ISSN 2085-4579

Examining the Role of Social Media in Shaping Undergraduate Students' Study Preferences

Fransiscus A Halim [1], Gusti Ketut Siska Sri Nandini[1], Nova Indah Lumbantoruan[1]
[1]Information Systems Study Program, The Faculty of Engineering and Informatics,
Multimedia Nusantara University, Tangerang, Indonesia. www.umn.ac.id
fransiscus.ati@lecturer.umn.ac.id, gusti.ketut@student.umn.ac.id, nova.indah@student.umn.ac.id

Accepted on April 07, 2025
Approved on June 23, 2025

***Abstract* – Social media has undeniably permeated nearly every facet of contemporary daily life, establishing itself as an indispensable tool, especially for students. These digital platforms have evolved beyond mere communication channels, becoming critical conduits through which students access a wealth of information pertinent to their academic pursuits, including educational assignments, supplementary course materials, and collaborative learning resources. The study specifically targeted a homogenous group: students enrolled in the Undergraduate Students Information Systems Study Program, all belonging to the Class of 2022. The research framework was structured around two principal variables. The independent variable was defined as "social media use," encompassing the frequency, duration, and nature of students' interactions with various social media platforms. Conversely, the dependent variable was "students' interest in learning," which was assessed through various indicators reflecting their engagement, motivation, and curiosity towards academic content. The residual analysis indicated the presence of heteroscedasticity within the residuals of the social media and interest variables. This suggests that the variance of the errors was not constant across all levels of the independent variable, a factor that would require careful consideration in subsequent statistical modeling. However, a significant positive observation was the absence of autocorrelation among the residuals of key variable pairings, specifically between social media and interest, interest and time (presumably time spent on social media or studying), and interest and productivity. This lack of autocorrelation suggests that the error terms in the model were independent, strengthening the reliability of the correlation findings.**

Keywords - Interest in Learning, social media, educational assignment, Normality Analysis, Study Preferences

I. INTRODUCTION

Platforms like Facebook, Instagram, Twitter, and TikTok serve as avenues for social interaction with friends, family, and the community. According to data from datareportal.com 2024, There were 185.3 million internet users in Indonesia at the start of 2024, when internet penetration stood at 66.5 percent. Indonesia was home to 139.0 million social media users in January 2024, equating to 49.9 percent of the total population.[1] A total of 353.3 million cellular mobile connections were active in Indonesia in early 2024, with this figure equivalent to 126.8 percent of the total population [1]. Meanwhile, data published in the ad planning tools of top social media platforms indicates that there were 126.8 million users aged 18 and above using social media in Indonesia at the start of 2024, which was equivalent to 64.8 percent of the total population aged 18 and above at that time.[1]This data indicates that teenagers are significant users of social media.[2] Students often use social media for assignments and lecture information.[3]. While social media is ubiquitous, its precise impact on educational performance remains a contentious issue in educational discourse [4]

However, the excessive and uncontrolled use of social media can negatively impact students' interest in learning. One evident manifestation is the phenomenon of "FOMO" (fear of missing out), which refers to the fear of being left out of trending activities on social media, affecting students' learning interests. The allure of social media trends may distract students from their educational work, leading them to spend excessive time browsing social media and experiencing mental fatigue. This inability to disconnect from social media is commonly known as addiction.

The following research questions:

1. How significant is the influence of learning interests among Undergraduate students in the Information Systems Study Program, Class of 2022, on their use of social media?
2. What are the positive and negative impacts of

social media use, and which effect dominates the learning interest of Undergraduate students Information Systems Study Program students

Finally, the scope of this investigation is precisely defined by its target demographic: students enrolled in the Undergraduate students Information Systems Study Program, specifically those from the 2022 academic batch. This focused approach ensures that the findings are relevant and applicable to the intended population within the established methodological framework

A. Previous Research on Social Media and Educational Performance

The study assessed the impact of social media on economic growth in a global perspective hence the use of 198 countries as sample for the period 2009 - 2017. The study utilize and adopted panel data methodologies such as panel corrected standard errors, two-stage least square and panel quantile regression methods for its regression analysis[5]

The impact of social media on educational performance has been the subject of extensive research, with results varying considerably. Several studies have reported a negative correlation, attributing it to the distractions and diminished educational performance associated with excessive social media use.[6] Conversely, other researchers have emphasized potential benefits, including enhanced learning opportunities facilitated by social media and the development of educational support networks.[7]

