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# An Empirical Evidence of Education Tourism and Economic Growth in Malaysia

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## ABSTRACT

The transformation of Malaysian higher education institutions have witnessed the government's intention of widening the role of higher education institutions in which not only serves in providing quality of human capitals but also as an income contributor in the area of education tourism sector through attracting more international students. In line with the increase demand among students to study abroad, the Malaysian government has aimed to attract 200,000 international students by year 2020. However, attracting foreign students without a proper filtering process will hamper the socio-economic and hence will give obstacle for Malaysia to achieve her economic goals. Therefore, this paper tries to investigate the importance of education tourism to Malaysia's economic growth over the period of 2002:Q1 to 2013:Q4. In terms of modelling and methodology, this study borrows the Feder's growth model as the theoretical framework and the advanced time series approaches (i.e. unit root, cointegration and Granger causality) being used to achieve the objective of this study. Our empirical findings suggest that economic growth, education tourism and other determinants are cointegrated, implying that there is a meaningful long-run relationship between them. Moreover, we also find that education tourism does not Granger-causes economic growth in the short run, but it Granger-causes economic growth in the long run. For the sake of brevity, any macroeconomic policies that heading toward promoting inbound education tourism will probably spur the growth of the Malaysian economy, especially in the long-run.

Keywords: Education tourism; International students; Economic growth; Malaysia

## *ABSTRAK*

*Transformasi institusi-institusi pendidikan tinggi (IPT) di Malaysia telah menyaksikan niat kerajaan dalam meluaskan lagi peranan IPT bukan sahaja sebagai penyedia modal insan berkualiti tetapi sebagai penyumbang pendapatan sektor pelancongan pendidikan melalui kemasukan pelajar antarabangsa. Selari dengan peningkatan permintaan untuk belajar ke luar negara ini, kerajaan mensasarkan akan menerima seramai 200,000 pelajar antarabangsa menjelang tahun 2020. Walau bagaimanapun, pengambilan pelajar asing tanpa tapisan yang ketat ini boleh memberi kesan kepada sosio-ekonomi dan seterusnya menjadi halangan kepada Malaysia dalam mencapai matlamat-matlamat ekonominya. Oleh demikian, kajian ini cuba mengkaji kepentingan pelancongan pendidikan kepada pertumbuhan ekonomi Malaysia dalam tempoh 2002:Q1 hingga 2013:Q4. Dari segi model kajian, kajian ini meminjam model pertumbuhan Feder sebagai rangka kerja teori manakala kaedah analisis statistik siri masa (ujian punca unit, kointegrasi dan hubungan sebab-penyebab Granger) digunakan untuk mencapai objektif kajian. Dapatan empirikal mencadangkan pertumbuhan ekonomi, pelancongan pendidikan dan penentu-penentu pertumbuhan lain mempunyai hubungan jangka panjang yang bererti. Kami juga mendapati bahawa pelancongan pendidikan tidak mempunyai hubungan sebab-penyebab Granger terhadap pertumbuhan ekonomi tetapi hubungan ini wujud dalam jangka panjang. Sebagai ringkasan, apa sahaja polisi-polisi makroekonomi yang membawa kepada promosi*

*kedatangan pelancongan pendidikan berkemungkinan dapat memacu pertumbuhan ekonomi Malaysia, terutamanya dalam jangka panjang.*

*Kata Kunci*: Pelancongan pendidikan; Pelajar antarabangsa; Pertumbuhan ekonomi; Malaysia

