

Impact of Economic Growth, Consumer Spending, Inflation Rate and Wage Growth Rate and Unemployment Rate on Investment in Technology

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Abstract: This study examines the combined effects of key economic variables; GDP growth rate, inflation rate, wage growth rate, consumer spending, and unemployment rate on investment in technology in China. Utilizing data from the World Bank (2005-2022) and employing SPSS for statistical analysis, the research reveals intricate interrelationships among these variables. Key findings highlight the strong negative correlation between GDP growth rate and unemployment, the positive impact of inflation and wage growth rate on technological investments, and the critical role of wage growth and employment conditions in fostering technological advancements. The regression analysis underscores the significance of wage growth rate and unemployment rate in driving investment in technology, while GDP growth, consumer spending, and inflation rate exhibit positive but statistically insignificant relationships. The study emphasizes the importance of wage growth and employment policies in stimulating technological investment, offering valuable insights for policy makers aiming to optimize economic growth through technological advancements. Future research should address the study limitations, such as small sample size and cross-sectional data, and explore additional variables and longitudinal impacts to build more comprehensive understanding of the factors influencing technological investments.

Keywords: GDP Growth Rate, Consumer Spending, Inflation Rate, Wage Growth, Unemployment Rate, Investment in Technology, Economic Variables.

1. Introduction

1.1. Background

Economic variables such as GDP growth rate, inflation rate, wage growth rate, consumer spending, and unemployment rate play crucial roles in shaping the overall economy of any country. These factors influence various economic outcomes, including investment decisions (Wonglimpiyarat, 2016) and consumer behavior. Understanding how these variables interact is vital for creating effective economic policies that promote sustainable growth and stability. This study aims to investigate the combined impact of these economic variables on investment in technology in China, a rapidly growing and dynamic economy. By examining the roles of consumer spending and investment in technology as mediating factors, this research seeks to provide a comprehensive understanding of the underlying economic dynamics that drive technological investment trends. GDP growth rate is a critical indicator of economic health, reflecting the increase in the value of goods and services produced by an economy over a specific period. A higher GDP growth rate generally indicates a robust economy with expanding business activities and job creation. However, the relationship between GDP growth and investment in technology is not always straightforward. Economic growth can sometimes be accompanied by structural changes that affect various sectors differently (Feng, 2017). For instance, rapid technological advancements can lead to increased investment in technology even in a growing economy, necessitating a closer look at how these investments interact with GDP growth. Inflation rate, which measures the rate at which the general price level of goods and services rises, is another critical variable (Q. Liu, Liu, Moussa, & Mu, 2024). Inflation can have varying effects on the economy depending on its magnitude and stability. Moderate inflation

is often associated with economic growth and can stimulate spending and investment. However, high or volatile inflation can erode purchasing power, create uncertainty, and adversely impact investment and savings decisions. The Phillips Curve, a key economic theory, posits an inverse relationship between inflation and unemployment in the short run, suggesting that lower unemployment can be achieved at the cost of higher inflation and vice versa. This relationship, however, can vary in different economic contexts and over different time periods, making it essential to explore how inflation interacts with other economic variables to influence investment in technology (T.-Y. Liu & Ma, 2024). Wage growth rate, reflecting changes in the average wage levels over time, directly impacts consumer spending and living standards. Higher wages increase disposable income, leading to greater consumer spending, which in turn stimulates economic activity and job creation. However, excessive wage growth without corresponding productivity increases can lead to inflationary pressures, potentially impacting the overall economic stability. The interplay between wage growth and technological investment (Zhu & Tian, 2024) is particularly relevant in today's economy, where automation and digitalization are transforming labor markets. Understanding how wage growth interacts with investment in technology can provide valuable insights for policymakers. Consumer spending (Tian, Yang, & Yu, 2019), a critical component of GDP, drives economic growth by boosting demand for goods and services. Increased consumer spending can lead to higher production levels and job creation, reducing unemployment. However, consumer spending is influenced by various factors, including wage growth, inflation, and economic expectations. This study examines how consumer spending mediates the relationship between GDP growth, inflation, wage growth, and investment in technology, providing a nuanced

understanding of these interactions. Investment in technology is another crucial factor that can influence economic growth and employment. Technological advancements (Sun, Fan, Zhang, & Xie, 2023) can enhance productivity, innovation, and competitiveness, leading to economic expansion. However, they can also result in job displacement and require workforce adjustments. By exploring the mediating role of technological investment, this research aims to shed light on the complex dynamics between technological progress, economic growth, and labor market outcomes.

