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Capital Structure and Performance: Applied Study on Jordanian Industrial Public Shareholding Companies Listed in Amman Stock Exchange (ASE)

هيكل رأس المال والأداء: دراسة تطبيقية على الشركات الصناعية المساهمة العامة الأردنية المدرجة في سوق عمان المالي

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Abstract

The study investigates the effect of capital structure on the performance of Jordanian Industrial Public Shareholding Companies Listed in Amman Stock Exchange (ASE), for a period of ten years (2007-2016). Study sample consist of (41) companies representing (62.12%) of the original population. The multiple regression analysis was used as a technique to examine the effect of capital structure measured by debt ratio, debt-to-equity ratio, on the performance measured by return on assets, return on equity.

The multiple regression analysis results indicated:

- *A negative statistical relationship between debt ratio and return on assets. Also, there is a negative statistical relationship between debt-to-equity ratio and return on assets.*
- *A negative statistical relationship between debt ratio and return on equity. Also, there is a negative statistical relationship between debt-to-equity ratio and return on equity.*

Key words: capital structure, performance, Jordanian Industrial Public Shareholding Companies.

الملخص:

هدفت الدراسة إلى التعرف على أثر هيكل رأس المال على أداء الشركات الصناعية المساهمة العامة الأردنية المدرجة في سوق عمان المالي للفترة الممتدة من (2007–2016)، والبالغ عددها (66) شركة لغاية 2016/12/31 بحسب التقرير السنوي الصادر عن مركز إيداع الأوراق المالية لعام 2016، وشملت عينة الدراسة (41) شركة مساهمة عامة صناعية ممن انطبقت عليها شروط إختيار العينه، شكلت ما نسبته (62.12%) من مجتمع الدراسة. استخدمت الدراسة تحليل الإنحدار المتعدد لإختبار فرضيات الدراسة. وكان من بين أهم النتائج التي توصلت إليها الدراسة:

- وجود أثر عكسي ذو دلالة احصائية لنسبة المديونية على العائد على الأصول والعائد على حقوق المساهمين.
- وجود أثر عكسي ذو دلالة احصائية لنسبة الديون الى حقوق الملكية على العائد على الأصول والعائد على حقوق المساهمين.

الكلمات المفتاحية: هيكل رأس المال، الأداء، الشركات الصناعية المساهمة العامة الأردنية.

1. Introduction

The theories of capital structure are among the most elegant and sophisticated in the field of finance, (Ross, et.al. 2002). It is one of the most complex areas of financial decision making because of its interrelationship with other variables of financial decision making. Poor capital structure can result in high cost of capital, decreasing the NPVs of projects and making them unacceptable. Effective capital structure can lower the cost of capital, increase the NPVs of projects, thereby increase the firm's value (Gitman, 2003). Modern capital structure theories begin in 1958 by Modigliani and Miller's classical paper which provided the motivation for the huge literature concerning capital structure. The main proposition of MM theory is that, under a number of restrictive assumptions, the value of the firm is independent from its financial structure. These assumptions include the absence of taxes, bankruptcy costs, equality of borrowing and

lending rates, and the independence of the companies productive activates from its financing decisions. (Siam et.al. 2005). And hence debt and equity are perfect substitute for each other. Following up MM previous study, MM (1963) contend that when taxes are introduced, a firm start benefiting from using more debt, because the interest payment is tax deductible. Therefore, MM argue that a firm can increase its value by using debt. Also, they gave a cautionary warning that the firm will not necessarily maximize their value by using 100% debt due to bankruptcy costs. However, once the assumption of perfect markets is relaxed, the choice of capital structure becomes an important value- determining factor. (Twairesh, 2011). This work led to the formulation of alternative theories such as the Trade-Off Theory (TOT), Pecking-Order Theory (POT), Market Timing Theory (MTT), and the Agency Theory. These theories point out a number of firm-specific factors that may affect the capital structure decision of firms. Moreover, these theories have been examined and tested by many empirical and theoretical studies. Many researches have concluded their results after seminal MM work, but left many questions after each research. Still it is ambiguous question to raise equity is more profitable and valuable for a company than to raise debt. (Gohar et.al. 2015). Capital structure represents the proportions of the firm's financing from current and long-term debt and equity (Ross et.al. 2002). Leverage results from the use of Fixed-cost assets or fund to magnify returns to the firm's owner, increase in leverage result in increased return and risk and the amount of leverage in the firm's capital structure can significantly affect its value by affecting return and risk (Gitman, 2003). The more debt a firm has,