## INTRODUCTION

For the past decade, travelling activities has been increase significantly. This phenomenon has attracted interest among scholars and policy makers around the globe in search for the important of tourism sector to the economic development. Most often than not, tourism plays as engine of economic growth such as Balaguer and Cantavella-Jorda (2002), Gunduz and Hatemi-J (2005), Brida et al. (2010), Lean and Tang (2010), Katircioğlu (2009ab), Husein and Kara (2011), Srinivasan, Kumar and Ganesh (2012), Eeckels, Filis and Leon (2012), Hye and Khan (2013), Jalil, Mahmood and Idress (2013), Tang (2011, 2013), Tang and Tan (2013, 2015a, 2015b) while other studies found out that economic growth is the driving force to tourism sectors such as Oh (2005), Tang and Jang (2009), and Payne and Mervar (2010). However, a group of studies found that both tourism and economic growth are interdependent, such as Dritsakis (2004), Louca (2006), Kim, Chen and Jang (2006), Khalil, Kakar and Waliullah (2007), Lee and Chien (2008), Lorde, Francis and Drakes (2011), Tang and Abosedra (2014), and Ridderstaat, Croes and Nijkamp (2014). Thus, the aforementioned literatures have led this area of research leave with inconclusive results whether tourism really plays a major role in economic development (Katircioğlu, 2014; Tang and Tan, 2015b) and possibly due to aggregated analysis conducted by previous researchers as argued by Tang and Tan (2013). In attempt to relate the impact of higher education and tourism contribution to economic growth, Katirciŏglu (2010) have recently hypothesised the causal link between these variables in North Cyprus and found long-run causality from higher education and economic growth. Similar study by Katirciŏglu, Fethi and Caner (2014) have employed Solow growth model to investigate the determinant of economic growth in North Cyprus. The study found a long-run causality exists from higher education and other determinants to economic growth. According to Katirciŏglu (2010) and Katirciŏglu, Fethi and Caner (2014), since most of the students in the North Cyprus' higher education institutions (HEIs) are consist of international students, hence it can be considered that international students also can be student tourism (Katirciŏglu, Fethi and Caner, 2014).

Generally, education has long been recognised as an important factor that could turn countries into a well-developed country. Due to rapid expansion of advanced technology and inability for a country to provide quality education, the demand for higher education in relatively advanced countries has been increasing. According to the United Nations of Educational, Scientific and Cultural Organization (UNESCO), about 100% increase in the flow of international students' mobility from 2 million in 2000 to 4 million in 2012, where tertiary education consists of 1.8%. Receiving country have benefited from these inbound international students. At one hand, they contribute to the financial contribution to enables HEIs to do research and teaching expertise (Ziguras and Law, 2006) and on the other hand international students contribute to the tourism sectors. With respect to Malaysia, total enrolment of international students is quite impressive since 2002 and currently being ranked at 12th in receiving international students in 2012 by the UNESCO. The government is welcoming international students to study in Malaysia because their enrolment are expected to contribute some important aspects to the home socio-economy, such as sources of skill worker (Tham and Kam, 2008), research and development (R&D) spillover (Park, 2004) and source of education tourism income (Huang, 2008; Rodríguez, Martínez-Roget and Pawlowska, 2012). Hence, under the 10th Malaysia Plan, the government aims to increase about 200,000 international students by year 2020. To achieve this, several policies have taken place such as the National Higher Education Strategic Plan NHESP which aim to transform and internationalise the Malaysian HEIs while the National Higher Education Action Plan from 2007 to 2010 are the blueprint from the foundation of NHESP to enhance the role of Malaysia as an hub of excellence centre (see Tham, Mahmod and Alavi, 2013).

Despite continuing to promote her education institutions to global market, negative problems arise from some of international students should be a concern to the policy makers and the stakeholders. The theoretically postulated positive influence of education tourism on economic growth is further dampened by some negative social problems committed by international students. For example, according to *Dewan Negara* reports, there are 1,390 international students cases reported under Immigration Act, Department of Immigration Malaysia and 39 international students was arrested for involved in criminal activities (*Sidang Dewan Negara*, 24th June 2014). Moreover, some local mainstream newspapers have reported multiple criminal cases such as drug trafficking and

violation of students' visas committed by some of these international students. These issues would not only bring additional economic costs to the government in handling them but also operational difficulties in identifying genuine international students, particularly in private HEIs where currently received higher enrolment of international students in Malaysia. This cause the role of educational tourism in stimulating the economic growth in Malaysia remains puzzled. Therefore, it is timely to examine the contribution of education tourism to the Malaysian economic growth. The need to find a new source of economic growth together with some empirical gaps have motivated the present study to further examine, with respect of inbound international students, that whether education tourism could play any role in stimulating economic growth in Malaysia. Furthermore, determining the answer is paramount important for an effective strategy formulation regarding to the future of education tourism and its role on economic growth. Thus, the present paper tries investigates the long-run relationship between education tourism and other determinants of economic growth. Accordingly, Granger causality also will be carrying out to detect any possible causal relationships.