1.2. Problem Statement

While previous studies have individually examined the impact of economic variables on investment, there is a gap in understanding the combined effects of GDP growth rate, consumer spending, inflation rate, wage growth rate, and unemployment rate on investment in technology. This gap is particularly evident in the context of China, where rapid economic transformation necessitates a detailed analysis of how these factors collectively influence technological investments.

1.3. Research Questions

(1) How does the GDP growth rate influence investment in technology in China?

(2) What is the impact of consumer spending on investment in technology?

(3) How does the inflation rate affect technological investments?

(4) What is the relationship between the wage growth rate and investment in technology?

(5) How does the unemployment rate impact the technological investments?

(6) How do these economic variables collectively influence investment in technology when consumer spending is considered as a mediating factor?

1.4. Research Significance

This Research is significant as it provides insights into the multifaceted relationship between key economic variables and investment in technology. By focusing on China, this study addresses a critical need for understanding how rapidly developing economies can leverage technological investments to sustain economic growth and stability. The findings will aid policy makers in formulating strategies that optimize the benefits of economic growth, consumer spending, inflation management, wage regulation, and employment policies to enhance technological advancement. Additionally, this research contributes to the broader literature on economic development by offering a nuanced perspective on the interplay between the economic variables and technological investments.

2. Literature Review

2.1. GDP Growth Rate and Technological Investment

The GDP growth rate has been a focal point of numerous empirical studies, which have explored its determinants and impacts on various economic outcomes. (Liu, Liu, Tang, & Xu, 2024), conducted a cross-country analysis and found that higher initial levels of human capital, lower government consumption, and higher investment rates are associated with higher GDP growth rates. This study highlighted the

importance of macroeconomic stability and investment in human capital as drivers of economic growth. Another research extended the Solow-Swan model to include human capital, demonstrating that countries with higher levels of human capital tend to experience faster GDP growth. Their findings underscored the role of education and skill development in fostering economic expansion. Furthermore, their study argued that inclusive institutions that protect property rights, enforce contracts, and provide public goods are crucial for sustained economic growth. Countries with better institutional frameworks tend to have higher GDP growth rates, highlighting the interplay between governance and economic performance.

Additionally, (Li, Yu, Xian, & Fan, 2024) examined the robustness of growth determinants and found that investment in physical and human capital consistently predicts economic growth across different countries and time periods. Recent studies have also focused on the impacts of technological advancements and innovation on GDP growth. Many researchers assert that technological innovation and human capital development are central to long-term economic growth. These studies suggest that policies fostering research and development, education, and knowledge dissemination can significantly boost GDP growth. Empirical evidence supports that countries investing in technology and innovation tend to experience higher growth rates, linking technological progress with productivity improvements and economic expansion. Empirical studies on GDP growth have highlighted the critical roles of human capital, investment, institutional quality, and technological innovation. These factors collectively contribute to economic growth, and understanding their interactions is essential for developing policies that promote sustainable economic development.

