that will attract interested buyers in various ways [13] In business, e-commerce is not completely free from the risk of a lot of data forgery, content faking and many retail stores are just looking for profit without being accompanied by quality products [14]. This has changed the way students and students perceive e-commerce content. Currently, a lot of content displayed on social media is only for part of the promotion of a product that can be used or a product needed by the community [15] therefore the need for e-commerce content is very important as a promotional media in business by increasing security in promoting with e-commerce content [16][17]. Social media has changed the availability, structure and delivery of information that serves to reach current and future customers and others [18][19][20]. In running a small business content on social media as marketing to promote business [21].

The contribution of technology to information processing that occurs during technology development can help transform spaces where communication is limited. Therefore, in today's digital era, the emergence of technology can provide solutions for people to find and use information providers to meet their needs. Ordinary media such as radio must be able to increase its presence in order to compete with online media in the digital era as well as the development of ecommerce with digital content [22] At a time when e-commerce content on social media was not yet developed as a means of promotion around people who were addicted to newspapers and television broadcasts, nowadays they are dealing with internet addiction, especially social media and where a lot of time is spent just looking around e-commerce based on content displayed on social media [23]. Students are

connected to other users through social media, where on social media users can form a community, make recommendations or review a product to create trust in other users in e-commerce through content created on social media [24]. Social media as a medium that is very much needed in carrying out business promotions such as placing contextual content that can be accessed with social media, it is proven to be able to help business people in reducing costs in carrying out significant promotions [25].

Social media is a platform for people to discuss their issues and opinions, and it has been used as an innovative medium for educational purposes. Meanwhile, students are taught to use this tool better with classroom media that are only used for messaging or texting, rather than learning how to use these media effectively [26]. With its ease of use, speed, and reach; it is rapidly changing public discourse in society, setting trends and agendas on topics ranging from the environment and politics to technology and the entertainment industries [27]. The potential influences of the media often seem to challenge individual respect and autonomy [28]. As if the proponent point of view assumed that the masses were vulnerable to scammers, cultural stimulants, ideological needles under the skin, television was the sole cause of various social behaviors. Based on the use of social media, which plays a major role in e-commerce, the effect of time adequacy and the nature of the use towards student's academic performance became extremely important to investigate to some extent [29]. In fact, advertising is the primary scheme that social media companies use to generate revenue streams to keep their businesses going [30][31][32][33][34].

III. RESEARCH METHODOLOGY

A. Instrument Development

This research can be categorized as exploratory as it want to find the effect of social media towards several factors in e-commerce as its usage become popular all around the world in delivering the product and service. Several literatures become the basis for the instrument development such as design features that consist of information and website quality as well as performance [14-18] then sustainability and fast response as the indicator for the attribute social media that influence students' academic performance [24-29]. Those indicators then classified into the importance of content, the necessity of promotion, the power of price and the growth objective. Actually, there is a gap in which mostly the research focus on the direction of external impact of social media towards e-commerce while the opposite direction often neglected. It is interesting to know the important role of e-commerce as primary activity in several location of Indonesia have influenced the usage of social media and vice versa.

B. Sample and Population

Universitas Harapan Medan, Universitas Muhammadiyah Sumatera Utara and Politeknik Negeri Medan become the sample for this study with 180, 78, 200 students respectively or a total of 458 students were obtained. There are 15 questions necessary to answer, which can be summarized as skill (Q1), necessity (Q2), easiness (Q3), interested (Q4), fascinated (Q5), updated (Q6), informative (Q7), offerings

(Q8), disruptive (Q9), interactivity (Q10), high risk (Q11), right choice (Q12), historical matches (Q13), platform dependent (Q14) and increased sales (Q15). These indicators then establish 4 (four) variables, which are content (X1), promotion (X2), price (X3) and growth (Y1). Therefore, by using the Slovin formula, the sample size of this study can be obtained with the selected 213 person.

$$n = \frac{N}{1+Ne^2} \quad (1)$$

$$n = \frac{458}{1+458(0,05^2)} = 213 \quad (2)$$

C. Validity test

By using these criteria, the study can determine whether a question is valid or not, a valid questionnaire if r count (rxy) is greater than r table (r table). Validity is the degree to which a concept, conclusion, or measurement is reasonable and likely to correspond accurately to the real world. Validity criteria are used with N = 458 at the 5% significance level. From questions number 1 to 15, the validity test results are obtained, all questions are declared valid because the value of r (item, total) for each question is ≥ 0.3 . The following is table 1, the calculated R-value obtained with the help of the R program.