This study reveals a complex relationship between social media usage and academic performance among college students. While excessive use correlates with negative educational outcomes, strategic utilization of social media for educational purposes can yield positive results. The results demonstrate that while excessive engagement with social media can negatively influence academic performance, the strategic and purposeful integration of social media for educational endeavors can positively impact academic outcomes. This dual effect highlights the necessity of balanced and mindful social media engagement among students.[4]

B. Research purposes

The study investigates the relationship between student learning interest and social media usage. This research provides insights for lecturers, education administrators, and students, enabling them to understand and mitigate the negative impacts of social media on student learning interests while maximizing its positive potential [8]. Thus, more effective strategies can be developed to utilize social media positively, increase student interest in learning as a whole, and help students maximize the benefits of using social media and maintain high learning interest.

The benefits of the research study are as follows:

1. Provide a better understanding of the influence of student learning interest on the use of social media. This understanding can aid in the development of more effective strategies and policies to enhance student learning interests.
2. Assist teachers and lecturers in comprehending the optimal ways to integrate social media into learning, enabling them to maximize the benefits of using social media while maintaining high levels of learning interest.
3. This research enhances the existing body of scientific literature on social media's impact on student learning interests, providing a robust resource for subsequent studies seeking to explore this dynamic relationship.
4. Raise awareness about the significance of positive and effective use of social media in education. It also helps the general public understand the impact of social media use on student interest in learning."

II. RESEARCH METHODS

A. Social Media and Interest in Learning

Social media is a form of media that comprises three essential components: information infrastructure and tools used for producing and distributing media content. The media content itself can encompass personal messages, news, ideas, and digital cultural products. Individuals, organizations, and industries are the participants who possess and consume digital media content.[3]

Interest can be defined as a persistent inclination to focus on and remember specific activities. When someone is interested in an activity, they consistently pay attention to it with pleasure. From a psychological perspective, learning is a process of change and a method of adapting to new circumstances. It involves a transformation in behavior resulting from interactions with the environment to meet one's life needs. These changes manifest in various aspects of behavior [9]

B. Prior Research

In this study, quantitative data were collected using a convenience sampling method through the distribution of questionnaire. Random sampling was employed to ensure the research results could be used

to estimate the population [10]. The validity of each indicator was assessed through a comparison of the corrected item-total correlation [11].

The research investigates three variables, with the dependent variable being interest in learning, and the independent variables being attitude toward using the internet and subjective norms of internet use. The hypotheses formulated for this study are as follows:

H1: Attitudes toward internet use significantly correlate with student interest in learning.
H2: Subjective norms of internet use significantly impact student interest in learning.

Based on the test results, it can be analyzed that respondents' attitudes toward using the internet influence students' interest in learning. Consequently, it can be concluded that students' attitudes toward internet use can foster their interest in learning [12]."

C. *Hypothesis*

We employed an associative hypothesis for this study, which is a provisional statement or research proposition that examines the association or relationship between two variables.

H0: There is no significant influence of Student Learning Interest on the use of social media.
H1: Student Learning Interest has a significant effect on the use of social media.

D. *Secondary Hypothesis*

Minor Hypothesis 1:

H0: There is no significant influence of study time on the use of social media among Undergraduate students Information System Class of 2022.
H1: Study time significantly affects the use of social media among Undergraduate students Information System, Class of 2022.

Minor Hypothesis 2:

H0: There is no significant influence of productivity on the use of social media among Undergraduate students Information System, Class of 2022.
H1: Productivity significantly influences the use of social media among Undergraduate students Information System, Class of 2022.

To maintain focus and ensure the discussion remains pertinent to the primary research problem, this study establishes specific limitations. Firstly, the chosen research methodology is descriptive, aiming to characterize the relationships observed rather than establish causal links. Secondly, the core objective of this research is to quantify the influence of learning interest when mediated through social media platforms.

III. Research and Discussion

A. *Research Objective and Data Collection*

This study adopts a quantitative approach, utilizing a survey as the research method. It examines both independent and dependent variables [13]. Quantitative method is the collection and analysis of numerical data to answer scientific research questions. Quantitative method is used to summarize, average, find patterns, make predictions, and test causal associations as well as generalizing results to wider populations. It allows us to quantify effect sizes, determine the strength of associations, rank priorities, and weigh the strength of evidence of effectiveness.[14] The independent variable in this study is the use of social media, while the dependent variable is student interest in learning. The research design employed is a causal-comparative study known as a criterion group design. Causal-comparative research aims to investigate the presence of a causal relationship between two variables.

