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SUSTAINABILITY OF FINANCIAL PERFORMANCE OF A SOCIAL MEDIA GIANT - A CASE STUDY

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Abstract. Sustainability of financial performance of a giant media firm such as Facebook wil be dependepent on various factors such as Lending rate, turnover ratio, current ratio, etc. Facebook has achievements in online social media and network industry, deserving of its position as one of the leading firms in the online social media system, contributing to online marketing services. Movement of stock price of Facebook will reflect the business health of the company. Good business management requires us to consider the impacts of multi micro and macro factors on net profit, and it contributes to promoting business plan and socio-economic policies for economic growth and stabilizing macroeconomic factors. By data collection method through statistics, analysis, synthesis, comparison, quantitative analysis to generate qualitative comments and discussion; using econometric method to perform regression equation and evaluate quantitative results, the article analyzed and evaluated the impacts of Eight (8) micro and macroeconomic factors such as: Current Ratio (CR), Debt to Equity Ratio (DTE), Asset Turnover Ratio (ATO), Receivables Turnover Ratio (RTO), Consumer Price Index (CPI), Lending Rate(LDR), GPD Growth Rate (GGR) and Employment Cost Index (ECI) on Return on Assets (ROA) of an online social media firm, Facebook in the US in the period of 2012-2019, both positive and negative sides. The research results show a statistically significant relationship between a micro factor (ATO), two macro factors (LDR and ECI) with Facebook's ROA, in which, LDR has a negative impact on ROA, while ATO has the highest positive impact on ROA, and ECI has also the positive effect on ROA but to a lesser extent. The research findings are of value to financial executives and investors not only for Facebook but also for companies in the online social media industry.

Keywords: Sustainability of financial performance; Facebook's ROA; Asset Turnover Ratio; Lending Rate; Employment Cost Index

1. Introduction

For the past decade, social media has swept the world. Facebook currently has more than 2 billion users. Instagram is less with about 800 million users. Snapchat has about 180 million daily active users. Facebook in the US maintained a higher growth rate than the industry average on all indicators of scale, quality, efficiency, and labor productivity. It currently pushes digital technology and control risk.

Not only the above factors affecting to Facebook financial stability, but there are also other variables also affecting to financial sustainability. These variables we will consider to put in our quantitative model which will be presented in the below results section.

Facebook achieved success through various reasons: first, it is easy to use and friendly for social networking with friends, family, fans, businesses, and acquaintances. Second, the construction and look of the site is also very attractive to the user a more excellent interface to work on. You can easily find your friends, follow ce-

lebrities, messages and chat or with the new feature even call your friends. All of these power packed features are fitted in a light site making it more advantageous than its competitors. Third, sources of information: in addition to being a website that connects people, it is also a huge source of information through which users can read news and articles about all incidents happening around the world. They can also present their views on a topic and start discussing with others about a topic. So it serves many purposes. Fourth, Facebook gives users many options to share such as photos, videos, status, feelings, location, etc. So many options up to a single site for everyone to easily share information. Fifth, information security and data protection. The email and password through which we open Facebook's account is secured through a very high level of protection so it is almost impossible for hackers to open accounts that they do not own. In addition, a notification is also sent if someone tries to open an account from a different location than the one used. So users know that their data is safe and secure. All of these features have made Facebook accessible to individuals around the world. A number of changes have also been made to the site since the year it was launched such as the introduction of a Like button, sharing photos and videos, News Feed, Timeline and trending topics with more beautiful versions and Handsome led the site to become the most commercial networking platform.

Social networking system in USA in recent years plays a key role in helping the whole economy. In the context that GDP growth in US has been stable during 2012-2019 and SP500 goes up, it is necessary to evaluate impacts main factors (see Exhibit 1 and Exhibit 2). We will choose of Eight (8) internal micro and external macro economic factors on Facebook performance, esp. Facebook return on assets.