the more likely it is that the firm will become unable to fulfill its contractual obligation. On the positive side, debt provides a significant tax advantage because interest is tax deductible (Ross, et.al. 2002). "Managers should choose the capital structure that they believe will have the highest firm value, because this capital structure will be the most beneficial to the firm's stockholders". The determination of a firm's capital structure constitutes a complex and difficult decision, one that involves several and antagonistic factors, (e.g., risk and profitability). The rift between theory and practice still needs to be reconciled despite of substantial theoretical development in the field of corporate finance over the past several decades (Yegon et.al. 2014). With regard to the subject under discussion, the rational of this study is to provide additional insights and empirical evidence on capital structure theories by examining the effect of capital structure on performance of Jordanian industrial public shareholding companies listed in Amman stock exchange (ASE) over a period (2007-2016).

1.1 The Problem of the Study:

The problem of this study can be expressed in the form of the following question: Is there an effect of capital structure on performance of Jordanian Industrial Public Shareholding Companies Listed in Amman Stock Exchange (ASE)?

1.2 The Importance of the Study:

The importance of this study stems from the importance of its problem. In addition, this study is important for the following reasons:

i. Provides additional insight into the relation between capital structure and performance.

ii. The final results of this study will be crucial for managers in Jordanian Industrial Public Shareholding Companies, throughout financing, investing and performance evaluating decisions.

1.3 The Objectives of the Study:

The primary objective of this study is to examine the effect of capital structure measured by debt ratio, debt-to-equity on performance measured by return on assets, return on equity of Jordanian Industrial Public Shareholding Companies Listed in Amman Stock Exchange (ASE) over the period (2007-2016), and to come out with recommendations related to subject of the study.

2. Literature Review:

The empirical literature is rich with studies relating to capital structure and performance. In general, there are contradictory results about capital structure and performance. In this section the researcher will briefly discuss the most recent studies.

Shlash et.al. (2008) aimed at identifying the most important determinants of the financial structure of listed industrial companies in Jordan for the period (1997-2001), in addition to identifying these companies' debt capacity and their ability to borrow from financing companies. The study concluded that the leverage ratio in the Jordanian industrial companies is of 36%, in addition, it turned out that there is a statistically significant positive relation between the financial structure and the leverage ratio for the last year at 1% significance level; and that there is a significant negative relation between the financial structure and profitability ratio, at 1% significance level.

The study of Al-Hammdan and Al-Qudah (2013) examines the impact of capital structure on the performance of Jordanian banks listed in Amman Stock Exchange for the period (1991-2010). The results show that the capital structure measured by total liabilities to assets has a positive and significant impact on return on assets, return on equity and earning per share. The results, also, indicates that the equity to assets-ratio has a positive and significant impact on return on assets, and a negative and significant impacts on return on equity, and earnings per share.

Al-Najjar (2013) conducted a study over (8) years from (2004-2011) on (20) corporations listed on the Palestinian exchange Security. It aimed at testing the effect of financial leverage on the performance according to accounting performance measures (return on assets, return on equity, and return on sales, sales growth, and market value of the firm measured by Tobin's Q. The study revealed that the financial leverage has a negative effect on accounting performance measures.

Abd-Alfatah (2014) aimed to find out if there is a relationship between capital structure measured by debt ratio and profitability measured by return on assets, return on equity, and net profit margin for insurance companies in Jordan for the period (2009-2012). The study results showed that there is statistically a positive relationship between capital structure and return on equity, and there is statistically a positive relationship between capital structure and net profit margin. Also, there is no significant relationship between capital structure and return of assets.

Yegon et.al. (2014) investigates the relationship between Capital Structure on Firm's Profitability of the Banking Sector in Kenya from (2012-2014). The study found that there is a significant positive relationship between the short-term debt and profitability and a significant negative relationship between long-term debt and profitability.