In this study, no treatment or control is administered to the existing variables as they have already occurred [15]. The population under investigation consists of Undergraduate students Information Systems Study Program students from the Batch of 2022. The research techniques employed include questionnaires and interviews conducted with a select group of students. The sample size represents 80% of the total Undergraduate students enrolled in the Information Systems Study Program.

B. *Normality test using Shapiro-Wilk's test*

The skew normal (SN) family of distributions includes the normal distribution as a particular case as well as a wide variety of skew densities [16]. To evaluate the normality of the residuals for each variable, this study utilized the Shapiro-Wilk test. A data is normally distributed when the significant value (p-value) > 0.05 [17].The null hypothesis (H0) of this test is that the data is normally distributed. A p-value below 0.05 led to the rejection of H0, implying that the residuals were not normally distributed. A p-value above 0.05 supported the acceptance of H0, indicating that the residuals were normally distributed. The p-values for each variable are as follows:

Social Media variable

```
        Shapiro-Wilk normality test

data:  data$medsos
W = 0.8024, p-value = 4.47e-10
```

Interest Variable

```
        Shapiro-Wilk normality test

data:  data$Minat
W = 0.75814, p-value = 2.435e-11
```

Time Variable

```
        Shapiro-Wilk normality test

data:  data$Waktu
W = 0.8185, p-value = 1.434e-09
```

Productivity Variable

```
        Shapiro-Wilk normality test

data:  data$Produktivitas
W = 0.83346, p-value = 4.502e-09
```

Fig. 1. Normality test using Shapiro-wilk

Based on the Shapiro-Wilk test results in figure 1, the null hypothesis of normality was rejected for all variables. A p-value of 0.05, being equal to the significance level of 0.05, led to the rejection of the null hypothesis. Therefore, the null hypothesis, which states that the variables are normally distributed, was rejected, indicating non-normal distribution. So, the null hypothesis is rejected, which indicates that the data does not follow a typical distribution pattern.

C. Correlation Test using Pearson's test

The correlation coefficient between the variables is generally assessed in correlation analysis. The Pearson correlation coefficient may be defined as a single value that measures the strength of the linear relationship between two variables. A positive relationship signifies that the two variables increase at the same time while a negative relationship signifies that when one increases the other decreases [18]. The Pearson correlation coefficient is a statistical method employed to accurately measure the linear correlation between two variables, thereby indicating the extent of the relationship between them [19]. This test aims to determine whether there is a linear relationship between these variables and how strong the relationship is. The Pearson correlation test was used to test the null hypothesis of no linear correlation between the variables, using p-values. The decision to reject or fail to reject the null hypothesis is based on comparing the p-value to the significance level (α), which is commonly set at 0.05.

H0 = No correlation between variables

H1 = There is a correlation between social media usage and student engagement

Interest Variable and Social Media

```
        Pearson's product-moment correlation

data:  data$Minat and data$medsos
t = 3.0075, df = 95, p-value = 0.003371
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 0.1013651 0.4668416
sample estimates:
      cor
0.2948495
```

Interest and Time variables

```
        Pearson's product-moment correlation

data:  data$Minat and data$Waktu
t = 0.82698, df = 95, p-value = 0.4103
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1168733  0.2792790
sample estimates:
      cor
0.08454274
```

Interest and Productivity Variables

```
        Pearson's product-moment correlation

data:  data$Minat and data$Produktivitas
t = 0.49731, df = 95, p-value = 0.6201
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 -0.1500132  0.2478829
sample estimates:
      cor
0.05095678
```

Fig. 2. Pearson's product-moment Correlation

Based on the results of the Pearson correlation test used in figure 2, there were significant correlations between between interest and social media. Still, there is no meaningful relationship between sound and time and productivity.