Looking at the below chart 1, we find out that Facebook net profit moves in the same trend with ECI and GDP growth, although it fluctuates in a smaller range.
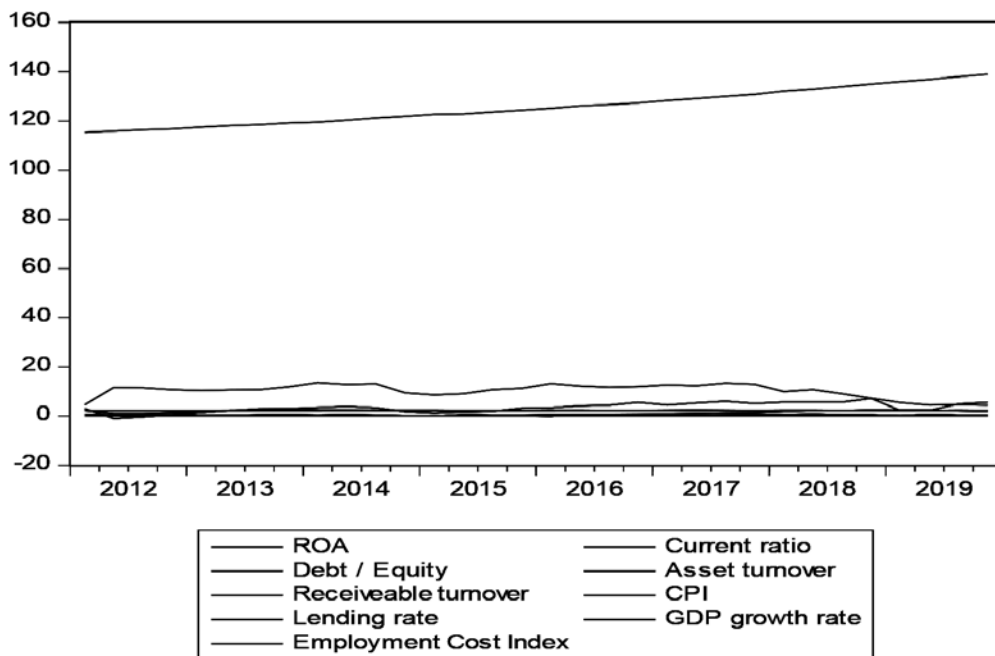
Source: results of authors' data analysis

Chart 1. Profit trends

This study will calculate and figure out the impacts of Eight (8) micro and macroeconomic factors such as: current ratio, debt to equity ratio, asset turnover ratio, receivables turnover ratio, consumer price index, lending rate, GPD growth rate and employment cost index on net profit (Return on Asset - ROA) of an online social media firm, Facebook in the US in the period of 2012-2019.

2. Research design

2.1 Research issues

The scope of this study will cover:
Issue 1: What are the correlation and relationship among many economic factors: current ratio, debt to equity ratio, asset turnover ratio, receivables turnover ratio, consumer price index, lending rate, GPD growth rate, employment cost index, Facebook net profit (Return on Asset - ROA)?
Issue 2: What are the impacts of above 8 factors on Facebook's ROA?
Issue 3: Based on the research results, we will give some important recommendations for Facebook executives and Facebook stock investors; those recommendations may also be of value to financial managers and investors in the social media industry.

2.2 Literature review

A study by Arshad et al. (2015) showed that current ratio had a significant positive effect on return on assets, but according to Ray (2012), the current ratio has a strong negative relationship with corporate profitability of Indian manufacturing firms. Meanwhile, Hatono (2018) points out that current ratio individually have not significant impact toward return on assets in consumer goods companies listing on the Indonesia Stock Exchange.

The impact of financial leverage on returns has always been a controversial subject (Mackevičius et al., 2018; Hilkevics, & Semakina, 2019). According to Joshua (2007) debt ratios has negatively affect performance of the Ghanaian and South African firms. Sorana (2015) shows that performance in Romanian companies is higher when they avoid debt and operate based on equity, while Syed & Fasih (2013) show the positive relationship of debt equity ratio with return on asset and sales growth and negative relationship of debt equity ratio with earning per share, net profit margin and return on equity of listed sugar companies of Pakistan.