The study of Abdel-Jalil (2014) examines the impact of capital structure on the performance of the Jordanian publicly- held industrial companies for the period (2008-2012). The results of his study indicate that there is a negative statistical relationship, at 10% significance level between debt ratio and return on investment, the results did not indicate at 10% significance level, any statistical relationship between debt-to-equity ratio and return on investment. He also found that a negative statistical effect, at 1% significance level between debt-to-equity ratio and return on equity, the results did not indicate at 10% significance level, any statistical relationship between debt ratio and return on equity.

But the study of Soumadi and Hayajneh (2015) investigates the effect of capital structure on the performance of the public Jordanian firms listed in Amman stock market for the period (2001-2006). The results show that capital structure associated negatively with firm performance; financial leverage effects negatively and statistically at level less than 1% on firm performance (return on equity) and less than 5% on firm value. Also, there is no significant difference between high levered and low levered firm to affect financial leverage on the firm performance, the results show negative and significant relationship.

AlGhusin (2015) investigates the impact of financial leverage, growth, non-current to total assets ratio, and size as independent variables on profitability in proxy of return on assets as dependent variable of Jordanian industrial listed companies for a period (1995-2005). The study shows that there is a significant effect of the financial leverage and growth on profitability. The companies may enhance profitability by minimizing the debt and increasing financial assets compared with total assets.

A study conducted by kontesa (2015) on the Indonesian companies listed in Indonesian stock exchange, examines the relationship between capital structure (DER), the performance (ROE) and Firm value (Tobin's Q). The results showed that there is a negative relationship between capital structure and profitability, the positive effect of capital structure and profitability on the firm's value.

Another study which was conducted in Karachi by Ahmad and Mohsin (2016) on companies listed on the KSE in the cement sector from (2009-2015). The study attempts to gauge the impact of capital structure (leverage) on the financial performance. The study found that leverage measured by debt to assets has a statistically significant negative impact on firm's performance measured by return on assets.

Musah and Gakpetor (2017) used a sample of financial institutions in Ghana from (2006-2015) to examine the relationship between capital structure measured by total debt to capital ratio (DR) and profitability measured by return on assets and return on equity of NGFIs. The study found that capital structure (DR) is positively associated with profitability, but statistically significant with only return on assets.

3. Methodology

The descriptive analytical research approach was adopted in this study, for its suitability of the purpose of the study. This part will include the study population, sample and the source of data, the statistical technique, the hypotheses of the study, the study variables and study model.

3.1 Study Population, Sample and Resource of Data

The study population consists of all Jordanian industrial public shareholding companies which includes 66 companies listed in Amman Stock Exchange (ASE), out of which 25 companies have been excluded. Therefore, the sample of the study consists of 41 companies, representing 62.12% of the original population, companies were selected according to the following conditions: the data are completely available in the period of 10 years (2007-2016), and during the study period the companies have not been closed or emerged with any other companies. The data were obtained from Amman Stock Exchange (ASE) database and annual reports issued by Jordanian industrial public shareholding companies.

3.2 Statistical Techniques

The hypotheses of this study were tested using the following relevant statistical method and tools. The data analysis was made utilizing (SPSS 20).

i. Descriptive Statistics: (e.g. Means, Standard Deviations)
ii. Multiple Linear Regression analysis to test the effect of the independent variables on the dependent variables.
iii. Multicolliniarity test: to ensure that there is no perfect linear relationship between two or more of the predictors.

iv. Normal Distribution Test: To test whether data is normally distributed.

v. Pearson Correlation, in addition to any other means deemed appropriate.

3.3 The Hypotheses of the Study

Derived from the literature review and previous studies. The following hypotheses have been developed:

Ho_1: There is no a significant effect of capital structure (measured by debt ratio and debt-to-equity ratio) on performance (measured by return on assets) of Jordanian Industrial Public Shareholding companies.

Ho_2: There is no a significant effect of capital structure (measured by debt ratio and debt-to-equity ratio) on performance (measured by return on equity) of Jordanian Industrial Public Shareholding companies.

