The Impact of Tourism and Income on Consumption in the Kingdom of Saudi Arabia for the Period 2015-2022.

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Abstract:

This research measures and analyzes the impact of tourism and income on consumption in the Kingdom of Saudi Arabia. It adopts descriptive analytic methodology and applies traditional econometrics techniques to build the model, estimate the parameters, and test the hypotheses. It uses a double logarithmic-linear regression
consumption model. The results indicate that the income elasticity of consumption equals approximately 0.28, and the tourism elasticity of consumption equals about 0.03. It also finds out that income and tourism have a statistically significant positive impact on consumption in the Kingdom of Saudi Arabia; therefore, if income increases by 1 percent, consumption increases by approximately 0.28 percent, and if tourism increases by 1 percent, consumption increases by about 0.03 percent. The adjusted multiple coefficient of determination is 0.92, and it indicates the explanatory power of the model. This value means that income and tourism in the Kingdom explain 92% of the overall variation in consumption. The research recommends growth and a rise in the tourism industries.

Key Words: Consumption Theories, Tourism, Income, Saudi Arabia.
JEL Classification: E21; F62; E24; F0.

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الملخص:
يقيس هذا البحث ويحلل أثر السياحة والدخل على الاستهلاك في المملكة العربية السعودية. ويتبع المنهج الوصفي التحليلي ويطبق تقنيات الاقتصاد القياسي لبناء النموذج، تقدير معلماته، واختبار الفرضيات. ويستخدم البحث نموذج الانحدار الخطي اللوغاريتمي المزدوج للاستهلاك. أظهرت النتائج أن مرونة الاستهلاك للدخل تساوي تقريباً 0.28، ومرونة الاستهلاك للسياحة تساوي تقريباً 0.03 . كما توصلت إلى أن الدخل والسياحة لهما تأثير إيجابي ذو دلالة إحصائية على الاستهلاك في المملكة العربية السعودية؛ فإذا زاد الدخل بالريال بنسبة 1 في المئة، زاد الاستهلاك بنحو 0.28 في المئة، وإذا زاد إنفاق السائحين بالريال بنسبة 1 في المئة، زاد الاستهلاك بنحو 0.03 في المئة. معامل التحديد المتعدد المعدل يساوي 0.92، وهو يدل على القوة التفسيرية للنموذج؛ ويشير إلى أن 92% من إجمالي التغير في لوغاريثم الاستهلاك يرجع إلى لوغاريثم الدخل ولوغاريثم إنفاق السياح في المملكة. يوصي البحث بزيادة ونمو صناعات السياحة.
الكلمات المفتاحية: نظريات الاستهلاك، السياحة، الدخل، السعودية.
رموز تصنيف JEL: F21؛ F62؛ F24، F0.

Introduction:

Meeting the people's essential requirements for commodities and services is regarded as a fundamental objective of every economy. Tourists frequently move between different destinations to meet their needs. Consequently, they spend money on various goods and services upon reaching their destination, including food, drinks, transportation, communications, entertainment, and accommodations. The objectives of tourists differ from one another. Certain people travel to gain knowledge from their trip experiences; for instance, Eva and Erik (2022) emphasize the need for a consistent and strategic focus on tourism knowledge and learning to meet the increasing demand for learning experiences among tourists. Some tourists travel to special destinations to try certain foods, while others do so for entertainment. Many people travel to the Kingdom of Saudi Arabia for the Hajj and Umrah because it is a pilgrimage destination; meanwhile, they visit many other places in the Kingdom. When tourists come to their destination in the

Kingdom, it might lead to a rise in local product and service consumption. This indicates a potential increase in local consumption.

Tourism is considered an important tool of economic policy; in this case, Yuan and Alexander (2023) emphasized that international tourism helps less developed countries reduce poverty by encouraging the development of their basic infrastructure, accelerating the accumulation of human capital, promoting diversification, and boosting both domestic demand and foreign exchange.

People can obtain more goods and services and improve their standard of living by increasing their income through many sources, such as wages and salaries, rental income, interest, and profits. Consequently, an increase in income can result in an increase in consumption.