Fairfield & Yohn (2001) provide evidence that disaggregating return on assets into asset turnover and profit margin does not provide incremental information for forecasting the change in return on assets one year ahead, but that disaggregating the change in return on assets into the change in asset turnover and the change in profit margin is useful in forecasting the change in return on assets one year ahead. Alas, according to Azad et al. (2018), the efficiency of the firms as measured by (total assets turnover, debtors' turnover, quick ratio current ratio and fixed asset turnover) has impacts on the profitability of firms.

Krishna (2015) investigated the nature of the causal relationships between stock prices and the key macro-economic variables in BRIC countries. The empirical evidence shows that long-run and short-run relationship exists between macro-economic variables and stock prices, but this relationship was not consistent for all of the BRIC countries. Kulathunga (2015) suggested that all macroeconomic factors influence the stock market development. More precisely, volatile inflation rate and exchange rate together with higher deposit rate have curtailed the stock market development in Sri Lanka. Moreover, positive optimism created by the economic growth and the stock market performance during the previous periods tend to enhance stock market performance.

Beside, Pervan et al. (2019) mentioned in the results of the conducted analysis which revealed that a firm's age, labour cost and industry concentration, as well as GDP growth and inflation, have significant influence on a firm's profitability

Then, Lim & Rokhim (2020) show strong and positive relationships between liquidity and sustainable growth rate with profitability as measured by return on equity (ROE), return on assets (ROA) and earning per share (EPS), except EPS for liquidity. Further, both firm size and market power show positive significant relationships with ROA but negative significant relationships with EPS. Sales growth and company efficiency (as measured by assets turnover ratio) have no significant relationship with profitability.

Within the scope of this paper, we examine the impact of independent variables, including corporate financial ratios and macroeconomic variables such as GPD growth, CPI and Employment Cost Index, on ROA of Facebook, to give some reasonable recommendations for financial managers as well as Facebook stock investors, and furthermore for financial managers and equity investors of businesses in the social networking industry. associations and information technology. Because of Facebook's characteristic of developing based on high quality human resources, we added ECI to macro variables affecting Facebook's ROA. We also analyze data through out time series from 2012-2019.

We identify our research gap: first, it differs from previous studies in the aspect that we use both micro and macro level variables affecting ROA, as well as adding ECI to macro variables affecting net profit and second, we measure it in a case of Facebook, a giant social media company.

3. Methodology and data

This research paper establishes correlation among economic factors by using an econometric model to analyze impacts of eight (8) micro and macroeconomic factors.

Micro factors to consider when discussing the impact on Facebook's ROA include: current ratio, debt to equity ratio, asset turnover ratio, receivables turnover ratio. Data is calculated based on Facebook's published financial statements.

Macro factors to consider when discussing the impact on Facebook's ROA include: consumer price index, lending rate, GPD growth rate and employment cost index. Data source is from U.S. Bureau of Economic Analysis (BEA).

All data are included from 2012-2019 with Quarterly data (32 observations in total).

Beside, econometric method is used with the software Eview. It will give us results to suggest policies for businesses and authorities.

The analytical techniques used include: descriptive statistical analysis, correlation analysis, multivariate linear regression by OLS method.

We build a regression model with Eview software to measure impacts of factors on Facebook net profit is a function with 8 variables as follows (see Table 1 as well):

$$ROA_t = \beta_0 + \beta_1*CR_t + \beta_2*DTE_t + \beta_3*ATO_t + \beta_4*RTO_t + \beta_5*CPI_t + \beta_6*LDR_t + \beta_7*GGR_t + \beta_8*ECI_t + \varepsilon$$

Table 1. Description of research variables

Variable	Type	Formula	Expected correlation
ROA	dependent	Net income / Total assets	
CR	independent	Current assets / Current liabilities	+
DTE	independent	Total debt / Total equity	-
ATO	independent	Net sales / Total assets	+
RTO	independent	Net credit sales / average accounts receivable	+
CPI	independent	Consumer Price Index	-
LDR	independent	Lending rate	-
GGR	independent	GPD growth rate	+
ECI	independent	Employment cost index	-

