The Influence of Canva Infographics and Educational Video Content on TikTok on Students' Learning Comprehension through Economic and Business Statistics Material as an Intervening Variable (A Case Study of the Office Administration Education Study Program, Faculty of Economics and Business, UNJ)

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Abstract. This study examines the influence of Canva Infographics and TikTok Educational Videos on student understanding, with Economic and Business Statistics (STATKOBIS) acting as a mediating variable. Employing a quantitative approach with PLS-SEM and involving 118 students from the Office Administration Education Study Program at FEB UNJ, this research finds that TikTok videos significantly affect student understanding both directly and indirectly through STATKOBIS. The strongest path is the indirect effect of TikTok content on understanding via STATKOBIS (coefficient = 0.440, p = 0.000). In contrast, Canva Infographics showed neither a significant direct nor indirect effect. The outer model confirms strong construct validity and reliability, while the inner model reveals that 88.4% of the variance in student understanding is explained by the model. These results emphasize that video-based learning, especially through TikTok, can effectively enhance understanding when accompanied by strong subject matter mastery, while static visual media like infographics may have limited impact. The mediating role of STATKOBIS is proven to be critical in bridging digital media and learning outcomes.

Keywords: Canva Infographics, TikTok Educational Videos, Learning Comprehension, Economic and Business Statistics, Digital Learning Media

Introduction

In the rapidly growing digital era, the transformation in the way individuals access and process information has brought significant changes in the world of education, especially in the learning process in higher education. Digital technology not only facilitates economic transactions, but also opens up great opportunities in the utilization of learning media that are more visual, concise, and easy to understand. One form of manifestation of the digitization of learning is the use of infographics and educational video content which is now increasingly popular among students.

Platforms like Canva allow anyone, including lecturers and students, to create interactive and engaging infographics that can convey complex material in a simpler way. On the other hand, TikTok as a short video-based social media has also become an increasingly popular means of delivering education, especially by the younger generation. With a fast, light, and visual delivery, educational video content on TikTok has reached various groups, including students, in understanding lecture material that is considered difficult, such as Economics & Business Statistics.

The above findings are in line with the results of the pre-research conducted on ten students of the Office Administration Education Study Program of FEB UNJ. In this context, students of the Office Administration Education Study Program of FEB UNJ are part of the digital generation who have a strong tendency to consume information through visual media. They are accustomed to speed, practicality and visual appeal in the learning process, and tend to be more responsive to learning materials presented in the form of infographics and short videos compared to conventional methods such as long texts or lectures. This indicates

a shift in learning style that relies more on visual and audiovisual media to understand the material.

Economics & Business Statistics is one of the courses that is often considered challenging by students due to its theoretical, numerical, and technical terms. Therefore, it is important to see the extent to which the utilization of Canva infographics and educational video content on TikTok can improve students' understanding of Statistics material, not only as a delivery medium, but also as an effective learning tool.

In today's digital era, students are increasingly familiar with various technology-based learning media, including infographics and short educational videos. The results of pre-research conducted on 10 students of the Office Administration Education Study Program (PAP) FEB UNJ show that 60% of respondents (6 people) like infographic design using Canva because it looks attractive and easy to understand. Meanwhile, 40% of respondents (4 people) prefer to learn through educational videos on TikTok, which are considered short but information-dense.

However, when it comes to the subject of Economics and Business Statistics (Statkobis), it was found that 70% of respondents (7 people) dislike math-related lessons. Even after using their preferred learning media (both Canva and TikTok), 60% of them (6 people) admitted that they did not understand the Statkobis material, 20% (2 people) felt that they understood very well, and the other 20% (2 people) only partially understood.

This data shows a gap between learning media preferences and the effectiveness of quantitative material understanding. Although media such as infographics and short videos are visually appealing and easily accessible, their effectiveness in improving understanding of analytical material such as Statkobis still needs to be studied more deeply.

Therefore, this study was conducted to analyze the effect of using Canva infographics and TikTok educational video content on student learning comprehension, and to see the extent to which Economic & Business Statistics materials play a role as an intervening variable in the relationship. The results of this study are expected to make a practical contribution in the development of digital learning media that is more effective and in accordance with the characteristics of today's students.