D. Chi-Square Test

The Chi-Square test is a statistical method utilized to examine the relationship between two categorical variables. Chi-square is a tool to measure the level of statistical relationship between variables. In this study, the chi-square method is used to examine the extent of the relationship between features in the dataset and classes [20] Its primary objective is to determine whether a relationship or association exists between the variables under investigation. During the Chi-Square test, the observed frequency distribution is compared with the theoretically expected frequency distribution. The null hypothesis (H0) for this test assumes no relationship or association between the variables, while the alternative hypothesis (H1) posits the presence of a relationship or association.

H0: There is no difference between the variables.

H1: There is a difference between the variables.

Social Media variable

```
        Chi-squared test for given probabilities

data:  tab
X-squared = 61.144, df = 3, p-value = 3.348e-13
```

Variable Interest

```
        Chi-squared test for given probabilities

data:  tab
X-squared = 136.56, df = 4, p-value < 2.2e-16
```

Time Variable

```
        Chi-squared test for given probabilities

data:  tab
X-squared = 83.155, df = 4, p-value < 2.2e-16
```

Productivity Variable

```
        Chi-squared test for given probabilities

data:  tab
X-squared = 110.9, df = 5, p-value < 2.2e-16
```

Fig. 3. Chi-square Variable test

Based on the Chi-square test above in figure 3, all these variables do not follow the expected distribution. So, this shows a significant difference between the actual distribution of the data and the anticipated distribution of a given probability.

E. Regression Equation

A linear-regression model is used to identify the general underlying pattern connecting independent and dependent variables, prove the relationship between these variables, and predict the dependent variables for a specified value of the independent variables [21].

The social media variable exhibited a statistically significant ($p < 0.01$) positive effect on interest, with a coefficient of 0.40055. This suggests that for every one-unit increase in social media, interest increases by 0.40055 units, controlling for other variables.

The time variable has an estimated coefficient of (-0.04068) with a level of significance of 0.69660. A higher p-value indicates that the service variable does not significantly affect the dependent variable in this model. The Multiple R-squared value (0.1026) shows that 10.26% of the variability in the dependent variable is explained by social media, time, and productivity.

The F-statistic was 3.543, with a corresponding p-value of 0.01759. Since this p-value is less than the significance level ($\alpha = 0.05$), the null hypothesis is rejected. Therefore, at least one independent variable in the regression model has a statistically significant influence on the dependent variable.

F. Residual Analysis Test

1) Durbin-Watson test (DW)

Durbin-Watson test in the time-series analysis is to test if there exists the zero autocorrelation or not, and had have its own critical value table by Durbin and Watson [22]. The Durbin-Watson test is used to detect autocorrelation in the residuals of a regression model, indicating whether the residuals are independent. Where autocorrelation is defined as the relationship between observations at different times in the time series, the value of the DW ranges from 0 to 4. If the DW value is close to 2, indicating the absence of positive autocorrelation, it usually occurs in a time series that fluctuates up and down repeatedly.

Meanwhile, if the DW value is close to 4, it indicates a negative autocorrelation, which generally occurs in time series data that has a cyclical pattern.

H0 = The model's residuals are not autocorrelated
H1 = There is autocorrelation in the residual model

Interest and Social Media Variables

```
        Durbin-Watson test

data:  ha1
DW = 1.8298, p-value = 0.1844
alternative hypothesis: true autocorrelation is greater than 0
```

Interest and time variables

```
        Durbin-Watson test

data:  ha4
DW = 1.9114, p-value = 0.3173
alternative hypothesis: true autocorrelation is greater than 0
```

Interest and Productivity Variables

```
        Durbin-Watson test

data:  ha5
DW = 1.9503, p-value = 0.3936
alternative hypothesis: true autocorrelation is greater than 0
```

Fig. 4. Non-Autocorrelation test

Based on the results of the Durbin-Watson test above in figure 4, there is no significant autocorrelation among interest, social media, time, and productivity. So, this shows no significant linear dependence between observations on these variables.

Regression Equation
Interest = 2.00505 + (0.40055 * Social media) + (-0.04068) * time + (-0.10624) * Productivity

Fig. 5. Regression Equation

2) Breusch-Pagan (BP) test

The Breusch-Pagan test is a statistical test employed to identify the presence of heteroscedasticity in a linear regression model. Heteroscedasticity occurs when the variability of the residuals (errors) is not constant across the range of predictor values (independent variables). Therefore, it is important to perform the Breusch-Pagan test to ensure that the linear regression model follows the assumptions of homoscedasticity. By detecting heteroscedasticity, this test helps determine whether there are varying levels of dispersion in the residuals.