Source: Research design of the authors

4. Main results

4.1. General data analysis

Table 2. Statistics for macro and micro economic factors

	CR	DTE	ATO	RTO	CPI	LDR	GGR	ECI	ROA
Mean	9.450620	0.066905	0.119075	2.084405	2.118672	0.601500	0.392169	123.1150	2.319420
Median	10.62765	0.048550	0.124850	2.288200	2.095923	0.226667	0.416988	120.6500	2.227250
Maximum	13.55830	0.200400	0.158100	2.487100	2.270795	2.520000	0.641411	138.9000	5.510000
Minimum	4.399500	0.002600	0.078700	1.034100	2.034795	0.113333	-0.031693	115.3000	-1.051700
Std. Dev.	3.082935	0.065406	0.026013	0.466629	0.075335	0.836870	0.190739	7.772913	1.591597

Source: results of authors' data analysis

The data shows (Table 2) that, between 2012 and 2019, Facebook maintained a very good current solvency, with a low debt ratio and relatively high performance. In particular, the average value of RTO is much higher than that of ATO (2.084405 compared to 0.119075), showing that the company not only ensures good performance as shown by high turnover of total assets, but also manages very good business receivables. Facebook's business seems to be backed by positive macroeconomic parameters of the US economy.

The consumer price index (CPI) is maintained at a moderate level, the lending rate (LDR) is low, while the economic growth rate (GGR) is averaging 0.392169 with a standard deviation of only 0.190739, and labor costs also do not have many big changes shown in the average value of the ECI index is around 123.

4.2. Correlation analysis

Table 3. Results of correlation analysis of research variables

Correlation									
Probability	CR	DTE	ATO	RTO	CPI	LDR	GGR	ECI	ROA
CR	1.000000								

DTE	-0.318449	1.000000							
	0.1712	-----							
ATO	-0.407573	0.122544	1.000000						
	0.0745	0.6068	-----						
RTO	-0.171196	-0.420583	0.592870	1.000000					
	0.4705	0.0648	0.0059	-----					
CPI	-0.656929	-0.001238	0.536290	0.385740	1.000000				
	0.0017	0.9959	0.0148	0.0930	-----				
LDR	-0.788049	0.216525	0.479791	0.166578	0.906266	1.000000			
	0.0000	0.3592	0.0323	0.4827	0.0000	-----			
GGR	-0.024421	0.247333	0.317612	-0.179580	-0.017133	0.010067	1.000000		
	0.9186	0.2931	0.1724	0.4487	0.9428	0.9664	-----		
ECI	-0.713495	-0.034043	0.469199	0.391631	0.978699	0.909697	-0.152500	1.000000	
	0.0004	0.8867	0.0369	0.0877	0.0000	0.0000	0.5210	-----	
ROA	-0.313925	-0.094256	*0.829749***	*0.737086***	*0.587977***	0.354421	0.025426	*0.549168**	1.000000
	0.1777	0.6926	*0.0000*	*0.0002*	*0.0064*	0.1252	0.9153	*0.0121*	-----

Source: results of authors' data analysis
** Significance level of 0.01
* Significance level of 0.05

The results of correlation analysis (Table 3) of research variables showed that ATO has a positive relationship with ROA at the significance level of 0.01. Likewise, RTO is positively correlated with ROA at the 0.01 significance level but with a slightly lower correlation. The findings on the relationship between ATO and RTO and Facebook's ROA coincide with initial expected correlation in the research model.