2.2. Consumer Spending

Consumer spending, or household consumption expenditure, is a crucial driver of economic growth and a significant component of GDP. (Tian et al., 2019), noted that consumers base their spending on expected long-term average income rather than current income, underscoring the stability of consumer spending despite temporary income changes. The life-cycle hypothesis suggests that individuals plan consumption and savings over their lifetime, aiming to smooth consumption by saving during working years and dis-saving during retirement. Wealth effects also play a significant role in consumer spending. (Lv, Yu, Zhao, & Si, 2023), found that increases in household wealth, such as rising home values or stock market gains, lead to higher consumer spending. (Wang, Yang, Zhang, Song, & Zhang, 2021), emphasized the importance of credit availability, showing that easier access to credit boosts consumption levels, emphasizing the role of financial markets in shaping consumer behavior. Changes in consumer spending are unpredictable and follow a random walk, as consumers adjust their spending based on new information about future income prospects. This has implications for understanding the volatility of consumer spending in response to economic shocks. Additionally, behavioral economics insights, such as the concept of mental accounting, indicate that individuals categorize and treat money differently depending on its source and intended use, providing insights into the psychological factors influencing spending decisions. Empirical studies on consumer spending highlight various factors influencing household consumption, including

income expectations, wealth, credit availability, and behavioral aspects. Understanding these dynamics is essential for policymakers and economists to develop strategies that stimulate consumer spending and drive economic growth.

2.3. Inflation Rate

The inflation rate has been a subject of extensive empirical research, focusing on its relationship with economic outcomes such as unemployment and economic growth. The Phillips Curve theory, introduced by Phillips, posits an inverse relationship between inflation and unemployment, suggesting that lower unemployment rates are associated with higher inflation. Samuelson and Solow extended this analysis to the United States, further validating the short-term trade-off between inflation and unemployment. Friedman and Phelps critiqued the Phillips Curve, introducing the concept of the natural rate of unemployment and asserting that the trade-off between inflation and unemployment only holds in the short run. In the long run, attempts to exploit this trade-off lead to accelerating inflation without reducing unemployment, emphasizing the role of inflation expectations in economic dynamics.

(Q. Liu et al., 2024), found that moderate inflation levels might coexist with high economic growth, while high inflation levels negatively impact growth by creating uncertainty and reducing investment incentives. (Ahmed, Chen, Kumpamool, & Nguyen, 2023), highlighted the nonlinear effects of inflation, showing that inflation rates above a certain threshold significantly impede economic growth. Recent research has focused on the role of central banks and monetary policy in managing inflation. (Wonglimpiyarat, 2016), suggested that central banks should adjust interest rates in response to deviations in inflation and GDP from their targets, emphasizing the importance of systematic monetary policy in stabilizing inflation and promoting growth. Empirical studies underscore the complex relationship between inflation and economic outcomes. Moderate inflation can support economic growth, but high inflation generally has adverse effects, emphasizing the need for effective monetary policy to manage inflation expectations and maintain economic stability.

2.4. Wage Growth Rate

Wage growth rate has been extensively studied in economic literature, focusing on its determinants and impacts on various economic outcomes. The relationship between wage growth and economic performance is well-documented, with numerous studies exploring how changes in wage levels influence factors such as consumer spending, inflation, and overall economic growth. (Lv et al., 2023), demonstrated a robust negative relationship between wages and unemployment across different countries and regions. Their findings indicated that higher wage growth tends to occur in regions with lower unemployment rates, suggesting that tight labor markets exert upward pressure on wages. The impact of minimum wage increases on wage growth and employment has also been studied extensively. (Hao, Feng, & Guo, 2024), found that these factors contributed to wage polarization, with high-skilled workers experiencing significant wage growth while low-skilled workers faced wage stagnation or decline. This disparity highlights the role of skill-biased technological change in driving wage inequality. The relationship between wage growth and inflation has also been a critical area of study. Phillips initially proposed an inverse relationship

between wage growth and unemployment, suggesting that higher wages could lead to increased inflationary pressures. (Chen, Wan, Zhang, & He, 2024), indicated that this relationship could be more complex, with the impact of wage growth on inflation depending on factors like productivity growth and labor market conditions. Recent studies have also examined the impact of wage growth on economic growth. (Wang et al., 2021), found that wage growth could drive economic growth by increasing consumer spending, which stimulates demand for goods and services. Policies promoting wage growth could lead to higher overall economic productivity and expansion. Empirical studies on wage growth rate have highlighted its multifaceted impacts on the economy. Wage growth is influenced by various factors, including labor market conditions, technological advancements, and policy interventions. Understanding these dynamics is crucial for developing effective economic policies that promote equitable wage growth and overall economic stability.

