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Tourism Development Effect On Saudi Economic Diversification

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Abstract

Investment in the tourism sector is a promising solution for two essential Saudi economic problems; less diversified economy and higher rate of unemployment. To estimate the effect of the tourism sector on output, income, and employment, Leontief's input-output analysis (I-O) is carried out. This paper found that increasing investment in the Saudi tourism sector can have a significant influence on solving these two problems. The tourism industry can have positive direct and indirect economic effects. The direct effect mostly comes from tourism activities. Other sectors of production such as services, construction, and manufacturing bring about the indirect economic effect. In sum, increasing investment in the tourism sector as an approach to enhancing Saudi economic diversification is entirely in line with the Vision 2030 objectives.

Keywords: Tourism Industry, Economic Diversification, Unemployment, Leontief's Input-Output Model, Direct/Indirect Effects, value added
(JEL Classification): C67, C80, D57, E23, F62, Z30, Z31, Z32, Z38

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1. Introduction

During the last 70 years, prices of oil increased by almost 900 percent while those of metals and minerals increased only by 68 percent (UNCTAT and UNSTAT). Oil is a scarce source of energy, but its scarceness was not the main reason for this massive increase in its prices. This dramatic increase in oil prices was, in fact, due to some political forces (Aguilera & Radetzki, 2016). In their recent book "The Price of Oil", Marian and Roberto believed that the recent collapse in global oil prices is going to need more time for recovery due to the current revolution in US shale oil resources and environmental regulations. Since the major producers of oil, through OPEC, have lost, to some extent, their ability to control the oil market, fluctuation in oil prices is highly expected to increase. Thus, oil exporting countries are seriously considering a new economic diversification strategy (Callen, Time, et al., 2014). A diversified economy is mainly characterized by less economic volatility/uncertainty and higher efficiency/productivity of the private sector (Callen, Time, et al., 2014).

The World Tourism Organization (UNWTO) defines tourism activities as "a set of activities carried out by a person traveling to a place outside his/her usual environment for at least one night, but less than a year, and whose main purpose of travel is other than the exercise of an activity remunerated from within the place visited". Moving from a permanent geographical place to a different one for at least one night and not more than a year and doing non–economic activities are the two features that differentiate tourism from immigration in which a person travels to another country for work purposes. There are two kinds of tourism (domestic and inbound) as classified by UNWTO. Domestic tourism is when a resident of one country domestically travels to visit another part of the same country for tourism purposes. Inbound tourism is when a resident of one country visits other countries for tourism purposes.

With regard to the effect of tourism sector on Saudi economic growth and employment, the Leontief I-O method is used as a tracker for economic activities of different Saudi sectors of production. This method estimates the influence of tourism sector on the economy under study, such as calculating tourism contribution to the Saudi economy and the Saudi labor market. In other words, the scope of this paper is to investigate the tourism industry's ability to generate new income and to explore the labor market for Saudi Arabia as a case study.

2. Literature Review

The World Tourism Organization (UNWTO) stated that the tourism sector has recorded a significant expansion during the last decade. Tourism is not a random activity nowadays; it has been a big business activity and a primary source of income for many countries, including advanced countries (Callen, Time, et al., 2014). Creating jobs and increasing income are the main features of tourism because tourism activities– directly and indirectly– influence a wide range of activities such as industry, services, education, transportation, infrastructure, culture, communications, and health. The Canadian National Task Force on Tourism Data (1985) simplified the tourism sector by dividing its activities into two tiers. All economic activities that cannot exist without tourism are under tier 1, such as cruise ships and travel agents. The type of economic activities that can exist independently of tourism, including restaurants, car rental agencies, gift shops, and attractions and events, falls under tier 2.

In the literature, there were long discussions about the kind of relationship between economic growth and increasing investment in the tourism sector. The question was "Does raising investment in the tourism sector have a positive relationship with economic growth in the short and long run?" The empirical work by Akan and others found that there are short term and long term positive multiplier effects between economic growth and expanding investment in the tourism sector among a big rang of developing and developed countries (Akanm, Arslan, & Isik, 2008). In comparison with other sectors of production, investment in the tourism sector has higher multiplier effects due to its wide involvement in economic activities. Abdel-Rahman found that there is a significant relationship between tourism development and economic growth (Abdel-Rahman, 2001).