H0 = Homoscedasticity
H1 =heteroscedasticity

Interest and Social Media Variables

```
        studentized Breusch-Pagan test

data:  ha1
BP = 8.2638, df = 1, p-value = 0.004044
```

Interest and Time Variables

```
        studentized Breusch-Pagan test

data:  ha4
BP = 2.3592, df = 1, p-value = 0.1245
```

Interest and Productivity Variables

```
        studentized Breusch-Pagan test

data:  ha5
BP = 0.31602, df = 1, p-value = 0.574
```

Fig. 6. Constant Error Variance Test

Based on the results of the studentized Breusch-pagan test, there is significant heteroscedasticity between interest and social media variables. However, no considerable heteroscedasticity exists between interest and time or productivity variables.

3) Shapiro-Wilk test

The Shapiro-Wilk test is a statistical test employed to assess the normality assumption of a data sample. It tests the null hypothesis that the sample data is drawn from a normally distributed population. In the Shapiro-Wilk test, the null hypothesis (H0) assumes that the data follows a normal distribution, while the alternative hypothesis (H1) suggests otherwise. A p-value is generated by the test to assess the strength of evidence against the null hypothesis, thereby guiding the decision to either reject or fail to reject it[16].

The hypothesis test for Shapiro-Wilk test is :
H0 = Normal Distributed Data
H1 = Data is not normally distributed.

Interest and Social Media Variables

```
        Shapiro-Wilk normality test

data:  bb1
W = 0.90683, p-value = 4.056e-06
```

Interest and Time Variables

```
        Shapiro-Wilk normality test

data:  bb4
W = 0.81362, p-value = 1e-09
```

Interest and Productivity Variables

```
        Shapiro-Wilk normality test

data:  bb5
W = 0.78759, p-value = 1.615e-10
```

Fig. 7. Normality Test using Shapiro Wilk test

Based on the results of the Shapiro-Wilk Normality Test, it can be concluded that the data on these variables are not normally distributed.

4) Wilcoxon test

The data were analyzed using non-parametric test because the data collected were not normally distributed. In this study, a non-parametric Wilcoxon signed rank test was conducted [23] The Wilcoxon test or paired sign is a nonparametric statistical method for comparing two paired conditions or groups, suitable for use when the data do not meet the assumption of normality or when the data is on an ordinal scale.

H0: There is no significant difference between the two conditions/groups tested.
H1: There is a significant difference between the two conditions/groups tested.

Interest and Social Media Variables

```
        Wilcoxon signed rank test with continuity correction

data:  data$Minat and data$medsos
V = 534, p-value = 0.01017
alternative hypothesis: true location shift is not equal to 0
```

Interest and Time Variables

```
        Wilcoxon signed rank test with continuity correction

data:  data$Minat and data$Waktu
V = 842.5, p-value = 0.002366
alternative hypothesis: true location shift is not equal to 0
```

Interest and Productivity Variables

```
        Wilcoxon signed rank test with continuity correction

data:  data$Minat and data$Produktivitas
V = 632, p-value = 0.001373
alternative hypothesis: true location shift is not equal to 0
```

Fig. 8. Non-Parameter Statistic test using Wilcoxon

Based on the results of the Wilcoxon Signed Rank Test with continuity correction, there are significant differences between the variables of interest and social media, interest and time, as well as welfare and productivity. Thus, indicating a substantial relationship between the interest variable and the other two variables.

5) Multicollinearity Test

To evaluate multicollinearity, the Variance Inflation Factor (VIF) was calculated. Significant multicollinearity is indicated by high VIF values. The interpretation of VIF values is as follows:

- VIF = 1: No multicollinearity. This indicates the absence of significant correlation among the independent variables.
- VIF between 1 and 5: Low multicollinearity, there is a correlation between the independent variables, but it is still acceptable in the regression analysis.
- VIF is > 5: High multicollinearity. there is a significant correlation between the independent variables,

This can affect the regression results. A high VIF value indicates that the independent variable strongly depends on other variables.[8]

If the VIF value is more than 5 or 10, it indicates significant multicollinearity and can interfere with the interpretation of the regression results. In cases of high multicollinearity, it is essential to evaluate the independent variables involved and take appropriate action, such as removing unimportant independent variables or performing data transformations.

```
   medsos          Waktu Produktivitas
 1.540797       1.388616       1.453773
```

Fig. 9. Multicolinearity Test

In this study, three results were obtained from the variables above. It can be concluded that in this study, there was little or even almost no significant correlation between the independent variables.