Literature Review

Infograpihcs Canva

Infographics created using Canva have evolved into one of the most popular and effective visual learning media in the digital age. Infographics allow for the presentation of data or concepts in a concise, engaging and easy-to-understand manner, especially in an educational context. Canva, as an online design platform, allows educators and learners to create infographics practically without requiring high design skills. A study by Ristanti & Isdaryanti (2024) proved that the use of Canva-based infographic media in science learning can significantly improve student learning outcomes, as seen from the increase in pre-test and post-test scores and moderate category N-Gain (0.58). These results are reinforced by Susanti et al. (2024) who stated that Canva can increase creativity, learning motivation, and understanding of science material for elementary school students.

The effectiveness of using Canva infographics can be measured through several indicators. First, the effectiveness of learning outcomes, which is seen from the increase in academic scores or students' comprehension skills after using infographics in learning. Second, learning motivation and creativity, which is students' encouragement to be more active in learning and their ability to produce innovative and original visual works. Third, the suitability of the content to the learning objectives, which reflects the extent to which the infographic content supports the achievement of competencies, such as in English learning which emphasizes persuasive elements such as proof and call to action (Andayani et al., 2024). Fourth, user perception and experience, including Canva's ease of use, satisfaction with the design, and need for training as found in Titiyanti et al.'s (2022) study of pre-service teachers. (2022) regarding pre-service teachers. Finally, retention and comprehension of the material, which is the extent to which students are able to recall and understand the information that has been visualized in the infographic (Lyra et al., 2016). These indicators prove that Canva infographics are not only visual aids, but also innovative learning strategies that can promote meaningful learning.

Tiktok Educational Video

Indonesian studies have shown that short TikTok videos are highly effective in formal and non-formal learning contexts, with significant improvements in a variety of student competencies. Febriyanti, Murtinugraha & Iriani (2024) reported that the use of TikTok vertical videos improved student learning outcomes in Research Methodology courses with N-Gain values between 57-75% and user satisfaction levels

reaching 82.4%. Khasanah (2024) found that social studies learning for junior high school students in Purworejo using TikTok improved cognitive learning outcomes by 36% more than the control group (pretest-posttest scores rose from 65.77 to 89.45; p = 0.017). Haslant & team (2024) from UIN Jakarta also reported high effectiveness of increasing students' interest and creativity in learning through TikTok, with increased posttest and valid satisfaction scores. Iswanto, Rahman & Pitaloka (2024) concluded that the case-based learning model assisted by TikTok successfully improved high school students' critical thinking skills on inflation material (N-Gain = 0.573; p = 0.000). Munifah (2024) reported an increase in high school students' interest in learning history in Tasikmalaya by 15.82%, with an N-Gain of 56.59% (p = 0.000). Common effectiveness indicators include: cognitive learning outcomes, N-Gain scores, user satisfaction, critical thinking skills, creativity, and interest in learning, as well as acceptance and motivation to learn.