The tourism sector is a solution for less economic diversification and a means for increasing stability (Sherbini, Ayman, et al., 2016). Investment in the tourism sector is also very environment-friendly since service activities, which do not intensively involve carbon dioxide emissions, account for most of the tourism industry. Thus, investment in the tourism sector can have promising results for generating jobs, enhancing economic diversification, and protecting the environment. In short, creating a balance among social, economic and environmental sectors is possible through investment in the tourism sector.

Moreover, the demand for tourism fluctuates less due to two reasons; the tourism sector involves a number of different economic activities with a wide variety of goods and services. In addition, foreign tourists constitute an important factor for stabilizing the tourism demand level against domestic shocks (Butler, 2001). The tourism sector has to be more dynamic in terms of innovating a different/new range of tourism products to maintain the attractiveness and competitiveness of the tourism sector in addition to organizing new tourism events and activities over the year. With regard to the labor market, the tourism sector is a job generator, especially for local citizens, low-skilled workers, and for students and women who seek part-time jobs. Thus, this sector's outputs are non-traded goods and services that usually generate an immense number of direct or indirect jobs through retail, construction, manufacturing and telecommunications (Sherbini, Ayman, et al., 2016).

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Boosting the tourism sector requires some efforts by decision makers. For instance, governments should build the required infrastructure such as hotels, services and roads. They can also increase the usefulness of existing infrastructures. In foreign policies, governments should be eager to have suitable trade agreements with the major trade partners (Krapf, 1961). Accumulation of hard currency from the tourism business is an important advantage for developing countries. Therefore, less developing countries seek to make their countries more attractive to tourists from advanced economies (Debbage, 1998). On the other hand, countries depending on the tourism industry have to maintain their relationships with other countries as lacking good political relations may pose a great hindrance to investment in the tourism sector (Timothy, 2002).

4. Research Methodology

Estimating the economic changes (output "X," and employment "L") that are expected to result from increasing investment in the tourism sector is the main purpose of using the Saudi input-output table. The I-O model calculates interaction coefficients of different Saudi production sectors. The I-O analysis built by Leontief (1985) for the American economy is appropriate for evaluating the impact of new policies such as increasing government spending on the economic system (Chemingui & Lofgren, 2004; Haji, 1993; Hawwas, 2010).

The Leontief I-O model can be emphasized in these four equations:

(1)
$$X_i = a_{i1}X_1 + a_{i2}X_2 + \dots + a_{ij}X_j + FD_i$$

(2) $X = AX + FD$
(3) $(I - A)X = FD$
(4) $X = (I - A)^{-1}FD$

 X_i in equation (1) is the total output of production sector i. $a_{il}X_j$ is a portion of X_j 's output that is required to be input to the X_j sector, and a_{ij} is a percentage from this equation (x_{ij}/X_i) . Equation (2) is a matrix-vector of equation (1) where

notation A indicates a *i by j* matrix having all elements of a_{ij} . Equation (3) adds X's in the left side and uses the notation *I* that refers to identity matrix. Equation (4) is the final step that is going to calculate X with the (I-A) inverse matrix. FD refers to final demand users as in household consumption, investment, government expenditure, and exportation. The Leontief I-O model is also used as a tool to analyze the economy at both the national and regional levels.

The I-O analysis is based on aggregate identities; the total output of any production sector is entirely consumed by other sectors of production and through final demand, internally as input to production sectors and directly by final demand users. The I-O analysis provides more information about the interaction between internal sectors of production and final demand. Any changes in the final demand, such as increasing demand on the tourism sector, will not only cause expansion in the tourism sector, but in all economic sectors that provide such input to the tourism sector, whether directly or indirectly. By having the I-O for any economy, policymakers can estimate the level of expansion in the related production sectors—such as construction, manufacturing, services, training centers, museums, and small/local businesses (Michael, 2010; Economics L., 2014).