3.4 The Variables of the study

3.4.1 Dependent Variables: we can use several ways to express the extent to which a firm uses debt, such as debt ratio and debt-to-equity ratio, these ratios provide information about protection of creditors from insolvency, and the ability of the firms to obtain additional financing for potentially attractive investments opportunities. (Ross, Westerfield, Jaffe, 2002)

a. Debt Ratio (DR): determines the firm's long-term debt-paying ability. The (DR) indicates the percentage of assets financed by creditors. The lower this ratio, the better the firm's position (Gibson, 1995). Debt Ratio (DR) is calculated as follows:

Debt Ratio (DR) = Total Debt / Total Assets

b. Debt- to- Equity Ratio (DER): determines the firm's long-term debt-paying ability. The lower this ratio, the better the firm's debt position (Gibson, 1995). Debt-to-Equity Ratio (DER) is calculated as follows:

Debt-to-Equity Ratio (DER) = Total Debt / Total Equity

3.4.2 Independent Variables

a. Return on Assets (ROA): measures the overall effectiveness of management in generating profits with its available assets. The higher the firm's (ROA), the better. (Gitman, 2003). Return on Assets (ROA) is calculated as follows:

Return on Assets (ROA) = Net Income + Interest Expense × (1- Tax Rate) / Assets

b. Return on Equity (ROE): measures the return earned on the common Stockholder's investments in the firm. The higher this return, the better off is the owners. (Gitman, 2003). Return on Equity (ROE) is calculated as follows:

Return on Equity (ROE) = Net Income / Stockholder's Equity

3.5 Study Model

This study tries to find the effect of capital structure measured by debt ratio and debt-to-equity ratio on performance measured by return on assets and return on equity. The study uses the following regression model to measure the dependent variable.

$$ROA_{it} = \alpha_i + \beta_1 DR_{it} + \beta_2 DER_{it} + U_{it}$$

$$ROE_{it} = \alpha_i + \beta_1 DR_{it} + \beta_2 DER_{it} + U_{it}$$

Where:

ROA_{it} : return on assets for the company (i) and the year of (t).

ROE_{it} : return on equity for the company (i) and the year of (t).

α_i : is the constant.

β_1, β_2 : is the slope of the independent variables.

U_{it} : Random error.

4. Data Analysis and Results

4.1 Descriptive Statistics of the Data

Table (1) shows a summary about the sample firms used in this study. So, it shows (410) observations are tested, it can be seen that the mean value of ROA is (0.80998) with a minimum of (-195.296) to a maximum of (43.299), so there is large variation of ROA among the Jordanian industrial public shareholding companies, whereas the standard deviation is (13.528218). While the mean value of ROE is (-1.23336) with a minimum of (-317.898) to a maximum of (57.208), so there is large variation of ROE among the Jordanian Industrial Public Shareholding companies, whereas the standard deviation is (28.719500). The mean value of DR is (32.07798) which indicates that the Jordanian industrial public shareholding companies finance its (32.07%) assets with debts, minimum value of DR is (0.400) to a maximum of (99.816) whereas the standard deviation is (21.786188). At last the mean value of DER is (2.23261) with a minimum of (0.004) to a maximum of (541.612) whereas the standard deviation is (26.776495).

Table (1) Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	410	-195.296	43.299	.80998	13.528218
ROE	410	-317.898	57.208	-1.23336	28.719500
DR	410	.400	99.816	32.07798	21.786188
DER	410	.004	541.612	2.23261	26.776495

4.2 Correlation Analyses

Before testing the hypotheses, Pearson Correlations was carried out to test the correlation between independent variables. Table (2) illustrates the correlation between independent variables. The results show that there is (-0.220) inverse interdependence between return on assets and debt ratio. And (-0.178) inverse interdependence between return on assets and debt-to-equity ratio. Which is means increase in debt ratio and debt-to-equity ratio decrease return on assets. Also, Table (2) shows that there is (-0.282) inverse interdependence between return on equity and debt ratio. And (-0.439) inverse interdependence between return on equity and debt-to-equity ratio. Which is means increase in debt ratio and debt-to-equity ratio decrease return on equity.

Table (2) Pearson Correlations Between independent Variables

	DR	DER
ROA	-0.220**	-0.178**
Sig	0.000	0.000
N	410	410
ROE	-0.282**	-0.439**
Sig	0.000	0.000
N	410	410

** Significant at the 0.01 level (2-tailed).

4.3 Multicollinearity test

Multicollinearity test is used to ensure that there is no perfect linear relationship between two or more of the predictors. So, the predictors should not correlate too highly (Field, 2009). One of the collinearity diagnostics methods is to use Variance Inflation Factor (VIF) and Tolerance which indicates weather independent variable has a strong relationship with the other independent variable. The (VIF) value of a

variable should not exceed (10). Table (3) shows that the (VIF) values are less than 10 and Tolerance values are more than (0.1) which means there is no multicollinearity problem and it could be safely said that the study model is an appropriate one.