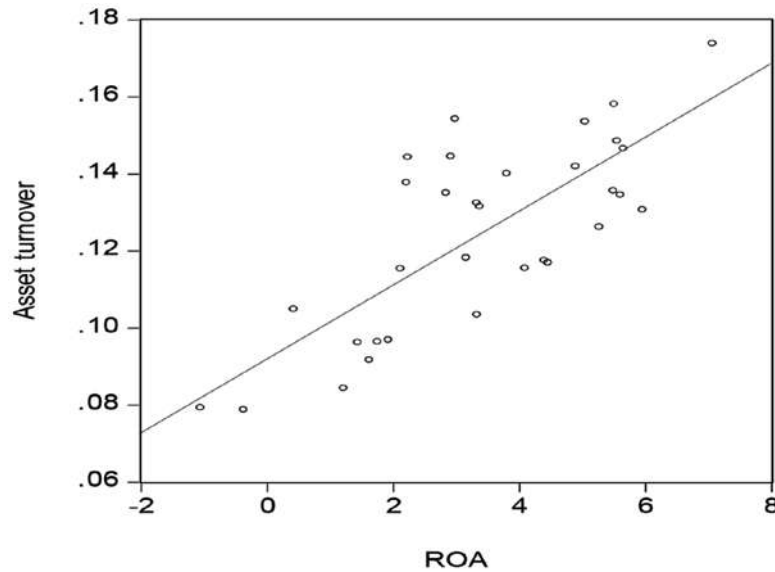First of all, the chart 1 below shows us that ROA has a positive correlation with ATO:

Chart 1. Net Profit (ROA) vs. Asset Turnover (ATO)

Source: results of authors' data analysis

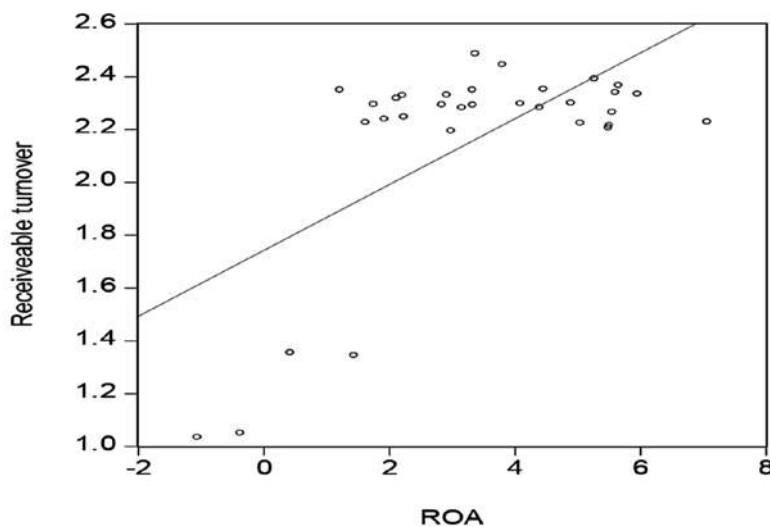Next we find out that, based on the scatter Chart 2 below, ROA has a positive correlation with RTO.

Chart 2. Net Profit (ROA) vs. Receivable Turnover (RTO)

Source: results of authors' data analysis

Also at the significance level of 0.01, CPI is positively related to ROA but with a positive correlation above 0.58. Meanwhile, at the significance level of 0.05, ECI is also positively related to ROA with a slightly lower correlation level (about 0.55).

The positive relationship between CPI and ROA is contrary to the correlation expectation initially in the research model. That finding can be explained by the characteristic that Facebook's business is heavily tied to personal consumption, so when the CPI rises in moderation, it will have a positive impact on Facebook's ROA. We see that, Facebook net profit (ROA) and CPI have positive correlation (see Chart 3):
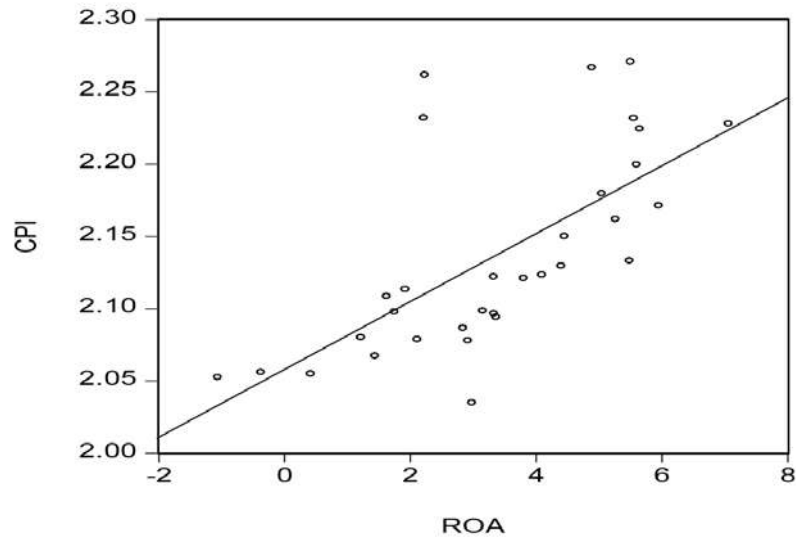