There are two equations that calculate the effect resulting from changes in final demand, such as increasing investment in the tourism sector.

Equation 5- calculates the amount of changes in output (∇X_i) resulting from investment of a certain amount of money in the tourism sector:

(5)
$$\nabla X_i = (I - A)^- 1 \nabla TSt$$

where:

 TS_t is the direct demand in the tourism sector.

Equation 6- calculates the amount of changes in employment (E_i):

(6) $\nabla E_i = L (I - A)^- 1 \nabla TSt$

Where L is the output-labor ratios (X_i/L_i) .

Our empirical work involves five tables; the first one is Table (1) which is the input-output table for Saudi Arabia (2011). The Saudi I-O was disaggregated into nine major sectors: agriculture, mining and quarrying, manufacturing, utility, construction, wholesale & restaurants, transportation, storage & telecommunications, finance & insurance services, and other services. The primary data was calculated from different sources, including the Organization for Economic Co-operation and Development (OECD) website, Ministry of Economy and Planning, General Authority for Statistics and Information (GSTAT), and Saudi Arabian Monetary Authority (SAMA).

Table (1) shows the Saudi I-O for 2011. It has two parts; input and output. The vertical side of the table presents the flow of input. For instance, column (1) has the total value of agriculture input to the agriculture sector and other entities of production. The horizontal side of the table presents the total output of each entity of production. Finally, column (10) shows the total output of each sector of production.

This Table includes nine entities of production: agriculture, mining & quarrying, manufacturing, utility, construction, wholesale & restaurants, transportation, storage & telecommunications, finance & insurance services, and other services. Columns (1 to 9) show the distribution of output among other domestic entities of production, while column 10 gives the sum of total output for the close economy.

Saudi Arabia Orginal (Input Output Table) PRODUCERS AS CONSUMERS											
2011	Milion of Saudi Riyal	1	2	3	4	5	6	7	8	9	10
		Agriculture	Mining and Quarrying	Manufacturing	Utility	Construction	wholesale & restaurants	Transport, storage	Financial intermediation	Services	Sum of Total Output
1	Agriculture	5118.6975	4.155	25022.91	0.135	1695.8025	5316.72375	106.69875	4.20375	1652.1675	38921.49375
2	Mining and Quarrying	349.2053738	3451.022708	114777.3345	12075.07195	27288.64975	694.5162788	721.9747013	13.17342	1677.153428	161048.1021
3	Manufacturing	4699.533806	2465.616754	44260.78219	604.2209138	23202.09323	9199.702939	7611.347531	453.3368813	20161.83867	112658.4729
4	Utility	486.285	940.48875	2967.38625	1033.95	321.2775	3231.97875	1411.19625	182.29875	8233.23	18808.09125
5	Construction	152.9661938	26.79824625	528.84282	48.92783625	40844.00303	1873.623311	956.0787188	2425.905619	4530.602576	51387.74835
6	wholesale & restaurants	4043.52	2328.28875	32122.24875	497.32125	13028.91375	20613.135	6142.43625	634.56375	22118.47875	101528.9063
7	Transport, storage, Telecommuication	1179.37125	677.15625	12145.845	515.7975	3948.03	13038.91125	44123.25375	2259	41705.7825	119593.1475
8	Finance and insuracne services	1960.86	833.24625	7012.57875	324.645	8102.445	27881.89875	6010.12875	29065.1625	22950.6	104141.565
9	Other services	3663.024626	4326.788543	18680.54181	659.1368025	5868.917749	37779.80122	16189.7378	3684.09408	86236.15156	177088.1942

Table (1): Saudi Arabia Input & Output Table for 2011¹

Source: Organization for Economic Co-operation and Development (OECD)

Table (1) also evaluates trade–offs among different entities of production in millions of dollar as the amount of output from entity A goes to entity B and vice versa. It is clear from Table (1) that the Saudi economy suffers from less diversification since petrochemical activities are (directly/indirectly) involved in most of Saudi economic activities. In other words, the non-oil sector is largely dependent on the oil sector.