## DATA AND METHODOLOGY

A set of quarterly data is extracted from the *International Financial Statistics* (IFS) published by the IMF, *Monthly Statistical Bulletin* published by Bank Negara Malaysia (BNM) and Higher education reports, Ministry of Education (MOE). Data range is from 2002:Q1 until 2013:Q4. The paper utilised Feder (1983) growth model as for the theoretical framework following Tang and Tan (2015b) as shown in the following function:

$GDP_t = f(CAP_t, ETOUR_t, XG_t)$

Where $GDP_t$ is per capita real gross domestic products, $CAP_t$ is the per capita real capital and $XG_t$ is per capita real export of goods. Due to the availability of data on education tourism, therefore the proxy for education tourism is inbound international students per capita, $ETOUR_t$. All the data are transformed into natural log and the GDP deflator is used to compute the real values of the data and 2010 is chosen for the based-year price.

A prerequisite step in dealing with time series data is to determine the stationarity of the variables as Nelson and Plosser (1982) argued that most macroeconomic variables contain a unit root. If a variable is non-stationary at level, the variable will be regressed on first-differenced form. The rejection of null hypothesis at first difference indicates that the variable is integrated or stationary at order 1. For policy formulation, economic variables ($\ln GDP_t$, $\ln CAP_t$, $\ln ETOUR_t$ and $\ln XG_t$) should indicate the presence of long-run equilibrium among the variables where all of them have the same order of integration in order to model the cointegration relationship. Otherwise, regression with non-stationary variables will only report spuriously and long-run policy formulation will not be effective. Therefore, to test the stationary property, the present paper employs a conventional unit root testing such as the augmented Dickey-Fuller (ADF) test and Generalised of Dickey-Fuller (DF-GLS). Because of the low power of the conventional tests especially with any structural break of the series, the paper utilised a unit root test with one structural break proposed by Zivot and Andrews (1992) (Zivot-Andrews hereafter). Zivot-Andrews proposed three models, which are permit one-time change in the level of the series (model A); allows one-time change in the slope of the trend (model B); the combination element of model A and B (model C). However, Sen (2003) have suggested that model C is more reliable result compare to model A and B. Therefore, the present paper only employs model C by estimating the following:

$$\text{Model C: } \Delta y_t = \alpha + \theta t + \delta_1 DU_t + \delta_2 DT_t + \beta y_{t-1} + \sum_{i=1}^{k} \lambda_i \Delta y_{t-i} + \varepsilon_{2t} \quad (1)$$

Where $\Delta$ is the first-difference operator, $k$ is lag length, $\varepsilon_{it}$ is the normally distributed error terms. $DU_t$ is the dummy variable for intercept shift ($DU_t = 1$ if $t > TB$ and 0 otherwise), and $DT_t$ is the dummy variable for trend shift ($DT_t = 1$ if $t > TB$ and 0 otherwise). TB is the break-date. The null hypothesis of the preceding models is $\beta = 0$, indicating that series are contain a unit root with drift without the structural break. Each regression contains specific t-statistic for any potential break-date and then chooses the minimum ADF statistics of the break-date. If all the variables are integrated at order 1, there could be an indication of a long-run relationship among them. Thus, the analysis will proceed to test the cointegration properties by performing the Johansen and Juselius (1990)

cointegration technique[1]. Then, we will perform the vector error correction model (VECM) with the condition of the presence of the long-run cointegration relationship from the preceding test. Thus, the VECM equations are estimated as follows:

$$\Delta \ln GDP_t = a_1 + \sum_{i=1}^{p} \phi_{1i} \Delta \ln GDP_{t-i} + \sum_{i=0}^{p} \omega_{1i} \Delta \ln CAP_{t-i} + \sum_{i=0}^{p} \kappa_{1i} \Delta \ln ETOUR_{t-i} + \sum_{i=0}^{p} \varpi_{1i} \Delta \ln XG_{t-i} + \vartheta_1 ECT_{t-1} + \mu_{1t} \quad (2)$$