Table (3) Collinearity Statistics

	Tolerance	VIF
DR	.958	1.044
DER	.958	1.044

4.4 Normal Distribution Test

To test whether data is normally distributed Kolmogorov-Smirnov test (K-S test) was used prior to the hypotheses testing; the result of (K-S test) is shown in table (4) below. The table (4) shows that data is not normally distributed. But according to the central limit theorem the sampling distribution in big samples tend to be normal anyway, and the sampling distribution will trend to be normal regardless of the population distribution in sample of (30) and more, (Field, 2009), (Palta, 2003), because the observation for each variable is bigger than (30) then, we can be more confident that data is normally distributed, and we can use parametric analysis method safely.

Table (4) K-S test

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ROA	.197	410	.000	.546	410	.000
ROE	.254	410	.000	.480	410	.000
DR	.087	410	.000	.939	410	.000
DER	.467	410	.000	.041	410	.000

4.5 Hypotheses Testing

Based on the research problem, two hypotheses have been formulated and tested:

Ho_1: "There is no a significant effect is statistically significant at the level of significance ($\alpha \leq 0.05$) of capital structure (measured by debt ratio and debt-to-equity ratio) on performance (measured by return on assets) of Jordanian Industrial Public Shareholding companies".

The multiple regression analysis was conducted to examine the effect of capital structure and return on assets. Table (5) shows the summary of Multiple Regression results.

Table (5) Results of Multiple Regression Between Capital Structure and ROA

R	0.259				
R Square	0.067				
Adjusted R Square	0.062				
F	14.599				
Sig.	0.000*				
Independent Variables	B	Std. Error	Beta	t	Sig.
(Constant)	4.780	1.162		4.115	0.000*
DR	-0.119	0.030	-0.191	-3.913	0.000*
DER	-0.070	0.025	-0.139	-2.843	0.005*
Durbin-Watson	1.371				

***P≤ 0.05**

The results reveal that the Auto- Correlation using Durbin-Watson attains DW score of 1.371 which is mean there is no auto- correlation problem. Table (5) shows that the (F) value was (14.599); the level of significance (0.000) and it is less than ($\alpha \leq 0.05$). This indicates that there is a significant effect between capital structure and ROA. Table (5) shows that the adjusted R square is equal to (0.062), this indicates that the independent variables explain (6.2%) of variation in the dependent variables. As seen from table (5), that there is a negative

statistical relationship between DR and ROA. Further, table (5) shows that there is a negative statistical relationship between DER and ROA. This result is consistent with the study of (Shlash et.al. 2008; Al-Najjar, 2013; Yegon et.al. 2014; Abdel-Jalil, 2014; kontesa, 2015; Ahmad and Mohsin, 2016). The results of this study opposed the results of a study of (Al-Hammdan and Al-Qudah, 2013; Abd-Alfatah, 2014; Musah and Gakpetor, 2017)

Based on table (5) above, it shows that $B\hat{}_o = 4.780$, $B\hat{}\,1 =$-0.119, $B\hat{}_2 =$ -0.070. So, the regression equation is:

$$ROA_{it} = 4.780 - 0.119\,DR_{it} - 0.070\,DER_{it} + U_{it}$$

Based on the above results, the null hypotheses "There is no a significant effect is statistically significant at the level of significance ($\alpha \leq 0.05$) of capital structure (measured by debt ratio and debt-to-equity ratio) on performance (measured by return on assets) of Jordanian Industrial Public Shareholding companies", is rejected.

Ho$_2$: "There is no a significant effect is statistically significant at the level of significance ($\alpha \leq 0.05$) of capital structure (measured by debt ratio and debt-to-equity ratio) on performance (measured by return on equity) of Jordanian Industrial Public Shareholding companies".

The Multiple Regression analysis was conducted to examine the effect of capital structure and return on equity. Table (6) shows the summary of Multiple Regression results.