2.5. Unemployment Rate

The unemployment rate, a key economic indicator, measures the percentage of the labor force that is unemployed and actively seeking employment. Extensive empirical research has explored the determinants of unemployment and its implications for economic performance. Okun's Law, formulated by Arthur Okun, posits a negative relationship between GDP growth and unemployment. Okun's empirical analysis indicated that for every 1% increase in GDP growth, the unemployment rate would decrease by approximately 0.3 percentage points. This relationship underscores the importance of economic growth in reducing unemployment levels. The Phillips Curve, introduced by A.W. Phillips, highlighted an inverse short-term relationship between unemployment and inflation. Phillips observed that lower unemployment rates were associated with higher inflation, suggesting a trade-off between these two variables. Empirical studies have also examined the impact of structural factors on unemployment. (Ruiz & Mario, 2021), discussed the role of labor market institutions, such as unemployment benefits and labor market regulations, in shaping unemployment rates. Their findings suggested that more generous unemployment benefits and rigid labor market regulations could lead to higher structural unemployment by reducing the incentives for job search and increasing labor market inflexibility.

The relationship between technological change and unemployment has been another critical area of research. (Feng, 2017), examined the impact of computerization on labor market outcomes, finding that technological advancements led to job polarization. High-skilled jobs experienced employment and wage growth, while middle-skilled jobs faced displacement and low-skilled jobs saw little change. This highlights the need for policies that support workforce adaptation to technological change through education and training. Recent research has focused on the effects of globalization on unemployment. (Jean & Balli, 2013), examined the impact of trade and outsourcing on labor markets, demonstrating that globalization can lead to job displacement in certain sectors while creating employment opportunities in others. Their findings suggest that the net effect of globalization on unemployment depends on the economy's ability to adapt and reallocate resources efficiently. Empirical studies on the unemployment rate have highlighted its complex relationship with economic growth, inflation,

labor market institutions, technological change, and globalization. Understanding these dynamics is crucial for developing policies that promote job creation and economic stability.

2.6. Investment in Technology

Investment in technology has been extensively studied for its crucial role in driving economic growth, productivity, and competitiveness. The concept of technological progress as a key driver of economic growth was highlighted by Solow, who emphasized that technological advancements contribute significantly to increases in output and efficiency. This foundational work emphasized that capital accumulation alone could not explain long-term economic growth without incorporating technological progress. (Li et al., 2024), discussed how investment in research and development (R&D) leads to technological advancements that drive sustained economic growth. Their model suggested that policies fostering innovation and R & D can have long-lasting positive effects on economic performance. The role of human capital in technological progress has been emphasized by (Zheng, Hao, Lv, & Wei, 2023), suggesting that education and skill development are crucial for leveraging technological investments effectively. Empirical studies have supported these theoretical frameworks by demonstrating the impact of technological investment on economic performance. The model of growth through creative destruction, discussed by (Zhou, Zhu, Chen, Zhao, & Fei, 2014), illustrates how technological innovation can lead to productivity improvements and economic expansion. Their research showed that economies investing in technology and innovation tend to experience higher growth rates due to continuous improvements in production processes and product quality. The impact of technology on labor markets has also been a significant area of study. (Dinopoulos, Heins, & Unel, 2024), discussed how technological advancements, particularly in information technology, have led to job polarization, where high-skilled jobs see wage and employment growth, while low-skilled jobs face stagnation or

decline. This highlights the importance of aligning educational and training programs with technological advancements to ensure that the workforce can adapt to changing labor market demands. The role of government policy in promoting technological investment has been underscored by various studies. Government support for R&D and innovation is critical for technological progress and economic growth. Their research suggested that public investment in technology can complement private sector efforts, leading to a more robust and dynamic economy. Investment in technology is a vital component of economic growth, driving productivity, innovation, and competitiveness. Theoretical and empirical studies have highlighted the importance of technological progress, supported by human capital development and government policy, in fostering sustainable economic expansion.