This research focuses on measuring and analyzing the impact of tourism and income on consumption in the Kingdom. The dependent variable in the model is consumption, while the independent variables are income and tourism. Additionally, it aims to close the gap in the application environment by using the tourism variable in the consumption function to verify and evaluate the economic theory.

The Problem of Research: Economies produce many goods and services to satisfy human needs, although they are defined as limitless, numerous, diverse, renewable, growing, etc. However, the economic resources that contribute to the production of goods and services to meet these needs are characterized as limited and relatively scarce. Consequently, tourists travel and bring money with them to meet their requirements. Moreover, individuals make a considerable effort to generate income from various sources to meet their needs. Therefore, the research questions are

as follows: What is the impact of tourism on consumption in the Kingdom of Saudi Arabia? What is the impact of income on consumption in the Kingdom?

The Aims of Research: This study aims to measure and analyze the impact of tourism and income on consumption in the Kingdom and employs quarterly data from the first quarter of 2015 to the fourth quarter of 2022. Furthermore, it aims to fill the literature gap in this field by inserting tourism as an independent variable in the consumption function to test economic theory.

The Significance of Research: Researching how tourism and income impact consumption is essential in this rapidly developing economic world. This study provides valuable information and serves as a reference for researchers in this discipline. In addition, decision-makers in the Kingdom of Saudi Arabia will receive recommendations from this study that will help them when formulating economic strategies. It helps the Saudi Arabian Central Bank, Ministry of Tourism, and Ministry of Finance formulate and carry out economic strategies.

Hypotheses of the Research: To answer the research problem's questions, the study tests the following hypotheses: The first hypothesis is that tourism has a statistically significant positive impact on consumption in the Kingdom of Saudi Arabia. The second hypothesis is that income has a statistically significant impact on consumption in the Kingdom.

The Methodology of Research: The study adopts descriptive analytic methodology and applies traditional econometrics techniques to build, estimate, and test the regression model. Furthermore, it detects econometric problems and tests the hypotheses of the research. The study collects data from two secondary sources: the General Authority of Statistics (2023) and the Ministry of Tourism (2023). The research uses the E-views program for analyzing the data.

The Limitations of Research: The study's timeframe spans from the first quarter of 2015 to the fourth quarter of 2022. Additionally, the Kingdom of Saudi Arabia is the scope of application. It comprises consumption as a dependent variable and income and tourism as independent variables.

The Terminologies of Research: In this part, the research presents a brief definition of the main terms, including consumption, tourism, and gross domestic product or income.

Consumption is known as the aggregate expenditure on non-productive goods and services purchased by the family's sector inside the Kingdom during a specific period.

Tourism is defined as the activities undertaken by the visitor who travels to a major destination outside his or her usual environment for a period of less than one year for business, leisure, or other personal purposes (Ministry of Tourism, 2023).

Gross domestic product (GDP) represents the market value of the gross goods and services produced within the kingdom's borders, and it is calculated in several ways, including the expenditure approach and the value-added approach. The expenditure approach includes summing aggregate consumption, aggregate investment, government expenditure, and the net of exports. Hasan et al. (2022, p. 37) confirmed that "GDP is measured by taking the quantities of all goods and services produced, multiplying them by their prices, and summing the total". The value-added approach is also called the income approach, and it is the aggregate of revenues from local production factors such as wages, rents, interests, and profits. Therefore, GDP represents income, and it is considered one of the most important indicators of economic activity.