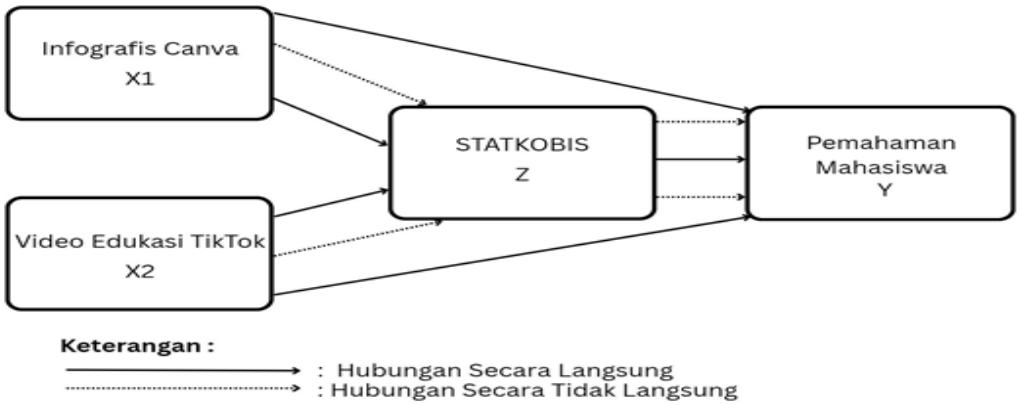
Economic and Business Statistics

Economic and Business Statistics is a branch of statistical science that serves to analyze economic and business data to support accurate and data-driven decision making. In the Indonesian context, a study by Siregar and Arifin (2021) emphasized that economic statistics are crucial in formulating fiscal and monetary policies, especially through indicators such as Gross Domestic Product (GDP), inflation rate, and unemployment rate. On the business side, research conducted by Wulandari and Hartono (2022) shows that the use of descriptive and inferential statistics such as linear regression, correlation, and trend analysis is very effective in predicting sales and consumer behavior in the retail sector. Meanwhile, Indriyani and Prasetyo (2020) examined the role of business statistics in measuring the performance of micro, small, and medium enterprises (MSMEs), which includes indicators such as profit growth, cost efficiency, and sales volume from year to year. The general indicators used in economic statistics include GDP, inflation, export-import, and interest rates, while in business statistics indicators such as revenue, net profit, ROI, profitability ratios, and market demand trends are often used. Proper utilization of statistics helps companies and governments strategize, respond to market dynamics, and manage risks more effectively.

Learning Comprehension

Research in Indonesia shows that improving students' reading comprehension is determined by indicators such as literal comprehension (pulling out explicit information), interpretive (inferring implied meaning), inference skills, critical evaluation, and motivation and metacognitive strategies. Lena, Sartono, Prameswari & Rafika (2023) in a case study at SDN 02 Jambak found that low-grade students still have difficulty in reading comprehension while the upper grades are starting to be able to, and recommended improving library facilities and teacher differentiation approaches in teaching comprehension. Warnasih, Sumayana & Martini (2023) used the class discussion method for learning children's story texts, reporting an increase in the average score from 65.6 in cycle I to 76.6 in cycle III, showing the effectiveness of interactive strategies in honing students' comprehension skills. Farisia, Andriani, Nurulqolbi, Fransiska & Handien (2024) analyzed the reading skills of grade 1 students and established four levels of comprehension: literal, interpretive, critical, and creative, and measured the percentage of achievement of each level to assess and map appropriate learning strategies. In general, the main indicators of comprehension in this literature include: explicit information retrieval, inference process, interpretation, critical evaluation, creativity in comprehension, as well as the use of discussion strategies, learning facilities, and metacognitive approaches.

Research Hypotesis



This study has four main variables, each of which consists of four indicators to measure their influence on student learning comprehension. The first variable is Canva Infographics (X1), which is measured through indicators: visual design, information suitability, text readability, and media interactivity. The second variable, TikTok Educational Video (X2), has indicators in the form of visual appeal, clarity of educational messages, appropriate video duration, and ability to attract attention. The third variable, namely Economic and Business Statistics (Z) as an intervening variable, includes indicators of understanding basic concepts, ability to read statistical data, mastery of applications in an economic context, and ability to analyze quantitative data. Finally, the fourth variable is Student Understanding (Y), which is measured through indicators of overall understanding of the material, the ability to answer questions, the ability to re-explain concepts, and the ability to connect material with other contexts. Based on these indicators, researchers compiled questions for pre-research purposes as well as designed research instruments in the form of questionnaires used to measure data quantitatively.

To test the relationship between these variables, the following are the seven hypotheses formulated in this study:

1. H1: There is a positive and significant influence between Canva Infographics on Student Understanding.
2. H2: There is a positive and significant influence between TikTok Educational Videos on Student Understanding.
3. H3: There is a positive and significant influence between Canva Infographics on the understanding of Economic and Business Statistics material.
4. H4: There is a positive and significant influence between TikTok Educational Videos on the understanding of Economic and Business Statistics material.
5. H5: There is a positive and significant influence between the understanding of Economic and Business Statistics on Student Understanding.
6. H6: Canva infographics have an indirect effect on student understanding through economic and business statistics as an intervening variable.
7. H7: TikTok Educational Videos have an indirect effect on Student Understanding through Economics and Business Statistics as an intervening variable.