Table (6) Results of Multiple Regression Between Capital Structure and ROE

R	0.480	
R Square	0.231	
Adjusted R Square	0.227	
F	61.081	
Sig.	0.000*	

Independent Variables	B	Std. Error	Beta	t	Sig.
(Constant)	8.184	2.239		3.656	0.000*
DR	-0.264	0.059	-0.200	-4.507	0.000*
DER	-0.426	0.048	-0.398	-8.951	0.000*
Durbin-Watson	1.409				

***P≤ 0.05**

The results reveal that the Auto- Correlation using Durbin-Watson attains DW score of 1.409 which is mean there is no auto- correlation problem. Table (6) shows that the (F) value was (61.081); the level of significance (0.000) and it is less than (α≤ 0.05). This indicates that there is a significant effect between capital structure and ROE. Table (6) shows that the adjusted R square is equal to (0.227), this indicates that the independent variables explain (22.7%) of variation in the dependent variables. As seen from table (6), that there is a negative statistical relationship between DR and ROE. Further, table (6) shows that there is a negative statistical relationship between DER and ROE. This result is consistent with the study of (Soumadi and Hayajneh, 2015; kontesa, 2015; Shlash et.al. 2008; Al-Najjar, 2013; Yegon et.al. 2014; Abdel-Jalil, 2014). The results of this study opposed the results of a study of (Al-Hammdan and Al-Qudah, 2013; Abd-Alfatah, 2014; Musah and Gakpetor, 2017)

Based on table (6) above, it shows that β_o = 8.184, β_1 = -0.264, β_2 = -0.426. So, the regression equation is:

$$ROA_{it} = 8.184 - 0.264\,DR_{it} - 0.426 DER_{it} + U_{it}$$

Based on the above results, the null hypotheses "There is no a significant effect is statistically significant at the level of significance (α≤ 0.05) of capital structure (measured by debt ratio and debt-to-

equity ratio) on performance (measured by return on equity) of Jordanian Industrial Public Shareholding companies", is rejected.

5. Conclusion, limitation and Recommendations

5.1 Conclusion

Capital structure is a crucial for any firm, and considers of debated topics. The firm must consider using an optimal capital structure to minimize the firm's overall cost of capital and because the need to maximize returns.

The study investigates the effect of capital structure on the performance of Jordanian Industrial Public Shareholding Companies Listed in Amman Stock Exchange (ASE), for a period of ten years (2007-2016). The results of descriptive statistics show that the average performance of Jordanian Industrial Public Shareholding Companies is low, when performance is measured by using ROA and ROE. The results indicate that the Jordanian industrial public shareholding companies finance its (32.07%) assets with debts. Using multiple regression analysis, results indicated a negative statistical relationship between debt ratio and return on assets. Also, there is a negative statistical relationship between debt-to-equity ratio and return on assets. This result is consistent with the study of (Shlash et.al. 2008; Al-Najjar, 2013; Yegon et.al. 2014; Abdel-Jalil, 2014; kontesa, 2015; Ahmad and Mohsin, 2016). The results of this study opposed the results of a study of (Al-Hammdan and Al-Qudah, 2013; Abd-Alfatah, 2014; Musah and Gakpetor, 2017). Study found a negative statistical relationship between debt ratio and return on equity. Also, there is a negative statistical relationship between debt-to-equity ratio and return

on equity. This result is consistent with the study of (Soumadi and Hayajneh, 2015; kontesa, 2015; Shlash et.al. 2008; Al-Najjar, 2013; Yegon et.al. 2014; Abdel-Jalil, 2014). The results of this study opposed the results of a study of (Al-Hammdan and Al-Qudah, 2013; Abd-Alfatah, 2014; Musah and Gakpetor, 2017)

5.2 limitation and Recommendations

In the light of the results of this study, researcher recommends the following:

- Jordanian industrial public shareholding companies should retain balance between owner's equity and using debt in order to finance their needs, so that it will be in better position.
- Jordanian industrial public shareholding companies are required to pay more attention to capital structure decisions.

This study has several limitations. First, the research was carried out in Jordan. Therefore the findings are more likely to have limited application to other countries. Second, this study is done in industrial sector due to time and other resource constraints, so it is recommended for future researchers to do study in other sectors, and consider other factors which researcher did not deal with them in this study.

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