The Structure of Research: This study is organized as follows: The introduction includes the study problem, objectives, significance, hypotheses, methods, limitations, terminology, and

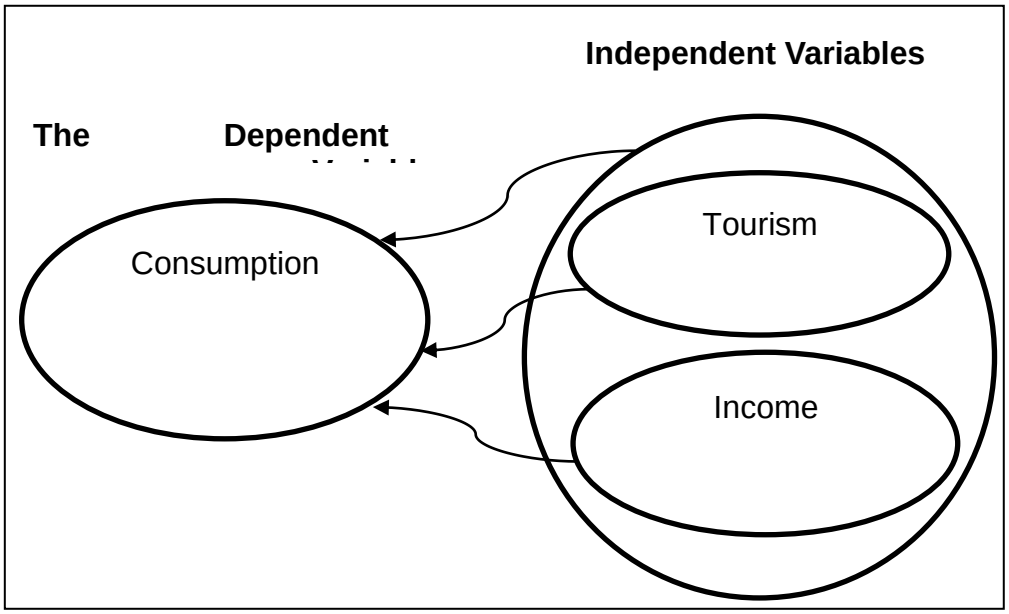
research framework. The theoretical framework and literature evaluations include theories of consumption and tourism, along with literature reviews. The study framework encompasses the description of variables, model construction, parameter estimation, and a discussion of the findings. Finally, it deals with a conclusion.

1. Theoretical Framework and Literature Reviews:

This section of the research deals with the theories of consumption, tourism, income, and the literature reviews.

1.1. Theoretical Framework:

Figure 1: Conceptual Framework of the Study's Variables.



Source: Prepared by the researcher.

Figure 1 provides the conceptual model that the study proposes for the relationship between the variables. Tourism and income are independent variables, while consumption is the

dependent variable. The Figure outlines how independent variables affect consumption. The study anticipates a positive impact on consumption from each independent variable, as well as a positive combined effect.

Theories of Consumption : Consumption is the aggregate value of goods and services that families acquire. It is a vital component of the gross domestic product, and it stimulates the production of goods and services. As Rodney (2023, p. 36) points out, "The ultimate purpose of production is consumption. If there is no sufficient demand, there is a risk the economy will fall into a depression".

The determinants of consumption have been the subject of numerous theories. Based on the absolute income hypothesis of John Maynard Keynes, which he proposed in 1936, Ping Zhang (2022) emphasized that Keynes argued that consumption is a function of income, meaning that income is the main factor determining consumption. This theory is expressed by the equation $C=\alpha+\beta Yd$, which shows that consumption (C) depends on Yd, or disposable income (income minus tax). The positive intercept (α) symbolizes autonomous consumption that is independent of income. And the coefficient β represents the marginal propensity to consume, which is positive and limited between one and zero; therefore, an increase in disposable income by one unit causes an increase in consumption by less than one.

James Dizen Brie's theory, the relative income hypothesis, which appeared in 1949, determined that relative income as an independent variable affects consumption. In this instance, HAMDAOUI and DELENDA (2022) emphasized that the hypothesis claimed that both the previously attained highest level of income and the consumption factor from the prior period

influence consumption. Darwish (2021) cited Dizen Brie's idea, which holds that people imitate their neighbors to improve their standard of living. Therefore, consumption is a function of current income relative to the higher level of previous income.

Modigliani and Ando's life cycle hypotheses, published in 1963, provided an explanation of the relationship between income as an independent variable and lifelong saving and consumption. According to Richert-Kaźmierska (2021), the life cycle theory postulates that consumption and savings are dependent upon the average level of income throughout life. It is known that the hypotheses divided life into three phases: the first working period, the working period, and the period after retirement. When current income is low during the first working period, people use credit to partially finance their expenditures. During periods of abundant employment and current income, past debts are settled, and savings amass. After retirement, withdrawals from savings are used to pay for consumption.