$$\Delta \ln CAP_t = a_2 + \sum_{i=1}^{p} \omega_{2i} \Delta \ln CAP_{t-i} + \sum_{i=0}^{p} \phi_{2i} \Delta \ln GDP_{t-i} + \sum_{i=0}^{p} \kappa_{2i} \Delta \ln ETOUR_{t-i} + \sum_{i=0}^{p} \varpi_{2i} \Delta \ln XG_{t-i} + \vartheta_2 ECT_{t-1} + \mu_{2t} \quad (3)$$

$$\Delta \ln ETOUR_t = a_3 + \sum_{i=1}^{p} \kappa_{3i} \Delta \ln ETOUR_{t-i} + \sum_{i=0}^{p} \phi_{3i} \Delta \ln GDP_{t-i} + \sum_{i=0}^{p} \omega_{3i} \Delta \ln CAP_{t-i} + \sum_{i=0}^{p} \varpi_{3i} \Delta \ln XG_{t-i} + \vartheta_3 ECT_{t-1} + \mu_{3t} \quad (4)$$

$$\Delta \ln XG_t = a_4 + \sum_{i=1}^{p} \varpi_{4i} \Delta \ln XG_{t-i} + \sum_{i=0}^{p} \phi_{4i} \Delta \ln GDP_{t-i} + \sum_{i=0}^{p} \omega_{4i} \Delta \ln CAP_{t-i} + \sum_{i=0}^{p} \kappa_{4i} \Delta \ln ETOUR_{t-i} + \vartheta_4 ECT_{t-1} + \mu_{4t} \quad (5)$$

Where $\Delta$ is the lag operator, $\phi_i$, $\varpi_i$, $\kappa_i$, and $\omega_i$ are coefficients to be estimated for the short-run causality, $\vartheta_i$ are the lagged-one error correction term, and $\mu_{it}$ are the white noise error terms. The rejection of null hypothesis of no causality for the short run is compared to the Likelihood ratio statistics. For example, if the probability value of $\kappa_{1i}$ (in equation 2) is greater than the Likelihood ratio statistics, the null hypothesis is rejected and indicating that there is causality direction from education tourism to economic growth in the short run. Similarly, if the probability value of $\phi_{5i}$ (in equation 4) is greater than the Likelihood ratio statistic, the causality from economic growth and education tourism exist; meaning that a bi-directional causality in short run. Regarding to the long-run causality, the $\vartheta_i$ coefficient of lagged-one error correction term must be rejected. For example, if the probability value of $\vartheta_1$ (in equation 2) greater than the t-statistic, there is evidence of long-run causality relationship from all the independent variables (except for the lagged-one dependent variable) to the economic growth. However, if the result fails to register any long-run cointegration, the type of causality only can be ran with first-differenced variables and not include the error correction term. In other word, the causality analysis will report in the short-term form.

## RESULT AND DISCUSSION

Table 1 reports the Zivot-Andrews unit root test (Model C). All variables show no evidence of stationary at level, including ln$ETOUR_t$. Based on these results, we conclude that all the series are $I(1)$. We did test the conventional ADF and DF-GLS but the results were not tabulated in the paper as to conserve space. Based on the ADF and the DF-GLS tests, no evidence of the series are stationary at level as the null hypothesis of the series contain a unit root is not rejected. However, the null of non-stationary is rejected for all variables after taking first difference. Therefore, all the variables are share a linear trending and have same level of stationarity.

INSERT TABLE 1

Accordingly, the analysis proceeds to confirm the long-run cointegration using the multivariate Johansen-Juselius cointegration (1990) technique. In table 2, we choose lag 4 as the optimum lag order suggested by AIC. However, in order to determine the rank test with the method,

[1] We skip the explanation as this technique is commonly used in empirical studies.

one may have difficulties in choosing the appropriate selection of the deterministic component in the cointegrating equation models (i.e. model 2, 3 and 4 in Eviews selection). Hence, by applying the Pantula principle, model 2 is the most appropriate model to carry out the cointegration test. Based on the result, the number of cointegrating vector is 1 as indicated by the rejection of null hypothesis from both the trace and the maximum eigenvalue statistics at 5% significant level. This confirms that at least one cointegrating vector is presence among the variables.