Methods

This study uses a quantitative approach with a survey method to measure the effect of Canva infographics and TikTok educational videos on student learning comprehension in Economic and Business Statistics courses. The research was conducted from March to June 2025, starting from the stage of submitting the title and preparing the initial research outline in March, followed by distributing questionnaires in April, and ending with data processing and analysis to report preparation in May to June 2025. Data collection was carried out online through the Google Form platform, which was distributed to active students of the Office Administration Education Study Program, Faculty of Economics and Business, State University of Jakarta, who had taken related courses.

The population in this study were all students from batches 2021 to 2024 who had taken Economic

and Business Statistics courses. The sampling technique used was purposive sampling, with the criteria that respondents had taken the course. From the questionnaire distribution process, 117 respondents were obtained with a relatively even distribution in each generation. The research instrument was structured in the form of a questionnaire with a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), designed to describe respondents' perceptions of the use of infographics and educational videos as learning media and their level of understanding of the material taught.

In this study, the Canva infographic variable is defined as a visual medium that presents information in a concise and interesting manner to help students understand learning materials. Meanwhile, TikTok educational videos refer to short video content delivered in a communicative and engaging manner through the TikTok platform for educational purposes. Economic and Business Statistics is understood as a course that teaches the application of statistical methods in the context of economics and business. The understanding of student learning is defined as the ability of students to absorb, understand, and apply the material that has been learned, both conceptually and practically.

Data analysis in this study was carried out using the Partial Least Square (PLS) approach using SmartPLS software assistance. This technique is used because it is able to handle models with latent variables and is suitable for a small number of samples. The analysis was carried out through testing the validity and reliability of the instrument, assessing the R-square (R^2) value to see the strength of the model, testing multicollinearity through the Variance Inflation Factor (VIF) value, and hypothesis testing to determine the significance of the relationship between variables in the research model.

Result and Discussion

Constellation Figure 1 (Score Loading Factors)