Chart 3. Net Profit (ROA) vs. Consumer Price Index (CPI)

Source: results of authors' data analysis

Likewise, the positive relationship between ECI and ROA is contrary to the initial correlation expectation in the research model. That finding can be explained by the characteristic that Facebook's business is heavily associated with high-quality personnel, so when the ECI index increases slightly, it will have a positive impact on Facebook's ROA.

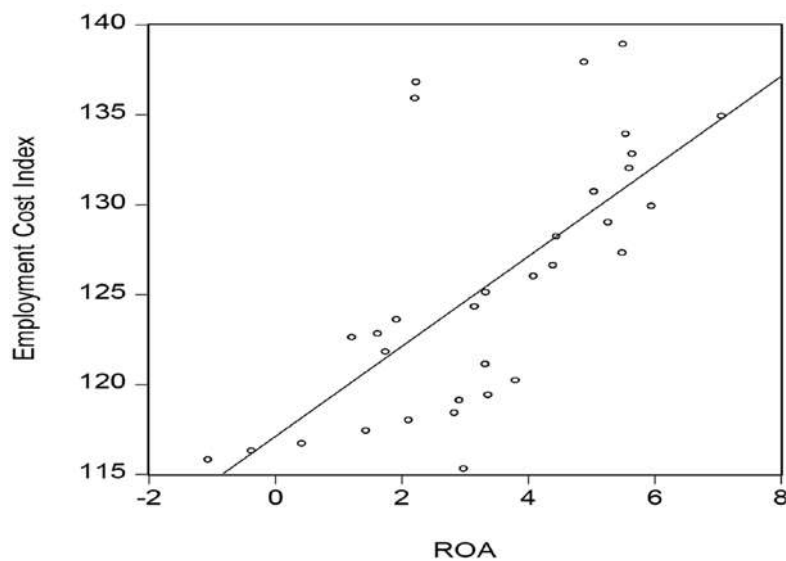The Chart 4 below shows us that ROA has a positive correlation with ECI:

Chart 4. Net Profit (ROA) vs. Employment Cost Index (ECI)

Source: results of authors' data analysis

4.3. Regression model and main findings

4.3.1 Scenario 1: Regression model with 8 variable (Original proposed research model)

Note: C: constant
Using Eview gives us the below results:

Dependent Variable: ROA

Method: Least Squares

Date: 05/31/20   Time: 02:04

Sample: 2012Q1 2019Q4

Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-47.30452	12.13877	-3.896977	0.0025
CR	-0.062936	0.085418	-0.736801	0.4767
DTE	2.169131	2.659442	0.815634	0.4320
ATO	50.05873	8.601677	5.819647	0.0001
RTO	-0.114121	0.494111	-0.230963	0.8216
CPI	15.91943	13.21203	1.204920	0.2535
LDR	-2.443485	0.505096	-4.837667	0.0005
GGR	-1.362081	1.036626	-1.313957	0.2156
ECI	0.102559	0.142128	0.721597	0.4856

R-squared	0.942662	Mean dependent var	2.319420
Adjusted R-squared	0.900962	S.D. dependent var	1.591597
S.E. of regression	0.500881	Akaike info criterion	1.757265
Sum squared resid	2.759694	Schwarz criterion	2.205344
Log likelihood	-8.572647	Hannan-Quinn criter.	1.844735
F-statistic	22.60569	Durbin-Watson stat	3.148476
Prob(F-statistic)	0.000009		

Source: results of authors' data analysis

The initial linear regression results showed that the independent research variables explained about 90.09% of the variation of the independent variables in the research model.

The original research model's linear regression results showed that there are several variables that have an impact (statistically significant) on Facebook's ROA including ATO and LDR, while the remaining research variables are not statistical significance impact on ROA of Facebook.