TABLE I. RESULTS OF VALIDITY WITH THE R PROGRAM

Question	Alpha	Std. Alpha	Total item r.	Validity
Q1	0.859	0.8733	0.6031	Valid
Q2	0.863	0.8782	0.4861	Valid
Q3	0.862	0.8767	0.5027	Valid
Q4	0.853	0.8673	0.7232	Valid
Q5	0.859	0.8746	0.5774	Valid
Q6	0.86	0.8761	0.5464	Valid
Q7	0.858	0.8728	0.6074	Valid
Q8	0.859	0.8735	0.5992	Valid
Q9	0.855	0.8701	0.6612	Valid
Q10	0.864	0.8788	0.4753	Valid
Q11	0.881	0.8878	0.2689	Valid
Q12	0.863	0.878	0.4973	Valid
Q13	0.867	0.8816	0.4275	Valid
Q14	0.856	0.8697	0.6703	Valid
Q15	0.866	0.8808	0.4289	Valid

D. Reliability Test

This test is used to see whether the instruments used in determining the effect of social media e-commerce content on information technology students are reliable. Reliability is the general consistency of a scale. For example, measurements of a person's height and weight are often very reliable. This reliability testing technique uses an analytical technique, namely Cronbach's alpha. In this reliability test, α is considered reliable if it is greater than 0.6. In this study the results are based on processing with R software, the alpha value obtained in the output table is $0.8698 > 0.6$ so that it can be said to be reliable. It refers to the consistency of a test

in measuring its properties. Therefore, there are various factors that can influence this consistency such as psychological or physical state, environmental factors such as room temperature, lighting, noise, etc., individual judgment and test form. If there were no random errors in the measurement, the result in this properties would receive the similar score each time, which can be defined as true score. The extent to which the score is not affected by the measurement error indicates the reliability of the test itself.

IV. DISCUSSION AND RESULTS

A. Data Normality Test

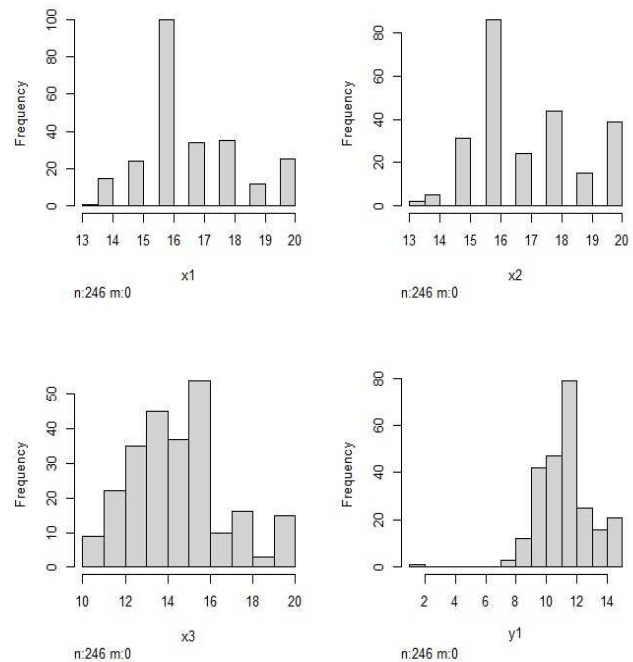


Fig. 1 Normality test of E-Commerce Content (X)

This is a theoretical distribution to test whether the data is completely consistent with a normal distribution or close enough to normal that it can be used with statistical tools without concern. In some cases, statistical tools may be strong against the assumption of normality, so it may be possible to use them without worrying about whether the data is normal. In other words, the normality test is not very sensitive to a certain degree of violation of the normality assumption. Through the data processing using R software, it produced the histogram graph using the Kolmogorov-Smirnov test, which the data normality test was carried out as can be seen in Figure 1. Based on the histogram graph, it is necessary to know that the value $p\text{-value} \geq 0.05$ means normal, thus it is concluded that the regression model is normally distributed. The results of the data normality test with the data values in the variables are as follows:

- One-sample Kolmogorov-Smirnov test
- data: \$ residuals model
- D = 0.081301, p-value = 0.07739
- alternative hypothesis: two-sided

B. Multicollinearity test

The multiple collinearity test helps diagnose the presence of multiple collinearity in a model. It refers to a situation in which there is a correlation or relationship between two or more independent variables. The presence of these type of relationships in the data set is problematic for four reasons as it causes increased variance in the data set, makes the data set too sensitive to small changes, creates instability in the regression model and leads to skewed and unreliable results. Multicollinearity problems can be seen from the Variance Inflation Factor (VIF) value. where if the VIF value < 10 , it can be concluded that there are symptoms of multicollinearity and if the tolerance value is $>$ than 0.1 . vice versa, if the VIF value > 10 and the tolerance value > 0.10 , the conclusion that there can be no multicollinearity symptoms. On the table 2 o find out the regression model obtained from the independent variable, this test was carried out.