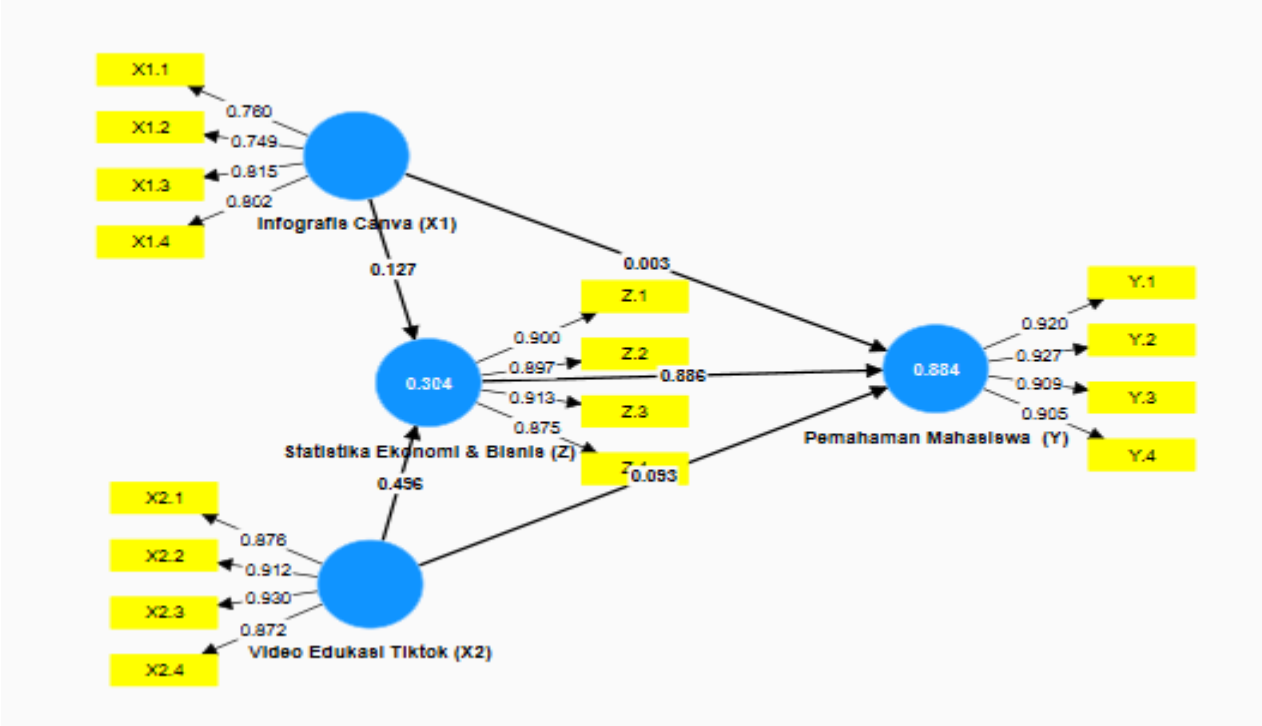


Figure 1: First Model

The SmartPLS model figure above illustrates the relationship between three latent variables, namely Canva Infographics (X1), TikTok Educational Videos (X2), and Economics & Business Statistics (Z) as intervening variables, and Student Understanding (Y) as the dependent variable. Each latent variable is measured by several indicators with outer loading values that are all above 0.7, indicating that the indicators are valid in representing their constructs. For example, the X2.2 indicator has a loading of 0.912 on the X2 variable, and the Y.2 indicator has a loading of 0.927 on Y.

Structurally, it can be seen that Canva Infographics (X1) has a very small direct effect on student understanding (Y), which is 0.003, which indicates that the direct effect can be said to be almost nonexistent or very weak. However, X1 influences understanding through variable Z (Economic & Business Statistics),

with a path value of 0.127, although the value is also relatively small. In contrast, TikTok Educational Video (X2) shows a much stronger influence on variable Z, which is 0.456, and also has a direct influence on student understanding of 0.303, which shows a positive and quite significant contribution.

The Economic & Business Statistics variable (Z) as an intervening variable plays an important role in this model, indicated by the value of the effect on student understanding (Y) of 0.688, which is the largest effect value in any path. The R-square (R^2) value on variable Z of 0.304 indicates that 30.4% of the variability in Z is explained by X1 and X2, while the R-square value on Y of 0.884 indicates that the combination of X1, X2, and Z is able to explain 88.4% of the variability in student understanding, which is classified as very high.

Overall, this model shows that digital learning media, especially TikTok Educational Videos, have a much stronger influence than Canva Infographics, both directly and indirectly through increasing understanding of Statistics material. The role of Z as an intervening variable is also very significant in bridging the influence of learning media on student learning outcomes.

Table 1: Outer Loadings

Outer loadings	
X1.1 <- Infografis Canva (X1)	0.760
X1.2 <- Infografis Canva (X1)	0.749
X1.3 <- Infografis Canva (X1)	0.815
X1.4 <- Infografis Canva (X1)	0.802
X2.1 <- Video Edukasi Tiktok (X2)	0.876
X2.2 <- Video Edukasi Tiktok (X2)	0.912
X2.3 <- Video Edukasi Tiktok (X2)	0.930
X2.4 <- Video Edukasi Tiktok (X2)	0.872
Y.1 <- Pemahaman Mahasiswa (Y)	0.920
Y.2 <- Pemahaman Mahasiswa (Y)	0.927
Y.3 <- Pemahaman Mahasiswa (Y)	0.909
Y.4 <- Pemahaman Mahasiswa (Y)	0.905
Z.1 <- Statistika Ekonomi & Bisnis (Z)	0.900
Z.2 <- Statistika Ekonomi & Bisnis (Z)	0.897
Z.3 <- Statistika Ekonomi & Bisnis (Z)	0.913
Z.4 <- Statistika Ekonomi & Bisnis (Z)	0.875

Measurement Evaluation Model (Outer Model)

1. Validity & Reliability Test

Table 2: Cronbach's alpha & Composite reliability

Konstruk	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Infografis Canva (X1)	0.790	0.804	0.863	0.612
Pemahaman Mahasiswa (Y)	0.936	0.936	0.954	0.838
Statistika Ekonomi & Bisnis (Z)	0.918	0.919	0.942	0.803
Video Edukasi Tiktok (X2)	0.920	0.927	0.943	0.806

Based on the results of reliability and construct validity testing, all variables in the model have met the established criteria. The Cronbach's Alpha values for the four constructs, namely Canva Infographics (0.790), Student Understanding (0.936), Economics & Business Statistics (0.918), and TikTok Educational Videos (0.920) are above 0.7, which indicates that each construct has good internal consistency. In addition, the Composite Reliability (CR) value of all constructs is also above the 0.7 threshold, even most of them are close to or exceed 0.9, indicating very strong construct reliability. Meanwhile, the Average Variance Extracted

(AVE) value of all constructs is above 0.5, which means that convergent validity has been met, so that the indicators used are able to explain the construct well. Thus, it can be concluded that all constructs in the model have met the validity and reliability requirements, and are suitable for further analysis in the PLS-SEM model.