In the permanent income hypothesis of Milton Friedman 1975, he divided the family's income into permanent and transitory income and their consumption also into permanent and transitory consumption. Permanent income is the amount a family can spend on consumption without withdrawing from its wealth, and it is a weighted average of current and past incomes. While transitory consumption is unexpected or unanticipated, like unexpected medical or electricity bills. Stephen (2011) states that, according to Milton Friedman, consumption is determined by an average expected income or permanent income and that consumption is a constant percentage of income.

Tourism: In the context of the definition of tourism, Ping Zhang (2022) defined family tourism as the practice of organizing trips for entire families. The Kingdom paid great attention to tourism;

furthermore, the Tourism Development Fund (2023) states that the national tourism strategy is based on the tourism sector, driven by a bold ambition to bolster Saudi Arabia's reputation as a top tourist destination in the world. With unwavering government support, it is the cornerstone for achieving the aspirations of the tourism sector. Fennel and Cooper (2020, p. 12) summarized that "Tourism knowledge often revolves around getting people to consume more". Therefore, the study anticipates a positive relationship between tourism and consumption.

The Kingdom of Saudi Arabia has many tourist destinations that attract citizens and foreigners; for instance, Mecca, Medina, Jeddah, Al-Riyadh, Abha, Tabuk, and Dammam. Mecca and Medina are religious tourism destinations in the Kingdom.

The Grand Mosque, the world's largest, makes Mecca one of the most popular tourist spots. Muslims regard it as their qibla and visit it to perform Hajj, one of the five pillars of Islam. Consequently, Muslims strongly believe that the Hajj is an obligatory religious obligation for those who are financially and physically able to perform it. Therefore, millions of Umrah pilgrims and Hajjes visit Mecca every year as a destination for Muslims. The number of issued visas for Umrah pilgrims in the year 1444 is 8,108,492 visas, and the number of hajjis who visited Mecca in the 1443 season is 921,420 hajjis (Ministry of Hajj and Umrah, 2024). Mecca has many hotels, restaurants, and means of transportation that serve spiritual visitors who come to it for the purpose of Umrah pilgrimages, Hajj, and visiting its historical and religious monuments.

Medina, the city of Prophet Mohammed, peace be upon him, is also one of the most visited destinations by Umrah pilgrims and Hajjes due to the presence of Prophet's Mosque. Moreover,

there are historical and religious areas that visitors visit; for instance, Al-Baqi Cemetery, Quba Mosque, Al-Qiblatain Mosque, Mount Uhud, where the Battle of Uhud is located, and Medina Museum.

1.2 The Literature Reviews:

The researcher identified several empirical studies that dealt with tourism and others with consumption. For instance, Diacona and Mahab (2015) were among the studies the researcher identified. It dealt with the relationship between income, consumption, and GDP: a time series and cross-country analysis. They used the co-integration technique and employed a sample of 79 countries from 1980 to 2010, which is divided into three income-level categories: lowest, middle, and highest. Their research indicates that income influences consumption, which is more important for those in high- and low-income nations and less important for the middle class.

Rout et al. (2016) investigated the relationship between tourism and economic development, using empirical data from Odisha, India. The aim of the study is to examine the tourism-led growth hypothesis at the state level. The study uses econometric analyses to examine the stationarity, correlation, cointegration, and long-run responsiveness of tourism sector variables to Odisha's economic growth. It indicates that tourism has a significant effect on economic growth.

Bernini et al. (2017) investigate whether tourism expenditure behavior reflects inequalities among Italian households. The objective of the investigation is to enrich the examination of living standards by analyzing the distribution of spending on tourism, a quintessential luxury good. The study uses mixture of regression models. Socioeconomic factors affect three groups of

households with different consumption behaviors. Additionally, household budget constraints are the main factor driving tourism spending. Furthermore, tourism has not yet become part of the lifestyle of Italians.