INSERT TABLE 2 AND 3

Next, we estimate the long-run impact of education tourism and other growth determinants using an ordinary least square (OLS) method. For a comparison, we also report other estimation methods such as Stock-Watson dynamic OLS (DOLS) and fully modified OLS (FMOLS). These results are tabulated in Table 3. All the independent variables are significantly positive in explaining the economic growth at 1% significant level, except for the ln$CAP_t$ in which regression rejects at the 5% under DOLS estimation. GDP, on average, would increase around 1.4% to 1.5% if inbound education tourism increased by 10%. However, these values are relatively lower than the two conventional growth determinants. For example, if 10% increase in export of goods and capital, GDP will increase around 2.8% to 3.1% and around 3% to 3.2%, respectively. Nevertheless, the result is expected as Malaysia is being dependent to the external sectors.

Having determined the cointegration relationship, we further the analysis by examining the causal direction among the variables and the results are shown in Table 4. Our central analysis of Granger causality direction is between ln$ETOUR_t$ and ln$GDP_t$ (in equation 2 and 4, respectively) to answer our objective of the importance of education tourism to the Malaysian economy. In the short run, we failed to reject the non-causality hypothesis, either from ln$ETOUR_t$ to ln$GDP_t$ or reciprocally. This implies that education tourism has no role in stimulating the economic growth in the short run, which is independent between each other. On the other hand, long-run causality on the lagged-one coefficient of $ECT_{t-1}$ in both equations 2 and 4 shows the evidence of two-way causality direction between ln$ETOUR_t$ to ln$GDP_t$. The *p*-value of the t-statistic indicates a significant of 1% level where we reject the null hypothesis. Considering our models are in multivariate equations, finding the significant result on the $ECT_{t-1}$ coefficient means that all the independent variables are jointly contributing impacts to the dependent variable but not the individual independent variable. Thus, we also test the validity of the overall causality between the variables by restricting the ln$ETOUR_t$ and $ECT_{t-1}$ in equation 2 and ln$GDP_t$ and $ECT_{t-1}$ in equation 4 to obtain any possibilities of overall (strong) causality. As expected, both tests have rejected the null hypothesis at 1% significant level. With respect to the Granger causality from ln$ETOUR_t$ to ln$XG_t$ and ln$CAP_t$, only ln$ETOUR_t$ Granger-causes the former at 10% while a one-way causality direction found from ln$CAP_t$ to ln$ETOUR_t$ in the short-run. No matter in the long run or overall causality, bi-directional causal direction exist for ln$CAP_t$ and ln$ETOUR_t$ whereas one-way causality from ln$XG_t$ to ln$ETOUR_t$.

## CONCLUSION AND POLICY RECOMMENDATIONS

Numerous studies have been investigating the role of tourism and economic growth but failed to provide specific results on the impact of tourism sub-sector to the economic growth. Therefore, the present paper tries to investigate education tourism to the growth relationship in Malaysia. From the findings, all the variables are share the same level of integration, $I(1)$. Subsequently, Johansen-Juselius (1990) cointegration test have shown the existence of long-run relationship among the variables. Based on the VECM Granger causality test, there is no causality in either direction between education tourism and economic growth in the short run. Conversely in the long run, these variables are interdependent between each other as shown by both long-run and overall causality. Turning to other growth determinants, capital-economic growth relationship is consistently shown bi-directional causality both in the short run and long run. However, exports of goods-economic growth relationship appear to be a two-way direction for the overall causality. Interestingly, we also found that capital and education tourism have a bidirectional relationship in the long run.

Our results conclude that education tourism education tourism could play as one of important sectors to boost the economy in the long run, directly enhance the presence of tourism industry as a major contributor to the national income. Despite the fact that Malaysia is among the favoured tourism destination, tourism receipts or yield of spending per individual tourist is still relatively lower. This is closely related to the length of stay among tourists that have relatively shorter period (The Edge, 2011). Conversely, education tourists have relatively longer stay. Most of them are international students who

spend their time for the whole semester or the entire academic programme in foreign country. Thus, education tourism has great potential to be a new source of Malaysian economy. Realising the economic importance of education tourism, several strategies have been outlined under the Education National Key Economic Area (NKEA) with the aim to strengthen her position to be an education hub. For example, under the NKEA, the Malaysian government have focused on the participation of private HEIs as an important provider for educational learning facilities so that they could cater a wide range of international students. By 2020, Malaysia could achieve 200,000 international students' enrolments in both in public and private HEIs. That total could generate over 500,000 jobs and contribute to exchange earnings.