The initial linear regression results showed that the independent research variables explained about 90.09% of the variation of the independent variables in the research model.

However, the p-value coefficients of some independent variables have values greater than 0.05, so the research model presented is not the optimal research model.

4.3.2 Scenario 2: The research model regression following the step-wise procedure

The initial research model regression results show that there are some independent variables that have no statistically significant relationship with ROA (p-value> 0.05). Hence, we used the non-statistically insignificant extraction using the step-wise procedure, and the results are summarized in the following table 4.

Table 4. Summary of results

Model	7 factors model: RTO removed	6 factors model: CR removed	5 factor model: CPI removed	4 factors model: GGR removed	3 factors model: DTE removed
Adjusted R-squared	0.908775	0.912044	0.911837	0.914335	0.807618
Variable	Prob.	Prob.	Prob.	Prob.	Prob.
CR	0.4789	N/A	N/A	N/A	N/A
DTE	0.3058	0.1610	0.1527	0.1460	N/A
ATO	0.0000	0.0000	0.0000	0.0000	0.0000
CPI	0.2408	0.3280	N/A	N/A	N/A
LDR	0.0001	0.0001	0.0000	0.0000	0.0191
GGR	0.1940	0.2522	0.4609	N/A	N/A
ECI	0.4664	0.1280	0.0000	0.0000	0.0009

Source: results of authors' data analysis

4.3.3 Scenario 3: Regression model with 3 variable (Optimal proposed research model)

The results of the final research model include 3 factors are presented below:

Dependent Variable: ROA
Method: Least Squares
Date: 05/31/20   Time: 02:10
Sample: 2012Q1 2019Q4
Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-31.89161	7.746651	-4.116826	0.0003
ATO	51.89651	9.954259	5.213498	0.0000
LDR	-1.411141	0.567375	-2.487140	0.0191
ECI	0.239279	0.064611	3.703348	0.0009

R-squared	0.835913	Mean dependent var	3.385894
Adjusted R-squared	0.807618	S.D. dependent var	1.961994
S.E. of regression	1.060896	Akaike info criterion	3.072574
Sum squared resid	31.51402	Schwarz criterion	3.255791
Log likelihood	-45.16118	Hannan-Quinn criter.	3.133305
F-statistic	26.00856	Durbin-Watson stat	0.974737
Prob(F-statistic)	0.000000		

Source: results of authors' data analysis

We see Durbin-Watson (D) stat is 0.974737, which means that the model has Autocorrelation phenomenon. We use general differential equations to fix the Autocorrelation phenomenon of the original research model Autocorrelation fix:

$$P = 1-D/2 = 1-0.974737/2 = 0.512632$$
Generalized differential equation
$$ROA1t = ROAt - 0.512632 * ROA\ t-1$$
$$ATO1t = ATOt - 0.512632 * ATO\ t-1$$
$$LDRt = LDRt - 0.512632 * LDR\ t-1$$
$$ECI1t = ECIt - 0.512632 * ECI\ t-1$$

New variables are created from the generalized differential equation

Dependent Variable: ROA1

Method: Least Squares

Date: 05/31/20   Time: 02:34

Sample (adjusted): 2012Q2 2019Q4

Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-10.74432	6.335938	-1.695774	0.0000
ATO1	50.52415	9.952713	5.076420	0.0000
LDR1	-0.802719	0.851252	-0.942986	0.0000
ECI1	0.158124	0.109958	1.438035	0.0000
R-squared	0.823993	Mean dependent var		1.698111
Adjusted R-squared	0.782215	S.D. dependent var		1.433990
S.E. of regression	0.926878	Akaike info criterion		2.805925
Sum squared resid	23.19579	Schwarz criterion		2.990956
Log likelihood	-39.49184	Hannan-Quinn criter.		2.866240
F-statistic	14.93574	Durbin-Watson stat		2.021618
Prob(F-statistic)	0.000006			

Source: results of authors' data analysis

5. Discussion and recommendations

From the initial research model with 4 micro variables including CR, ATO, DTE and RTO; and 4 macro variables including CPI, LDR, GGR and ECI, the research data processing process results in the impact analysis model of 1 micro variable (ATO) and 2 macro variables including LDR and ECI to Facebook's ROA.