Dey (2019) examined the relationship through a panel analysis between GDP, consumption, and income in Asian nations. The study analyzed data from 11 Asian countries spanning the years 1980–2014 using the econometric methodology and co-integration technique. Additionally, it divided the data into three categories: lower, middle, and higher income. There is a stronger relationship between income and consumption in lower- and upper-middle-income countries.

Darwish (2021) estimated the total consumption function of the Palestinian economy from 1994 to 2016. The objective of the study was to construct an econometric model and emphasize the reality of consumption in the Palestinian Territories. It implemented a descriptive methodology and a quantitative approach to develop an econometric model. It was found that there is a positive relationship between consumption and disposable income, with an adjusted coefficient of determination (R-square) of 99.13%

Guerrouf et al. (2021) utilized the relative income theory to estimate the consumption expenditure function in Algeria from 1975 to 2018. The study was designed to determine the extent of the relationship between national disposable income and consumption expenditures for Algerian families in both the short and long term. It implemented an analytical-econometric methodology. It was discovered that disposable personal income from the previous year has an impact on consumption expenditure for the current year, but in the opposite direction. It was recommended that the Algerian government implement a

policy that prioritizes private consumption and directs it toward locally produced products and services.

Azam and Abdullah (2022) dealt with dynamic links among tourism, energy consumption, and economic growth: empirical evidence from top tourist destination countries in Asia. To conduct empirical analysis, the study used the modified ordinary least squares method and employed Granger's causality approaches. The study found that tourism has a statistically positive impact on economic growth in Asia's top nine travel and tourism countries.

Pablo-Romero et al. (2023) investigated the impact of tourism on energy consumption in 15 countries with the highest number of international tourist arrivals in the world. The aim of their study is to analyze the relationship between final energy consumption and tourist arrivals in the whole economy. The results show a positive and increasing relationship between energy consumption and tourist arrivals for the whole economy.

Wei and Lutfi (2023) conducted an empirical investigation of the economic absolute income hypothesis using mathematical statistics. They adopted a comparative analysis for four countries: China, India, the United Kingdom, and the United States. It found that China and India show positive intercepts in individual payments, while the UK and US show negative intercepts in government welfare expenditure, indicating significant differences in welfare treatment in developing countries. Furthermore, it found that the most apparent distinction between developed and developing countries is that China and India have a marginal propensity to consume that is significantly lower than that of the United States and the United Kingdom.

Although there have been extensive investigations done in this field, the researcher did not find a study dealing with the

impact of tourism and income on consumption. As a result, there is a gap in the scope of its application. Therefore, the present research aims to fill this gap in the existing studies by examining the impact of income and tourism as independent variables on consumption modes in the Kingdom of Saudi Arabia.

2. Practical Framework of the Research:

2.1. Describing the variables:

This research comprises three variables: consumption, gross domestic product (GDP), which represents income, and tourist spending, which represents tourism. And in this part, the research describes these variables; the second column of Table 3 in the Appendix presents consumption changes in the Kingdom and shows the fluctuating increases in consumption during the study period. Its value reached 262,015 million Riyals in the first quarter of 2015, and its maximum value was 377,979 million Riyals in the fourth quarter of 2022. There was a sharp decline in the second quarter of 2020, reaching 264,477 million Riyals due to the COVID-19 pandemic.

The researcher collected the data in the fourth column of Table 3 from the Ministry of Tourism. It presents an average of tourist spending in the Kingdom, although it decreased during the COVID-19 pandemic period, as it reached its lowest level, 65 million Riyals, in the second quarter of the year 2020. However, it shows an increase in the general trend during the study period, from 7,902 million Riyals in the first quarter of 2015 to 9,828 million Riyals in the fourth quarter of 2022. The fourth quarter of every year of the study period shows seasonal variations, with an increase in tourist spending due to the increase in the number of tourists coming to the Kingdom for the purpose of performing Umrah pilgrimages and Hajj.