	A Matrix										
2011	Sectors	1	2	3	4	5	6	7	8	9	
		Agriculture	Mining and Quarrying	Manufacturing	Utility	Construction	wholesale & restaurants	Transport, storage	Financial intermediation	Services	
1	Agriculture	0.131513388	2.57997E-05	0.222112988	7.17776E-06	0.03300013	0.052366601	0.000892181	4.03657E-05	0.009329631	
2	Mining and Quarrying	0.008972044	0.021428521	1.018807831	0.642014747	0.53103416	0.006840577	0.006036924	0.000126495	0.009470724	
3	Manufacturing	0.120743922	0.015309816	0.392875751	0.032125584	0.45151021	0.090611662	0.063643676	0.004353083	0.113851964	
4	Utility	0.012493996	0.0058398	0.026339663	0.054973681	0.00625203	0.031833089	0.011799976	0.00175049	0.046492258	
5	Construction	0.003930121	0.000166399	0.004694213	0.002601425	0.79481986	0.018454087	0.007994427	0.023294307	0.025583877	
6	wholesale & restaurants	0.103889127	0.014457101	0.285129453	0.026441878	0.25354125	0.203027254	0.051361105	0.00609328	0.124900922	
7	nsport, storage, Telecommuicati	0.030301284	0.004204683	0.107811199	0.027424234	0.07682824	0.128425605	0.368944665	0.021691627	0.235508542	
8	Finance and insuracne services	0.050379875	0.005173897	0.06224635	0.017260922	0.1576727	0.274620301	0.050254792	0.279092815	0.129599831	
9	Other services	0.094113156	0.026866436	0.165815685	0.035045385	0.1142085	0.372108817	0.135373457	0.035375828	0.486967254	
Source: Organisation for Economic Co-operation and Development (OECD)											

Table (2): Matrix (A) = aij = Xij / Xj

¹ 2011 is the Input-Output table for Saudi Arabia from OECD.

The Saudi I-O table is 33 by 33 (Row x column), we reshape the original Saudi I-O table to one that has 9 sector for the purpose of clarification. Hence, Our calculations have been done in the original table.

Table (2) calculates the A matrix entities represented as a_{ij} , where $(a_{ij} = X_{ij}/X_j)$. In short, A matrix calculates the input coefficients of all production sectors. This Table calculates the coefficients of different production sectors as a percentage of total output of each sector. Let us say X_2 consumes 10% of total production of X_1 , a_{12} is the percentage of X_1 used as input to X_2 . In the Leontief's model, this step is "A matrix". The kind of relationship among different sectors of production is summarized in Table (2) : $(A) = a_{ij} = X_{ij}/X_j$. Thus, Table (2) provides the distribution of output by one sector of production among all other sectors of production.

Table (3) calculates the (I-A); (I) is the identical matrix and A is the coefficient matrix. This Table has one condition, which is that diagonal values have to be positive and off–diagonal values have to be negative.

2011	Sectors	1	2	3	4	5	6	7	8	9
		Agriculture	Mining and Quarrying	Manufacturing	Utility	Construction	Vholesale & Restaurant	Transport, Storage	inancial Intermediatio	Services
1	Agriculture	0.868486612	-2.58E-05	-0.222112988	-7.18E-06	-0.033000132	-0.052366601	-0.000892181	-4.04E-05	-0.009329631
2	Mining and Quarrying	-0.008972044	0.978571479	-1.018807831	-0.642014747	-0.531034159	-0.006840577	-0.006036924	-0.000126495	-0.009470724
3	Manufacturing	-0.120743922	-0.015309816	0.607124249	-0.032125584	-0.451510214	-0.090611662	-0.063643676	-0.004353083	-0.113851964
4	Utility	-0.012493996	-0.0058398	-0.026339663	0.945026319	-0.006252025	-0.031833089	-0.011799976	-0.00175049	-0.046492258
5	Construction	-0.003930121	-0.000166399	-0.004694213	-0.002601425	0.205180138	-0.018454087	-0.007994427	-0.023294307	-0.025583877
6	wholesale & restaurants	-0.103889127	-0.014457101	-0.285129453	-0.026441878	-0.253541246	0.796972746	-0.051361105	-0.00609328	-0.124900922
7	ransport, storage, Telecommuicatio	-0.030301284	-0.004204683	-0.107811199	-0.027424234	-0.076828235	-0.128425605	0.631055335	-0.021691627	-0.235508542
8	Finance and insuracne services	-0.050379875	-0.005173897	-0.06224635	-0.017260922	-0.157672699	-0.274620301	-0.050254792	0.720907185	-0.129599831
9	Other services	-0.094113156	-0.026866436	-0.165815685	-0.035045385	-0.114208502	-0.372108817	-0.135373457	-0.035375828	0.513032746