The results of linear regression analysis of the research model showed that ATO has a positive effect on Facebook's ROA, with a very large correlation coefficient. By increasing Facebook's Asset turn over, corporate finance executives will have a huge positive effect on a company's overall return on assets.

The results of our research are consistent with Sari et al. (2018), but different from previous studies by Ray (2012) and Hatono (2018). The reason for the difference may be that Facebook's business is very different from manufacturing businesses in India or consumer businesses in Indonesia.

The research results also show that lending interest rates have a negative effect on Facebook's ROA, while the Employment cost index has a positive effect on Facebook's ROA.

These research findings imply that Facebook managers who want to improve ROA should not only need to pay attention to improving ATO, but also limit the use of loans to save debt costs, and utilize the high quality human resources in research and development to take advantage of the positive influence of ECI on the company's ROA.

The research results also provide useful indicators for stock investors of Facebook. Whenever investors observe positive signs of ATO improvement, limited borrowing, and hiring of high quality personnel, investors can expect positive improvements in the Facebook's ROA.

The implications for corporate financial managers and investors are not limited to Facebook's case, but may also apply to other firms doing business in the IT and online social media industry.

Beside, we can analyze impact of another macro factor, for example, deposit rate when we add this variable into our regression model of net profit. Furthermore, we can add unemployment rate or public debt increase into our econometric model to measure the impact of these extra factors on Facebook net profit.

6. Limitations of research and future research direction

First of all, the data used in this study was collected limited only in the case of Facebook. Therefore, the research results, for that reason, may not be of significance for the entire online social networking industry.

Besides, this study only uses secondary data collected from annual financial statements and other related documents, and the independent macroeconomic variables are limited. We have not mentioned other research variables that may have significant meaning such as unemployment rate, exchange rate,… etc.

Therefore, in the future, the development directions of this research can be mixed with secondary data with primary data from corporate financial managers survey, stock investor survey, or extend the scope of multi-company data research and in particular improve the research model, by adding other independent research variables such as unemployment rate, exchange rate,… into our above econometric model to measure impacts of them on Facebook's ROA.

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Exhibits

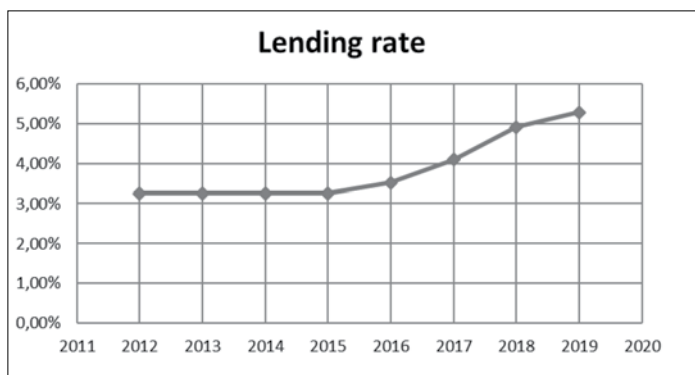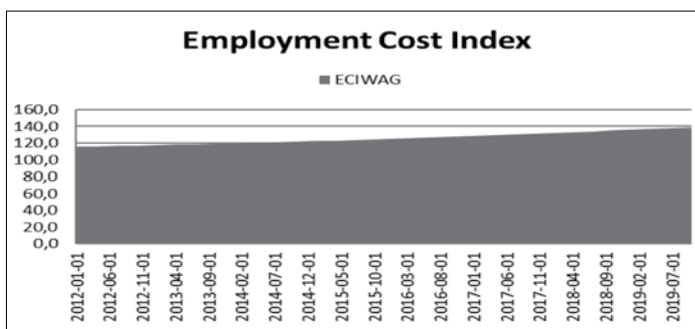**Exhibit 1.** Lending rate past 8 years (2012-2019) in US

Exhibit 2. Employment Cost Index past 8 years (2012-2019) in US

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