TABLE II. MULTICOLLINEARITY TEST

Coefficients		
Model	Collinearity Statistic	
Variables	Tolerance	VIF
x1	0.58148	1.71976
x2	0.57973	1.72494
x3	0.784	1.27551

C. Autocorrelation test

Many statistical procedures assume that the errors of the models used in the analysis are independent of each other or that the errors are unrelated. When this assumption is not satisfied, the error is said to be automatically correlated or dependent. Of course, it involves data collection from a single participant at several time points rather than from many participants simultaneously, the assumption of independent error inherent in many statistical analyses may not be satisfied. When this occurs, the results of this analysis and the conclusions drawn from it are likely to be misleading unless corrective action is taken. The correlation between confounding error in period t and confounding error in period $t-1$ can be found in the linear regression model, so it is necessary to test the autocorrelation assumption to determine whether there is autocorrelation or not. In table 3 do testing the value of the Durbin-Watson Test (DW Test) aims to diagnose the presence of autocorrelation in the regression model the result is that the p-value below 0.05 occurs autocorrelation in this study, the p-value is 0.278 so that there is no autocorrelation.

TABLE III. AUTOCORRELATION TEST

model	Std. Error of the Estimate	Durbin Watson	p-value
1	0.06201775	1.874316	0.278

D. Linear Regression Analysis

Linear regression is one way to perform predictive analysis. It is used for a regression estimation test where the predictive variable has the maximum effect on the outcome variable. Regression estimation describes the exact

relationship between one dependent variable and one or more independent variables. Data processing was carried out using the help of R software which in the calculations obtained the following results:

TABLE IV. REGRESSION ANALYSIS TEST

Coefficients				
Model	Regression Statistic			
Variables	estimate	standard error	t-value	Pr ($> t $)
x1	0.16699	0.16699	2.123	0.0348
x2	0.03817	0.03817	0.521	0.6025
x3	0.31446	0.31446	6.423	0.0346

In the table 4 above, it is explained that variable x_1 has a value of significant or Pr ($> |t|$) smaller than 0.05 , then variable X partially or itself affects variable Y , in this study:

- The test results for variable X_1 are 0.0348 , which means that the value is below the value of alpha, where the variable X_1 has an effect on Y_1 .
- Test results for variable X_2 , the value is 0.6025 , which is greater than the value of alpha, where the variable X_2 has no effect on variable Y_1 .
- Test results for variable X_3 have a value of 0.0346 , where the variable X_3 has an effect on variable Y_1 because the value is below the value of negligence, namely 0.05 .

Then the results of all variables will be shown simultaneously or together as follows. If the p-value on the F statistic is below 0.05 , then all variables X_1, X_2, X_3 simultaneously have a significant effect on the dependent variable F-statistic which is valued: 28.08 on DF 3 and 242 , p-value: $1.287e-15$.

E. Calculate T Test

For the t-test the following results were obtained:

- A significance value of 0.0348 is obtained from the variable "informative and educational content". While the significance value is > 0.05 , it is concluded that the research hypothesis or alternative hypothesis (H_1) is accepted. So, the conclusion is that there is a significant influence between "informative and educational content" on "purchase growth".
- The promotion variable gets a significance value of 0.6025 and also a significance value < 0.05 . With these results, it is concluded that the research hypothesis or alternative hypothesis (H_1) is accepted. the conclusion that can be in the form of no significant influence between promotions on purchase growth.
- While for the variable "Cost", the significance value is 0.0346 and the value is < 0.05 , thus the research hypothesis or alternative hypothesis (H_1) is accepted, so it is obtained that there is a significant effect between "costs" on "purchase growth".

V. CONCLUSIONS

By using linear regression, the relationship between variables to see whether e-Commerce content creation,

promotion strategy and price discovery on social media has an effect to increase sales growth significantly based on case study in Universitas Harapan Medan, Universitas Muhammadiyah Sumatera Utara and Politeknik Negeri Medan. It can be drawn conclusively that students find out that social media can give the relaxed place to do trial and error as well examine their potentiality without being afraid to fail as the cost for that is not huge compare to other platform. These dependent variables should be design properly to be informative, communicative, attractive and educational in term of their objective, so the potential buyer can find the content is useful and meaningful. Even, if they do not purchase the product or request for the service at immediate response but they can lead to other prospective buyers through sharing features in the social media, which are not complicated to do.

Basically, this study uses a linear regression test which is analyzed using R software based on the validity test with a benchmark of 0.4 for sufficient and reliability must be greater than 0.6. In this study, the alpha value obtained in the output table is $0.8698 > 0.6$ so it can be concluded that it is reliable. In linear regression the test results for the X1 variable are 0.0348, which means that the value is below the alpha value, where the X1 variable affects Y, the test results for the X2 variable have a value of 0.6025, where the X2 variable has no effect on the Y variable. Finally, the X3 variable has a value of 0.0346, which can be concluded that it affects the Y variable because its value is below the alpha value, which is 0.05. The results added contribution to the expansion of our previous model that focus to the effect of social media to the sustainability of short message service and phone call as well as to cultural homecoming tradition that depict the student behavior in their daily life, which social media play pivotal and central role to shape and determine their decision making and life pattern significantly.

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