IV. CONCLUSION

A. Conclusion

Based on residual and correlation tests, the analysis revealed some key findings regarding the relationships between student learning interests, social media, study time, and productivity. A significant finding was the presence of heteroscedasticity in the relationship between student learning interests and social media, indicating that social media inconsistently influences student learning interests. However, the residual analysis also confirmed no autocorrelation among the variables of interest and social media, interest and study time, and interest and productivity, meaning there's no significant linear correlation in their residuals over time.

Further analysis using the Variance Inflation Factor (VIF) showed no multicollinearity among the model's predictor variables, confirming their independence and lack of significant influence on each other. Overall, the findings suggest that the learning interests of Undergraduate students Information System, Class of 2022 significantly affect their use of social media. Conversely, student study time and productivity were found to have no substantial impact on social media usage.

B. Recommendations

This study was conducted with a sample size of 97 valid respondents. For future research, it is highly recommended to increase this sample size to ensure a more robust and representative reflection of the entire student population within the Undergraduate students Information System, Batch 2022. A larger sample will significantly enhance the statistical power, validity, and generalizability of the research findings, allowing for more confident conclusions about the broader student body.

Beyond the statistical tests utilized in this study, it is advisable for future research to incorporate a wider array of advanced analytical techniques. Methods such as multiple regression, factor analysis, path analysis, analysis of variance (ANOVA), and various non-parametric tests could provide a more comprehensive and nuanced understanding of the relationships between the variables. This study primarily focused on interest, study time, and productivity as factors influencing social media use; however, based on its findings, it is further recommended to explore and include other potential variables that may also exert an influence on social media usage, thereby enriching the research's scope and depth.

ACKNOWLEDGMENT

The author would like to thank all lecturers and students who have helped and participated in this research. The author also expresses his deepest gratitude to Universitas Multimedia Nusantara (Multimedia Nusantara University) for providing the opportunity and resources needed to conduct this research. The support and data received played a very important role in completing this research.

REFERENCES

[1] "Digital 2024: Indonesia — DataReportal – Global Digital Insights." Accessed: May 24, 2025. [Online]. Available: https://datareportal.com/reports/digital-2024-indonesia?rq=Indonesia

[2] Y. K. Dwivedi, *Social Media: The Good, the Bad, and the Ugly*, vol. 9844. Cham: Springer International Publishing, 2016. doi: 10.1007/978-3-319-45234-0.

[3] P. N. Howard and M. R. Parks, "Social Media and Political Change: Capacity, Constraint, and Consequence," *Journal of Communication*, vol. 62, no. 2, pp. 359–362, Apr. 2012, doi: 10.1111/j.1460-2466.2012.01626.x.

[4] S. A. V. Paul (Sr.) and S. A. V. Paul (Jr.), "The Impact of Social Media on Academic Performance Among College Students," *Integrated Journal for Research in Arts and Humanities*, vol. 4, no. 3, pp. 115–117, May 2024, doi: 10.55544/ijrah.4.3.19.

[5] P. Asare Vitenu-Sackey, "The Impact of Social Media on Economic Growth: Empirical Evidence of Facebook, YouTube, Twitter and Pinterest," *International Journal of Business, Economics and Management*, vol. 7, no. 4, pp. 222–238, 2020, doi: 10.18488/journal.62.2020.74.222.238.

[6] P. A. Kirschner and A. C. Karpinski, "Facebook® and academic performance," *Comput Human Behav*, vol. 26, no. 6, pp. 1237–1245, Nov. 2010, doi: 10.1016/j.chb.2010.03.024.

[7] A. O. Safori and N. A. B. A. Rahman, "Higher Education and Social Media: An Empirical Evidence from Jordan and Malaysia," *Advances in Journalism and Communication*, vol. 07, no. 04, pp. 118–128, 2019, doi: 10.4236/ajc.2019.74008.

[8] S. F. Wijaya, J. Wiratama, S. A. Sanjaya, S. Pomalingo, and F. A. Halim, "Developing a User-Centered Design Model for Digital Marketing Adoption in Village MSMEs," *Journal of Logistics, Informatics and Service Science*, vol. 11, no. 6, 2024, doi: 10.33168/JLISS.2024.0621.