2. Testing Structural Model (Inner Model)

Tabel 3: Path Coefficient

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Infografis Canva (X1) -> Pemahaman Mahasiswa (Y)	0.003	0.006	0.029	0.087	0.930
Infografis Canva (X1) -> Statistika Ekonomi & Bisnis (Z)	0.127	0.145	0.074	1.713	0.087
Statistika Ekonomi & Bisnis (Z) -> Pemahaman Mahasiswa (Y)	0.886	0.893	0.043	20.699	0.000
Video Edukasi Tiktok (X2) -> Pemahaman Mahasiswa (Y)	0.093	0.085	0.051	1.817	0.069
Video Edukasi Tiktok (X2) -> Statistika Ekonomi & Bisnis (Z)	0.496	0.494	0.076	6.499	0.000

Based on the results of the path coefficient analysis in Table 3, it can be seen that the direct relationship between Canva Infographics (X1) on Student Understanding (Y) has a coefficient value of 0.003 with a T-statistic value of 0.087 and a p-value of 0.930, which indicates that the relationship is not statistically significant. In contrast, the relationship of X1 to Economic & Business Statistics (Z) has a coefficient of 0.127, with a T-statistic of 1.713 and a p-value of 0.087, which means that this relationship is close to significant but has not crossed the 0.05 significance threshold. Meanwhile, the relationship from variable Z to Y shows the strongest influence with a coefficient of 0.886, a T-statistic of 20.699, and a p-value of 0.000, which means this relationship is highly statistically significant. For the path from TikTok Educational Video (X2) to Y, the coefficient value is 0.093 with a T-statistic of 1.817 and a p-value of 0.069, which indicates that the direct effect is close to significant. The path from X2 to Z has a coefficient of 0.496, a T-statistic of 6.499, and a p-value of 0.000, indicating that this relationship is highly significant. Overall, these results indicate that the indirect effect through variable Z is more dominant and significant, especially in explaining student understanding, compared to the direct effect of the two learning media.

Tabel 4: Indirect Effect

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Infografis Canva (X1) -> Pemahaman Mahasiswa (Y)	0.112	0.130	0.067	1.679	0.093
Video Edukasi Tiktok (X2) -> Pemahaman Mahasiswa (Y)	0.440	0.442	0.072	6.102	0.000

Based on the results of the Indirect Effect analysis in Table 4, it can be seen that Canva Infographics (X1) has an indirect effect on Student Understanding (Y) through the Economic & Business Statistics variable (Z) with a coefficient value of 0.112, T-statistic 1.679, and p-value 0.093. Although the value is positive, this indirect effect is not statistically significant because the p-value is still above 0.05. In contrast, TikTok Educational Video (X2) shows a very strong and significant indirect effect on student understanding with a coefficient value of 0.440, T-statistic 6.102, and p-value 0.000. This shows that the effect of X2 on Y indirectly through Z is very significant, and is the most dominant path in the model. Thus, it can be concluded that TikTok Educational Videos have a much more effective role indirectly in increasing student understanding, compared to Canva Infographics.

Tabel 5: Specifict Indrect Effect

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values

Infografis Canva (X1) -> Statistika Ekonomi & Bisnis (Z) -> Pemahaman Mahasiswa (Y)	0.112	0.130	0.067	1.679	0.093
Video Edukasi Tiktok (X2) -> Statistika Ekonomi & Bisnis (Z) -> Pemahaman Mahasiswa (Y)	0.440	0.442	0.072	6.102	0.000

Based on the Specific Indirect Effect results in Table 5, it is known that the indirect path from Canva Infographics (X1) through Economics & Business Statistics (Z) to Student Understanding (Y) has a coefficient value of 0.112, with a T-statistic of 1.679 and a p-value of 0.093. Although this path shows a positive effect, it is not statistically significant because the p-value is still above the 0.05 threshold. In contrast, the path from TikTok Educational Video (X2) through variable Z to Y shows a very strong and significant indirect effect, with a coefficient value of 0.440, T-statistic 6.102, and p-value 0.000. This result confirms that the specific indirect effect of X2 on student understanding through understanding of Economic & Business Statistics material is greater and significant, compared to the indirect effect of X1. Therefore, variable Z as a mediator plays an important role, especially in channeling the influence of video-based learning media on student learning outcomes.