3. Theory and Theoretical Framework

3.1. Theory

Investment theory, particularly the Accelerator Theory, is utilized to support this research. The Accelerator Theory posits that investment levels are closely related to changes in output of GDP. As GDP grows, businesses anticipate higher future demand, which prompts them to invest in new technology to increase production capacity. This theory provides a robust framework for understanding the positive relationship between GDP growth rate and investment in technology, as it highlights how economic expansion drives businesses to enhance their technological capabilities. By leveraging the principles of Accelerator Theory, this research can effectively explain how increase in GDP stimulate technological investments, thereby fostering a cycle of growth and innovation. This theoretical foundation is critical in examining how macroeconomic variables influence investment decisions in technology within the context of a rapidly developing economy like China.

3.2. Theoretical Framework

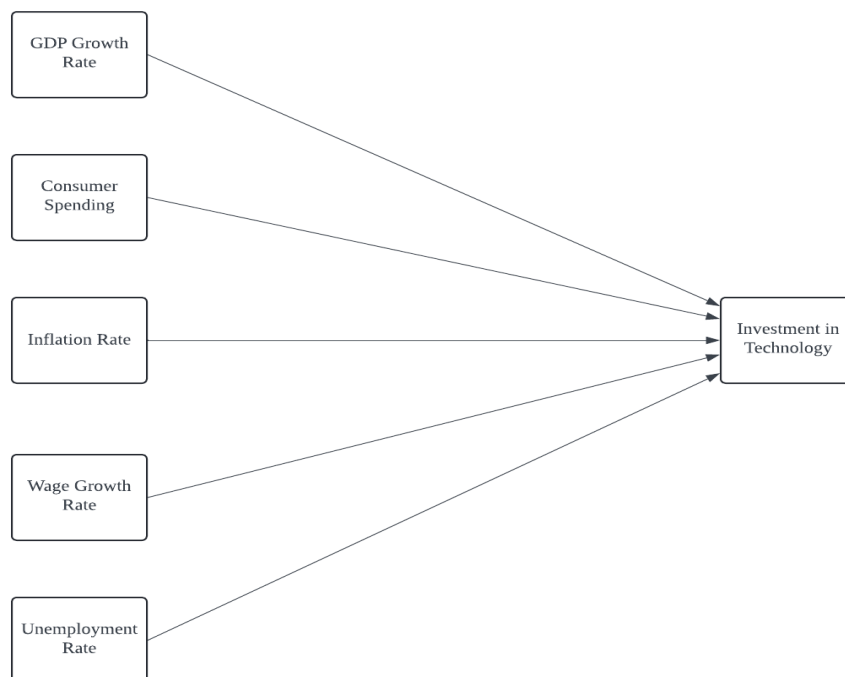


Figure 1. Conceptual Model

3.3. Hypothesis

H1: There is a positive relationship between GDP growth rate and investment in technology. As GDP growth rate increases, investment in technology also increases.

H2: There is a positive relationship between consumer spending and investment in technology. Higher consumer spending leads to greater investment in technology.

H3: There is a negative relationship between inflation rate and investment in technology. Higher inflation rates discourage investment in technology.

H4: There is a positive relationship between wage growth rate and investment in technology. As wage growth rate increases, investment in technology also increases.

H5: There is a negative relationship between unemployment rate and investment in technology. Higher unemployment rates lead to lower investment in technology.

4. Methodology

4.1. Data Source

The data for this research is sourced from the World Bank database, covering the period from 2005 to 2022. The variables include GDP growth rate, inflation rate, wage growth rate, consumer spending, investment in technology, and unemployment rate, all expressed in percentage terms. The World Bank provides comprehensive and reliable economic data, making it an ideal source for conducting an in-depth analysis of the relationships between these variables within the specified timeframe. This data ensures a robust foundation for analyzing the economic trends and interactions in China over the given period.