In the third column of Table 3, it is noted that the value of the Kingdom's gross domestic product (GDP) fluctuated during the study period, and the general trend shows an increase from 654,710 million Riyals in the first quarter of the year 2015 to 1,023,733 million Riyals in the fourth quarter of the year 2022. There was a decrease during the COVID-19 pandemic, reaching 598,321 million Riyals in the second quarter of the year 2020 due to the lockdown to prevent this disease.

2.2. Building the model:

The research starts with equation number 1, which was used by Wei and Lutfi (2023) in China, India, the United Kingdom, and the United States to express the absolute income hypothesis model proposed by Keynes:

$$CONS = \beta_0 + \beta_1 GDP + \varepsilon \quad ....1$$

They used the above formula to analyze the relationship between residents' income (*GDP*) and consumption level (*CONS*) in China. Where β_0 refers to the intercept, β_1 is known as the slope coefficient and represents the marginal propensity to consume. Equation 1 is a simple linear regression model because it includes one independent variable, which is GDP and represents income.

The current research inserts the tourism variable into the Keynesian model, or equation 1, to test the theory in the Kingdom's economy and to build the following equation:

$$CONS_t = \beta_0 + \beta_1 GDP_t + \beta_3 Tourism_t + \varepsilon_t \quad ....2$$

Where *CONS* is a dependent variable, it refers to the consumption expenditure in the Kingdom; *GDP* is an independent variable that represents income; and tourism is an

independent variable that represents tourists' spending. The symbol t refers to the time from the first quarter of 2015 to the fourth quarter of 2022. And is known as the random variable and represents stochastic factors that affect consumption but are not included in the model. Equation 2 is a multiple linear regression model because it includes more than one independent variable.

The data in this research represents quarterly time timeseries data, and it is seasonal data; therefore, the study transforms equation 2 into a logarithmic function because it suits seasonal data and reduces the econometric problems. In this case, Alharthi and Hanif (2020, p. 260) confirmed that "we used natural logarithm (ln) because the log transformation also helps to reduce problems such as multicollinearity." Moreover, Rout et al. (2016, p. 7501) emphasized that "the variables are expressed in their natural logarithms to avoid the likely problems of heteroscedasticity." Therefore, the transformed model is the following double log-linear regression model:

$$Y_t=\beta_0+\beta_1 X_{1t}+ \beta_2 X_{2t} +\mu_t \quad ....3$$

The dependent variable Y represents the logarithm of consumption, which is linearly related to the explanatory variables X_1, which represents the logarithm of income, and X_2, which represents the logarithm of tourism. Where β_0 is the intercept. However, in the present instance, β_1 and β_2 respectively represent the income elasticity of consumption and the tourism elasticity of consumption. The research utilizes the E-Views program to estimate equation 3, anticipating a positive sign from all parameter estimators.

2.3. Estimating the parameters:

Table 1 represents the results of the estimation via the ordinary least squares method (OLS).

Table 1: The results of model 3

Dependent Variable: Y_t in model 3			
Variable	**Coefficient**	**t-Statistic**	**Prob.**
Constant	3.860308	6.202689	(0.00)
X_{1t}	0.662030	14.26768	(0.00)
X_{2t}	-0.022257	-3.596428	(0.00)
(R^2 = 0.77) (Adj R^2 = 0.76) (Prop F = (0.00)) (DW = 1.29)			

Source: prepared by the researcher, depending on the research data.

Table 1 shows the Durbin-Watson statistic value (*DW=1.29*) for testing autocorrelation in model 3, and it is far from 2. Dougherty (2011) states that if there is no autocorrelation, DW will be around 2. Therefore, the research rejects the null hypothesis, and that indicates the existence of an autocorrelation problem in the model 3. The next step is to find a solution, so to solve this problem, the research adds the first-order autoregression function ($AR_{(1)}$) to the model 3. (Dougherty (2011); Ahmed (2022). And then gets the model 4 as follows:

$$Y_t=\beta_0+\beta_1X_{1t}+\beta_2X_{2t}+AR_{(1)}+\mu_t \quad ....4$$

Table 2 represents the results of estimating model 4 via the ordinary least squares method (*OLS*).