From the results, we are not ruling out the important of export of goods to the Malaysian economy as it continues to be the major export earnings. Moreover, the role of external trade and its effect to inbound international students need to be emphasised. External trade can establish strong networking in which can influence the flow of international students (Barnett et al., 2015). Besides, it can promote understanding between trading partners, which can be interpreted through exchange knowledge and expertise.

In short, any policy to attract international students will benefit the economy. However, there is stiff competition from regional countries who are also aiming to be an education hub in the region, such as Singapore in which has relatively higher quality. Therefore, to compete with other countries, quality of HEIs in Malaysia needs to be improved as it would help induce international students to choose Malaysia as their preferred destination. Moreover, selection of applicants should be done through tight filtering process so that it can reduce the possibility of fake students that could bring negative impact to social problems.

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TABLE 1: Zivot-Andrew Unit Root Test

| Model C | $\ln GDP_t$ | $\ln CAP_t$ | $\ln ETOUR_t$ | $\ln XG_t$ |
|---|---|---|---|---|
| $\tau\left(\hat{\lambda}_{\inf}\right)$ | - 3.0337 (7) | - 4.6505 (4) | - 4.9568 (0) | - 4.7131 |
| Structural break | Q1: 2009 | Q1: 2011 | Q1: 2009 | Q4: 2006 |

The asterisks ** is represent statistical significance 5%. The critical value of 1% and 5% for model A is given – 5.34 and – 4.93 respectively and model C is given – 5.57 and – 5.08 respectively. Numbers in parentheses are lag selection as suggested by AIC.

TABLE 2: Johansen Juselius Cointegration

| $H_0$ : No of cointegration equation(s) | Eigenvalue | Trace Statistic | Max-Eigen Statistic |
|---|---|---|---|
| $r = 0$ | 0.6251 | 67.207** | 42.190** |
| $r \leq 1$ | 0.2970 | 25.016 | 15.158 |
| $r \leq 2$ | 0.1394 | 9.8576 | 6.4584 |

The asterisks ** indicate 5% significant level. Lag selection is determined by AIC. The rejection region is compared with statistic table tabulated by MacKinnon, Haug and Michelis (1999).

TABLE 3: Long-run Elasticity

| Methods | OLS | DOLS | FMOLS |
|---|---|---|---|
| $\Delta\ln ETOUR_t$ | 0.1394*** | 0.1490*** | 0.1481*** |
| $\Delta\ln CAP_t$ | 0.3194*** | 0.2935** | 0.3002*** |
| $\Delta\ln XG_t$ | 0.3105*** | 0.2535*** | 0.2757*** |
| Constant | 5.0450*** | 5.8702*** | 5.5959*** |

The asterisks *** and ** indicate 1% and 5% significant level, respectively.

TABLE 4: VECM Granger Causality

| Independent variables | $\Delta\ln GDP_t$ | $\Delta\ln CAP_t$ | $\Delta\ln ETOUR_t$ | $\Delta\ln XG_t$ |
|---|---|---|---|---|
| | likelihood ratio | | | |
| $\Delta\ln GDP_t$ | – | 24.019*** | 0.061 | 49.007*** |
| $\Delta\ln CAP_t$ | 25.389*** | – | 6.318* | 0.469 |
| $\Delta\ln ETOUR_t$ | 0.268 | 0.106 | – | 4.984* |
| $\Delta\ln XG_t$ | 4.453** | 1.726 | 0.618 | – |
| *Long-run causality* | t – statistic | | | |
| $ECT_{t-1}$ | –0.406*** | –0.279** | –0.438*** | –0.101 |
| *Overall causality* | likelihood ratio | | | |
| $\Delta\ln GDP_t$, $ECT_{t-1}$ | – | 31.390*** | 9.929*** | 49.308*** |
| $\Delta\ln CAP_t$, $ECT_{t-1}$ | 30.472*** | – | 13.781*** | 2.149 |
| $\Delta\ln ETOUR_t$, $ECT_{t-1}$ | 9.715*** | 7.459** | – | 5.944 |
| $\Delta\ln XG_t$, $ECT_{t-1}$ | 13.463*** | 7.515** | 10.944** | – |

The asterisks ***, ** and * indicate 1%, 5% and 10% significant level, respectively.