4.2. Data Analysis

The collected data is analyzed using SPSS, a powerful statistical software tool designed for the data management and analysis. The analysis involves performing various statistical tests to explore the relationships between the key economic indicators. By using SPSS, the research ensures precise and accurate data handling, facilitating the examination of how GDP growth, inflation, wage growth, consumer spending, and unemployment rate impact the investment in technology in

China. This methodological approach guarantees robust and reliable results, enabling a thorough understanding of the dynamics between these economic variables within the study's context.

4.3. Descriptive Statistics

The descriptive statistics table provides valuable insights into the six key variables over 18 observations: GDP Growth Rate (GDP_GR), Consumer Spending (CS), Inflation Rate (IR), Wage Growth Rate (WGR), Unemployment Rate (UR), and Investment in Technology (IIT). The GDP growth rate varies significantly, with values ranging from 2.20 to 14.20, and a mean of 8.2611, indicating diverse economic conditions across the observations. The standard deviation of 3.00375 reflects considerable variability around the mean. Consumer spending is relatively stable compared to GDP growth, with a minimum value of 34.00 and a maximum of 40.00. The mean consumer spending level is 37.1111, with a lower standard deviation of 1.81137, suggesting less variability and more consistency in consumer spending across the observations. In contrast, the inflation rate exhibits substantial fluctuations, ranging from 86.50 to 131.90, with a high standard deviation of 14.39088. The mean inflation rate of 110.3722 indicates that inflation levels can vary significantly, impacting economic stability. Wage growth rate also shows moderate variation, with values between 42.80 and 54.20, and a mean of 49.7278. The standard deviation of 3.62521 reflects the spread of wage growth rates around the mean, indicating moderate variability. The unemployment rate is the most stable variable, with a narrow range of 4.30 to 5.00 and a mean of 4.5833. The low standard deviation of 0.18865 suggests a relatively stable employment scenario across the observations. Investment in technology, measured by IIT, ranges from 1.31 to 2.45, with a mean of 1.9183 and a standard deviation of 0.37335. This indicates moderate variability in technological investments across the observations. Overall, these descriptive statistics provide a comprehensive overview of the central tendencies and dispersions of the variables, setting the stage for further analysis of their interrelationships and impacts on investment in technology.

Table 1. Descriptive Statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
GDP_GR	18	2.20	14.20	8.2611	3.00375
CS	18	34.00	40.00	37.1111	1.81137
IR	18	86.50	131.90	110.3722	14.39088
WGR	18	42.80	54.20	49.7278	3.62521
UR	18	4.30	5.00	4.5833	.18865
IIT	18	1.31	2.45	1.9183	.37335
Valid N (listwise)	18				

4.4. Correlation

The correlation analysis reveals several significant relationships between the economic variables. GDP growth rate shows a strong negative correlation with the unemployment rate ($r = -0.848$, $p < 0.01$), indicating that higher GDP growth is associated with lower unemployment. Additionally, GDP growth rate has moderate correlations with other variables, though these are not statistically significant. Inflation rate exhibits a very strong positive correlation with wage growth rate ($r = 0.970$, $p < 0.01$) and investment in

technology ($r = 0.971$, $p < 0.01$), suggesting that higher inflation is closely associated with increases in wages and technological investment. However, its correlation with unemployment rate is not statistically significant. Wage growth rate also shows a strong positive correlation with investment in technology ($r = 0.889$, $p < 0.01$), but its relationships with other variables are not statistically significant. Consumer spending is negatively correlated with the unemployment rate ($r = -0.745$, $p < 0.05$), indicating that higher consumer spending is associated with lower unemployment. However, its negative correlations with other

variables, including investment in technology, are not significant. Investment in technology has positive correlations with both inflation rate and wage growth rate, but its relationship with the unemployment rate is not statistically

significant. Overall, the results highlight the complex interrelationships between these economic variables, particularly the significant impact of GDP growth rate and consumer spending on unemployment.