Tabel 6: Hypothesis Result

Hypothesis Code	Hypothesis Statement	Coefficient	T-Statistic	P-Value	Conclusion
H1	There is a positive and significant influence between Canva Infographics on Student Understanding.	0.003	0.087	0.930	Not Supported
H2	There is a positive and significant influence between TikTok Educational Videos on Student Understanding.	0.093	1.817	0.069	Not Supported
H3	There is a positive and significant influence between Canva Infographics on understanding of STATKOBIS.	0.127	1.713	0.087	Not Supported
H4	There is a positive and significant influence between TikTok Videos on understanding of STATKOBIS.	0.496	6.499	0.000	Supported
H5	There is a positive and significant influence between understanding STATKOBIS and Student Understanding.	0.886	20.699	0.000	Supported
H6	Canva Infographics have an indirect effect on Student Understanding through STATKOBIS.	0.112	1.679	0.093	Not Supported
H7	TikTok Educational Videos have an indirect effect on Student Understanding through STATKOBIS.	0.440	6.102	0.000	Supported

Based on the hypothesis testing results presented in the table above, it can be concluded that out of the seven proposed hypotheses, three are supported (H4, H5, and H7), while the remaining four (H1, H2, H3, and H6) are not statistically significant. The most dominant and significant influence is observed in the indirect relationship between TikTok Educational Videos and Student Understanding through the mediating variable, Economic and Business Statistics (STATKOBIS), as indicated by a high coefficient of 0.440 and a p-value of 0.000. In contrast, Canva Infographics show neither significant direct nor indirect effects on student understanding. Additionally, STATKOBIS plays a crucial mediating role, as it significantly contributes to student understanding (H5), and is positively influenced by TikTok content (H4). These results highlight the stronger impact of video-based educational content compared to infographic media in improving students' comprehension, especially when supported by a deep understanding of the course material.

Conclusion

Based on the overall findings from the measurement model, structural model, and hypothesis testing, it can be concluded that digital learning media play a critical role in shaping student understanding—especially when mediated through comprehension of the subject matter. Among the two media examined—Canva Infographics and TikTok Educational Videos—only TikTok content demonstrated a statistically significant effect, both directly and indirectly, on students' understanding. The indirect effect, channeled through the mastery of Economic and Business Statistics (STATKOBIS), proved to be the most substantial and impactful pathway in this model.

The outer model analysis confirmed that all constructs meet the criteria for validity and reliability, evidenced by strong outer loading values (above 0.7), high Cronbach's alpha, composite reliability, and AVE. This ensures that the indicators effectively represent each latent construct. In the inner model, the R-square value for the dependent variable (Student Understanding) reached 0.884, indicating that 88.4% of the variance is explained by the combination of Canva Infographics, TikTok Educational Videos, and understanding of STATKOBIS—highlighting the robustness of the model. Notably, TikTok videos significantly influenced students' grasp of STATKOBIS (coefficient = 0.496), which in turn had a very strong effect on overall student understanding (coefficient = 0.886). This indirect influence (X2 → Z → Y) demonstrated the highest coefficient among all relationships in the model, solidifying TikTok's educational potential when integrated thoughtfully.

On the other hand, Canva Infographics exhibited minimal and statistically insignificant impact—both directly and indirectly—on student understanding, indicating that infographics alone may not be sufficient to enhance deep comprehension of complex subjects such as statistics.

In summary, this study concludes that video-based learning, particularly educational TikTok content, is more effective than static infographic media in enhancing student understanding, especially when mediated by a solid grasp of the subject matter. The role of STATKOBIS as an intervening variable is vital, acting as a bridge that connects media formats to learning outcomes. These findings support the development of more interactive, engaging, and subject-integrated digital media strategies in higher education environments.

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