Table 2: The results of model 4

Dependent Variable: Y_t in model 4			
Variable	**Coefficient**	**t-Statistic**	**Prob.**
Constant	8.670377	5.350587	(0.00)
X_{1t}	0.284609	2.418184	(0.02)

X_{2t}	0.025168	3.113440	(0.00)
$AR_{(1)}$	0.928909	13.09337	(0.00)
(R^2 = 0.93), (Adj R^2 = 0.92), (Prop F = (0.00)), (DW = 2.18) Inverted AR Roots = 0.93 Prob White Test = (0.19) VIF=1.02			

Source: prepared by the researcher, depending on the research data.

Table 2 shows that the Durbin-Watson coefficient is about 2 (DW=2.18); therefore, the research cannot reject the null hypothesis. And the autocorrelation problem in the model no longer exists; that means the problem disappears after adding the first-order autoregression function ($AR_{(1)}$) to the model. Furthermore, the value of inverted AR roots equals 0.93, which is less than 1, and the $AR_{(1)}$ coefficient is significant at the 1% significance level, confirming that there is no autocorrelation problem in model 4.

One of the ordinary least squares (*OLS*) conditions for using a multiple linear regression model is that there is no linear correlation between the independent variables. Therefore, the variance inflation factor (*VIF*) can help identify if there is a linear relationship between X_{1t} and X_{2t} in the model. The results in table 2 show that *VIF* equals 1.02, less than 10, so the hypothesis of linear correlation is not rejected; therefore, there is no linear correlation between X_{1t} and X_{2t} in model 4.

To test whether the estimators have constant variance or homoscedasticity, the White test will be used to detect the heteroscedasticity problem in the model (Ahmed, 2023). Table 2 shows that the probability value of the White test equals 0.19, greater than 0.05; thus, the null hypothesis (variance is homoscedasticity) is not rejected, and there is no heteroscedasticity problem in model 4. The result of the white test also indicates rejection of the

model's misspecification. The following equation represents the estimation of model 4:

$$\hat{Y}_t=8.67+0.284X_{1t}+0.025\ X_{2t}+0.928AR_{(1)} \quad ....5$$

2.4. The results and discussing:

According to Table 2, equation 5, and the preview analysis, the research found the following results:

Accepting the first research hypothesis, which said that there is a statistically significant impact of tourism on consumption, because the probability value of the tourism variable coefficient equals 0.00, less than the significant value of 0.01, therefore, tourism impacts consumption in the Kingdom at a significant level of 1%. This outcome aligns with several studies conducted in various nations, such as Diacona and Mahab (2015), Pablo-Romero et al. (2023), and Azam & Abdullah (2022). The estimated parameter of tourism elasticity of consumption equals 0.02516; it has a positive sign indicating that if tourism increases by 1 percent, consumption increases by about 0.03 percent.

The study accepts the second research hypothesis, which asserts a statistically significant impact of income on consumption. This is because the probability value of the income variable coefficient equals 0.02, which is less than the significant value of 0.05. Therefore, income influences consumption in the Kingdom at a 5% significance level. This outcome aligns with several investigations, such as those by Diacona and Mahab (2015), Dey (2019), and Darwish (2021). Furthermore, the estimated parameter for the income elasticity of consumption is 0.284609, displaying a positive sign that aligns with the economic

theory. This conclusion implies that a 1 percent increase in income leads to a corresponding increase in consumption of approximately 0.28 percent.

The adjusted multiple coefficient of determination is 0.92, and it indicates the explanatory power of the model. This shows that income and tourism in the Kingdom account for 92% of the total variation in consumption.

3. Conclusion:

Finally, various studies have been conducted to investigate the influence of tourism on economic growth and its relationship with the economy; others have focused on the impact of income on consumption. Nevertheless, they ignored the impact of tourism on consumption. Thus, the current research aims to fill this gap in the scope of the study in the Kingdom of Saudi Arabia. It tested the hypotheses using data from the first quarter of 2015 to the fourth quarter of 2022.