Table 2. Correlations

Correlations							
		GDP_GR	CS	IR	WGR	UR	IIT
GDP_GR	Pearson Correlation	1	-.283	-.875**	-.858**	-.758**	-.879**
	Sig. (2-tailed)		.254	.000	.000	.000	.000
	N	18	18	18	18	18	18
CS	Pearson Correlation	-.283	1	.327	.279	-.046	.301
	Sig. (2-tailed)	.254		.185	.262	.856	.224
	N	18	18	18	18	18	18
IR	Pearson Correlation	-.875**	.327	1	.989**	.488*	.988**
	Sig. (2-tailed)	.000	.185		.000	.040	.000
	N	18	18	18	18	18	18
WGR	Pearson Correlation	-.858**	.279	.989**	1	.441	.984**
	Sig. (2-tailed)	.000	.262	.000		.067	.000
	N	18	18	18	18	18	18
UR	Pearson Correlation	-.758**	-.046	.488*	.441	1	.526*
	Sig. (2-tailed)	.000	.856	.040	.067		.025
	N	18	18	18	18	18	18
IIT	Pearson Correlation	-.879**	.301	.988**	.984**	.526*	1
	Sig. (2-tailed)	.000	.224	.000	.000	.025	
	N	18	18	18	18	18	18

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

4.5. Regression Analysis

The regression analysis results provide valuable insights into the relationship between various economic variables and investment in technology (IIT). The ANOVA table indicates that the overall regression model is statistically significant, with an F-value of 163.499 and a p-value of .000. This result suggests that the independent variables collectively explain a significant portion of the variance in investment in technology. Examining the coefficients table, we find that the intercept of the model is -4.992, which is statistically significant with a t-value of -2.726 and a p-value of .018. This implies that when all independent variables are zero, the expected value of IIT is -4.992. The coefficient for GDP Growth Rate (GDP_GR) is 0.023, with a t-value of 1.359 and a p-value of .199, indicating a positive but not statistically significant relationship with investment in technology. Similarly, the coefficient for Consumer Spending (CS) is 0.011, with a t-value of 1.108 and a p-value of .290, suggesting a positive yet statistically insignificant relationship. The Inflation Rate (IR) has a coefficient of 0.009, with a t-value of 1.204 and a p-value of .252, indicating a positive but not statistically significant relationship with IIT. However, the Wage Growth Rate (WGR) shows a coefficient of 0.072, with a t-value of

2.303 and a p-value of .040, highlighting a positive and statistically significant impact on investment in technology. Additionally, the Unemployment Rate (UR) has a coefficient of 0.377, with a t-value of 2.199 and a p-value of .048, also indicating a positive and statistically significant relationship. The regression model reveals that wage growth rate and unemployment rate have significant positive impacts on investment in technology, suggesting that higher wage growth and higher unemployment rates are associated with increased investment in technology. Although GDP growth rate, consumer spending, and inflation rate are positively related to investment in technology, their impacts are not statistically significant in this model. These findings emphasize the importance of wage growth and employment conditions in driving technological advancements.

Table 3. Regression

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.335	5	.467	163.499	.000 ^b
	Residual	.034	12	.003		
	Total	2.370	17			

a. Dependent Variable: IIT
 b. Predictors: (Constant), UR, CS, WGR, GDP_GR, IR

Table 4. Regression

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-4.992	1.831		-2.726	.018		
	GDP_GR	.023	.017	.187	1.359	.199	.064	15.644
	CS	.011	.010	.053	1.108	.290	.520	1.923
	IR	.009	.008	.350	1.204	.252	.014	70.100
	WGR	.072	.031	.699	2.303	.040	.013	76.369
	UR	.377	.171	.191	2.199	.048	.161	6.227