Table (3): (I-A) Matrix

Source: Organization for Economic Co-operation and Development (OECD)

 Table (4): Inverse Matrix (I-A)⁻¹

	A Inverse (I-A)^-1 Matrix									
2011	Sectors	1	2	3	4	5	6	7	8	9
		Agriculture	Mining and Quarrying	Manufacturing	Utility	Construction	wholesale & restaurants	Transport, storage	Financial intermediation	Services
1	Agriculture	0.077690078	1.16E-02	0.20293231	3.18E-02	0.860023195	0.163867249	0.08822981	4.21E-02	0.183477018
2	Mining and Quarrying	0.321463497	0.047888005	0.83968677	0.131780831	3.558576248	0.678044618	0.365074463	0.174373198	0.759185287
3	Manufacturing	0.224874347	0.033499242	0.587388664	0.092185048	2.489341764	0.474314632	0.25538166	0.121979818	0.531075214
4	Utility	0.037542291	0.005592627	0.098063281	0.015390098	0.415590284	0.079185814	0.042635422	0.02036427	0.088661871
5	Construction	0.10257361	0.015280259	0.267929965	0.042049053	1.135481999	0.216352665	0.116489138	0.055639563	0.242243292
6	wholesale & restaurants	0.202658937	0.030189841	0.529360348	0.083078058	2.243418888	0.427456938	0.230152423	0.109929393	0.478610123
7	Transport, storage, Telecommuication	0.238716451	0.035561283	0.623545278	0.097859484	2.642572797	0.503510994	0.271101639	0.129488267	0.563765465
8	Finance and insuracne services	0.207873991	0.030966721	0.542982459	0.085215918	2.301149132	0.438456753	0.236074971	0.112758224	0.490926271
9	Other services	0.353480665	0.05265756	0.923318015	0.144905956	3.913003843	0.745576605	0.401435203	0.191740446	0.834798737

Source: Organization for Economic Co-operation and Development (OECD)

Table (4) shows the inverse matrix (I-A)⁻¹ for 2011. The inverse matrix calculates coefficient vectors among different sectors of production. Agriculture and utility made the lowest contribution to the Saudi total output; their coefficient with other sectors of production is very small compared to mining, quarrying and manufacturing which had the highest coefficients with all sectors of production.

By giving all tables required for applying the Leontief's I-O model to Saudi Arabia, the effect of increasing investment in the Saudi tourism sector is examined through calculating output, value added and labor multiplier. From figure (1), we find that the output multiplier for increasing investment in the tourism sector is around (1.5) and (1.4) is the value added multiplier. In addition, we find that there is an average of 1.4 new jobs generated for each one million Saudi riyals spent on the tourism sector in Saudi Arabia.

Figure (1): The Saudi Tourism sector Multiplier:



Source: Authors' calculation

3. Scenarios of investment in the Saudi tourism Sector

In this section, we used these multipliers (output, value added, and labor) to build different scenarios of investment in the tourism sector of Saudi Arabia. We built three scenarios of investment (SR 100, 150, 200 billion) through 4 years (2017-2020). We distributed this amount of investment through four years so as to avoid inflationary pressures, reduce remittances, and control possible leakages. As shown in Figure (2), scenario (1) has an initial total investment of SR 100 billion in the tourism sector divided into SR 25 billion each year for 4 years. We found that the total value added would reach around SR 37.5 billion for investment of SR 25 billion in the first year and that it would be around SR 66.8 billion by the end of 2020. The tourism sector's contribution to the total Saudi GDP would be 4.9 percent by the end of the first year and 5.6 percent by the end of 2020.