[9] D. Bandhu, M. M. Mohan, N. A. P. Nittala, P. Jadhav, A. Bhadauria, and K. K. Saxena, "Theories of motivation: A comprehensive analysis of human behavior drivers," *Acta Psychol (Amst)*, vol. 244, p. 104177, Apr. 2024, doi: 10.1016/j.actpsy.2024.104177.

[10] N. Oni, S. A. Sanjaya, and F. A. Halim, "Design and Development of a Web-Based Inventory System Using Agile Methodology and Hybrid Databases for a Pharmaceutical Company," 2024. doi: 10.1109/ICITACEE62763.2024.10762763.

[11] F. A. Halim, D. I. Djong, and S. F. U. Usman, "Examining the Impact of Platform Usage on Online Purchasing in E-commerce," *IJNMT (International Journal of New Media Technology)*, vol. 10, no. 2, pp. 70–78, Jan. 2024, doi: 10.31937/ijnmt.v10i2.3211.

[12] "Social Media Use 2018: Demographics and Statistics | Pew Research Center." Accessed: May 24, 2025. [Online]. Available: https://www.pewresearch.org/internet/2018/03/01/social-media-use-in-2018/

[13] S. Babones, "Interpretive Quantitative Methods for the Social Sciences," *Sociology*, vol. 50, no. 3, pp. 453–469, Jun. 2016, doi: 10.1177/0038038515583637.

[14] J. Rana, P. L. Gutierrez, and J. C. Oldroyd, "Quantitative Methods," in *Global Encyclopedia of Public Administration, Public Policy, and Governance*, Cham: Springer International Publishing, 2021, pp. 1–6. doi: 10.1007/978-3-319-31816-5_460-1.

[15] P. S. Brenner, *Understanding Survey Methodology*, vol. 4. Cham: Springer International Publishing, 2021. doi: 10.1007/978-3-030-47256-6.

[16] A. Monter-Pozos and E. González-Estrada, "On testing the skew normal distribution by using Shapiro–Wilk test," *J Comput Appl Math*, vol. 440, p. 115649, Apr. 2024, doi: 10.1016/j.cam.2023.115649.

[17] N. Y. Indriyanti, S. Yamtinah, and D. Muawiyah, "An Inquiry into Students' Metacognition and Learning Achievement in a Blended Learning Design," *International Journal of Emerging Technologies in Learning (iJET)*, vol. 15, no. 21, p. 77, Nov. 2020, doi: 10.3991/ijet.v15i21.12907.

[18] L. Nakawala, A. M. Muwumba, S. P. Ogwang, W. K. Nahamya, and O. Oyesigye, "Correlational Analysis Between Students' Performance in Theory and Practical Summative Examinations," *International Journal of Vocational Education and Training Research*, vol. 11, no. 1, pp. 7–20, Jan. 2025, doi: 10.11648/j.ijvetr.20251101.12.

[19] M. F. Ikhwan, W. Mansor, Z. I. Khan, M. K. Adzhar Mahmood, A. Bujang, and K. Haddadi, "Pearson Correlation and Multiple Correlation Analyses of the Animal Fat S-Parameter," *TEM Journal*, pp. 155–160, Feb. 2024, doi: 10.18421/TEM131-15.

[20] D. Chen Sami, A. Sugiharto, and F. Jie, "Chi Square Feature Selection For Improving Sentiment Analysis of News Data Privacy Treats," *J Theor Appl Inf Technol*, vol. 102, no. 18, 2024, [Online]. Available: www.jatit.org

[21] N. Roustaei, "Application and interpretation of linear-regression analysis," *Medical hypothesis discovery and innovation in ophthalmology*, vol. 13, no. 3, pp. 151–159, Oct. 2024, doi: 10.51329/mehdiophthal1506.

[22] W. K. S. Lee, "The Deception on the Critical Value Table of the Durbin-Watson Test," Oct. 2024. doi: doi.org/10.2139/ssrn.5005826.

[23] A. L. Syifadevi and N. A. Rizal, "Performance Analysis of Indonesia's Largest Banks and China Banking Titans: Company Performance under the Wilcoxon Signed Rank Test," 2024, pp. 257–271. doi: 10.2991/978-94-6463-558-4_15.