a. Dependent Variable: IIT

4.6. Discussion

The correlation analysis reveals intricate interrelationships between the economic variables under study. A strong negative correlation between GDP growth rate and unemployment rate ($r = -0.848$, $p < 0.01$) indicates that higher GDP growth is associated with lower unemployment, highlighting the critical role of economic expansion in job creation. This aligns with the theoretical understanding that economic growth drives employment. Additionally, the inflation rate exhibits very strong positive correlations with both wage growth rate ($r = 0.970$, $p < 0.01$) and investment in technology ($r = 0.971$, $p < 0.01$). These correlations suggest that higher inflation is closely associated with increases in wages and technological investment, supporting the notion that inflation can stimulate economic activity and investment, albeit within a certain threshold. However, the relationship between inflation rate and unemployment rate is not statistically significant, indicating that inflation may not directly impact employment levels in this context. Wage growth rate also shows a strong positive correlation with investment in technology ($r = 0.889$, $p < 0.01$), suggesting that higher wages can lead to increased technological investments. This supports the idea that as wages rise, businesses may invest more in technology to boost productivity and offset higher labor costs. Consumer spending is negatively correlated with unemployment rate ($r = -0.745$, $p < 0.05$), indicating that higher consumer spending is associated with lower unemployment. This finding is consistent with Keynesian economic theory, which posits that increased demand leads to higher production and employment. However, consumer spending's negative correlations with other variables, including investment in technology, are not significant, suggesting a more complex interplay that warrants further investigation. The regression analysis further elucidates these relationships. The model is statistically significant, indicating that the independent variables collectively explain a significant portion of the variance in investment in technology. Wage growth rate and unemployment rate are particularly noteworthy, as both have positive and statistically significant impacts on investment in technology. This suggests that higher wage growth and higher unemployment rates are associated with increased technological investments. Although GDP growth rate, consumer spending, and inflation rate are positively related to investment in technology, their impacts are not statistically significant within this model.

4.7. Conclusion

The findings from both the correlation and regression analyses underscore the complex dynamics between various economic variables and their impact on investment in technology. The strong negative correlation between GDP growth rate and unemployment rate reaffirms the importance of economic growth in reducing unemployment. The significant positive correlations between inflation rate, wage growth rate, and investment in technology highlight how inflation and wages can drive technological advancements. However, the regression results suggest that while wage growth rate and unemployment rate significantly influence technological investments, GDP growth rate, consumer spending, and inflation rate do not have statistically significant impacts in this model.

These results emphasize the critical role of wage growth

and employment conditions in fostering technological investments. Policymakers should consider these factors when designing strategies to enhance technological development. By fostering environments that support wage growth and manage unemployment effectively, governments can stimulate greater investment in technology, thereby driving productivity and economic growth. Future research should explore these relationships further, perhaps incorporating additional variables or different economic contexts to build on these findings and offer more nuanced insights into the factors driving investment in technology.

4.8. Limitation and Future Research

While this research provides valuable insights into the relationships between GDP growth rate, consumer spending, inflation rate, wage growth rate, unemployment rate, and investment in technology, it has several limitations that should be acknowledged. Firstly, the sample size of 18 observations is relatively small, which may limit the generalizability of the findings. Future research should aim to include a larger sample size to enhance the robustness and applicability of the results. Secondly, the study is based on cross-sectional data, which captures relationships at a single point in time. Longitudinal studies would provide a more comprehensive understanding of how these relationships evolve over time. Moreover, the study focuses on a specific economic context, which may limit its applicability to other regions or countries with different economic structures and dynamics. Future research should explore these relationships in various economic settings to validate the findings and assess their generalizability. Additionally, while this study has identified significant correlations and relationships between the variables, it does not fully capture the potential causality between them. Future studies could benefit from using advanced econometric methods to address causality more effectively.

Future research should also consider the impact of additional variables that may influence investment in technology, such as government policies, international trade, and innovation capacity. Examining the role of external factors, such as global economic conditions and technological trends, could provide a more holistic view of the determinants of technological investment. Furthermore, qualitative research methods, such as case studies and expert interviews, could complement the quantitative findings and offer deeper insights into the underlying mechanisms driving technological investment. While this study sheds light on the significant relationships between key economic variables and investment in technology, addressing its limitations and expanding the scope of future research will be crucial for developing a more comprehensive understanding of the factors that drive technological advancements in various economic contexts.

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