Figure (2): Investment (SR 100 billion) in 4 years:

Source: Authors' calculation

In Figure (3), scenario (2) has an initial total investment of SR 150 billion in the tourism sector divided into SR 37.5 billion each year for 4 years. We found that the total value added would be around SR 52.5 billion for investment of SR 37.5 billion in the first year and around SR 100.3 billion by the end of 2020. The

tourism sector's contribution to the total Saudi GDP would be 5.4 percent by the end of the first year and 7.8 percent by the end of 2020.



Figure (3): Investment (SR 150 billion) in 4 years:

Source: Authors' calculation

Figure (4) shows that scenario (3) has an initial total investment of SR 200 billion in the tourism sector divided into SR 50 billion each year for 4 years. We concluded that the total value added would be around SR 70 billion for investment of SR 50 billion in the first year and SR 133.75 billion by the end of 2020. The tourism sector's contribution to the total Saudi GDP would be 6.10 percent by the end of the first year and 9.3 percent by the end of 2020.



Figure (4): Investment (SR 200 billion) in 4 years:

Source: Authors' calculation

4. Comparing Our Scenarios with the National Transformation Plan (NTP 2020)

The purpose of Table (8) is to compare our results calculated through these three scenarios with NTP 2020's objectives. The NTP 2020 aims to invest a total of SR 171.5 billion in the tourism sector by the end of 2020. In our empirical work, we had three scenarios involving investment in the tourism sector with SR 100, 150, and 200 billion by the end of 2020. The value added calculated by NTP 2020 was around SR 118.8 billion, and we found that the value added would be, on average, around SR 67 billion for the first scenario, SR100 billion for the second scenario, and SR134 billion for the third scenario.

The NTP 2020 expected the total contribution of the tourism sector to the Saudi GDP to be no more than 3.1 percent by the end of 2020. However, we found that the

tourism sector's contribution to the Saudi GDP would be around 5.6 percent for the first scenario, 7.8 percent for the second scenario, and 9.3 percent for the third scenario.

In terms of contribution to the GDP, there is a significant difference between the NTP 2020 and our calculations. However, it is worth mentioning that the contribution of the tourism sector to the Saudi GDP in 2015 was around 3.5% according to the Tourism Information and Research Centre (MAS). Therefore, it is more likely that the Saudi tourism sector's contribution to the Saudi GDP would be higher as compared with the contribution in 2015.

Finally, the NTP 2020 estimated that there would be more than 206 thousand direct new jobs generated in the tourism sector by the end of 2020 or 1.2 new jobs for each million spent on the tourism sector in Saudi Arabia. In our calculations, we found that the labor multiplier is 1.4 for each million, and based on this multiplier, 140, 210, 280 thousand direct new jobs would be generated for these three scenarios.

Key Performance	2020 Target	SCEN	SCEN	SCEN
Indicators		(1)	(2)	(3)
Total New Tourism	171.5	100	150	200
Investment (SAR BN)				
Value Added (SAR BN)	118.8	67	100	134
% contribution to GDP	3.1%	5.6%	7.8%	9.3%
Number of New Jobs	206	140	210	280
(Thousand jobs)				

Table (8): Comparing Results of NTP and Our Scenarios:

Source: Authors' calculation

5. Conclusion

Investment in the tourism industry is an important strategy for boosting the nonoil sector in Saudi Arabia. Saudi Arabia has been considering investment in the tourism industry very seriously as one of the primary methods for economic diversification. However, the Saudi tourism sector suffers from some structural issues that are slowing down its development. For instance, foreign workers intensively engage in construction and service activities that account for a significant part of the tourism industry. Furthermore, since cheap foreign workers largely exist in the Saudi labor market, the private sector refuses to employ Saudi workers. There are two suggested solutions for these problems: increasing Saudi workers' productivity and encouraging small and medium sized enterprises (SMEs). Additionally, many researchers now believe that Saudi women should have a chance to play an essential role in the tourism sector, such as working in call centers, preparing traditional crafts, and coordinating tourism activities.

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