The research detected the existence of autocorrelation; thus, the problem is remedied by adding a first-order autoregression function (AR(1)) to the model. Then the study tested other econometric problems, and the results indicated that the model became free of linear correlation, heteroscedasticity, and misspecification. Thus, the model became fit and free from spurious regression.

The results showed a positive relationship between tourism and consumption, indicating that tourism impacted consumption in the Kingdom. Moreover, it indicated that income impacted consumption in the Kingdom.

The research recommends increasing income in the Kingdom to enhance consumption. Expansionary policies that support employment can achieve this. As individuals'

incomes rise due to expansionary policies, their purchasing power increases, leading to more spending and job opportunities. Moreover, the research suggests the booming and development of tourism via establishing policies that encourage tourism industries in the Kingdom to increase consumption. Moreover, the research suggests the booming and development of tourism via establishing policies that encourage tourism industries in the Kingdom to increase consumption.

In future research, it is possible to advance this research and study the relationship between tourism and consumption in Gulf Cooperation Council countries. Furthermore, the examination of comparative studies that could be conducted with countries outside the Gulf Cooperation Council could provide valuable insights into the unique relationship between income and tourism as independent variables and consumption.

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Appendices:

Table 3: The Data of Research (millions Ryals in current price)

Time (t)	Consumption	GDP	Tourists Spending (Average)
2015_Q	262,015	654,710	7,902
2015_Q	255,331	652,337	6,446
2015_Q	247,631	619,818	7,711

2015_Q	260,110	583,701	5,442
2016_Q	274,405	594,201	9,643
2016_Q	271,923	623,177	7,399
2016_Q	272,442	625,046	7,822
2016_Q	272,119	655,076	6,276
2017_Q	281,201	657,878	7,156
2017_Q	283,291	650,513	7,663
2017_Q	284,169	669,250	10,827
2017_Q	286,934	703,589	6,947
2018_Q	297,412	749,239	6,326
2018_Q	300,491	798,576	5,627
2018_Q	300,351	801,496	11,813
2018_Q	302,887	825,379	7,393
2019_{Q1}	311,794	755,657	7,173
2019_{Q2}	316,823	788,245	6,811
2019_{Q3}	319,643	786,409	13,807
2019_{Q4}	319,655	814,306	6,661
2020_{Q1}	313,639	722,187	5,871
2020_{Q2}	264,477	598,321	65
2020_{Q3}	317,389	699,583	163
2020_{Q4}	323,197	733,427	601
2021_{Q1}	337,626	739,044	678
2021_{Q2}	341,111	769,954	780
2021_{Q3}	350,726	846,435	1,024
2021_{Q4}	353,362	901,763	2,424

2022_{Q1}	363,543	977,464	5,211
2022_{Q2}	369,184	1,088,078	7,262
2022_{Q3}	372,401	1,066,284	10,464
2022_{Q4}	377,979	1,023,73	9,828

Source: Prepared by the researcher according to data from the General Authority of Statistics, and Ministry of Tourism.

Table 4: E-Views Estimation for the model 4

Dependent Variable: LOG(CONT)				
Method: Least Squares				
Date: 11/04/23 Time: 15:45				
Sample(adjusted): 2015:2 2022:4				
Included observations: 31 after adjusting endpoints				
Convergence achieved after 11 iterations				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.670377	1.620453	5.350587	0.0000
LOG(GDPT)	0.284609	0.117695	2.418184	0.0226
LOG(SPENDIN)	0.025168	0.008084	3.113440	0.0043
AR(1)	0.928909	0.070945	13.09337	0.0000
R-squared	0.932159	Mean dependent var		12.63052
Adjusted R-squared	0.924621	S.D. dependent var		0.118575
S.E. of regression	0.032555	Akaike info		-3.891847

		criterion	
Sum squared resid	0.028616	Schwarz criterion	-3.706816
Log likelihood	64.32362	F-statistic	123.6625
Durbin-Watson stat	2.180387	Prob(F-statistic)	0.000000
Inverted AR Roots	.93		

Source: Prepared by the researcher according to data in table 3.