



The Impact of Investment in Tourism-Related Sectors of Razavi Khorasan Province on the Economy (A Two-Region Input-Output Model Approach)

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Abstract

Tourism is one of the most important sources of income in the Razavi Khorasan province. This study investigates the impact of investment in the tourism sector of Razavi Khorasan province on the value added in different economic sectors of the province and the rest of the national economies. The two-region input-output model is a method that can simultaneously investigate the effects of investment in 13 sectors related to tourism on the province's economy and the rest of the national economies. Using this model, it is possible to examine the effects of investment in each of the 13 sub-sectors related to tourism on the economy of Razavi Khorasan Province and the rest of the provinces of the country. the highest total effect in the province occurred as a result of increased investment in the sectors of "government health activities", "wholesale, and retail, except for motor vehicles and motorcycles" and "administrative activities and support services". In the rest of the national economies, increased investment in the sectors of "water and air transportation", "rail transportation", and "residential buildings" resulted in the greatest impact. Therefore, investing in these sectors in Razavi Khorasan province produces the highest value added. Therefore, investing in medical tourism, investing in selling souvenirs, food, and beverages for tourists, administrative and support activities related to the tourism sector, such as the activities of tourism agencies, developing air and rail transportation, and improving the facilities of residential houses rented to tourists, can improve the economic situation of the province and the rest of the national economies.

Keywords: investment in tourism, Iran, Razavi Khorasan province, two-region input-output model, value-added.

JEL Classification: O11, P45, Z32.

Introduction

The continuous fall in global oil prices has opened the way for tourism as a source of income and economic development for most economies (Nawaz and Hassan, 2016). Without a doubt, the tourism sector, as one of the most important sectors of

the world economy, currently has a rapid growth in the development of the world economy, which increases the global annual growth rate in gross national production, exports, world trade, and services (Rafiei et al., 2018).

Although the private sector primarily maintains tourism activity, the government plays a very important role in the development of the tourism sector. Governments, especially in developing economies, encourage tourism investment on the assumption that this investment will significantly contribute to their economic development (Hall and Michael, 1991; Reid, 2003), and tourism, compared to the rest of the sectors of the economy, has more spillover and multiplier effects (Archer and Owen, 1971; Rasul and Manandhar, 2009; Roe et al., 2004). Several factors, such as attractive landscapes and archeological excursions that draw people to different destinations, are necessary conditions for tourism development, while investment in the tourism sector is a sufficient condition (Nawaz and Hassan, 2016).

More investment in the tourism sector will stimulate long-term tourism revenue innovation and sustainable growth in the sector (Department of Resources, Energy and Tourism, 2009; Paramati et al., 2018). Investment in tourism is a vital component of the sustainable development of tourism. According to the report of the World Travel and Tourism Council (WTTC), tourism investment includes the development of accommodation and maintenance of buildings, new furniture, and equipment for the renovation of hotels, motels, and houses for tourists, tourist transportation (e.g., buses, airplanes, and cruise ships), capital projects, reconstruction of famous tourist places and sights, tourism-related Information and Communication Technology (ICT) projects, and "green" or "sustainability-oriented" investments (WTTC, 2015). These investments not only guarantee economic returns but also create environmental returns. Economic returns include tourism revenue, job creation, skill development, higher wages, and tax revenues. Environmental efficiency includes improving energy efficiency, proper use of water and waste, and protecting the ecosystem and biodiversity. Therefore, more investment in the tourism sector will stimulate long-term tourism revenue, innovation, and sustainable growth in the sector (Department of Resources, Energy and Tourism, 2009).

Moreover, the tourism sector has a high potential to stimulate the rest of the sectors of the economy through its forward and backward linkages. The expenditure on tourism goods and services leads to a chain of transactions requiring the supply of goods and services from these related sectors. The consumption demand, emanating from tourist expenditure, also creates more

employment and generates a multiplier effect on the economy (Prasad and Kulshrestha, 2015).

In other words, the value added by the tourism sector can be created directly and indirectly. Direct value added refers to the value of goods and services produced in the country and purchased by tourists, which is more than their cost price. However, the indirect value added of tourism includes tracking the flow of average purchases from those businesses that indirectly produce tourism products and add value added in the national and regional economy (Heidari, 2016).

To achieve this value-added, meeting the unique and diverse demands of tourists requires the development of new tourism products and destinations that inspire more experiences for tourists (Dujmovic and Vitasovic, 2014).

The point that causes the continuation of this industry is the suitable environment for investment (Rafiei et al., 2018). The increase in investment in tourism increases both the attraction of tourists and the expenses of tourists and the expenses made by tourists inside a country. For that country, it can be the rule of export that can create multiplying effects and lead to economic growth, and this growth itself can be the basis for creating more employment and income in the future.

Even though tourism is a sector with significant potential for generating income and employment, and public and private sector investment is necessary for the promotion and development of this sector and for benefiting from its benefits, this particular issue has received less attention in the existing literature (Nawaz and Hassan, 2016).

Iran and Razavi Khorasan province also have many natural and historical resources as well as potentials in the field of tourism, which should be used by investing in the tourism sector for economic growth and increasing the production of the rest of the related sectors.

According to the reports of the Iran Statistics Center, Khorasan Razavi Province has been ranked first among the important provinces of the country in attracting domestic tourists (National Statistics Portal of Iran Statistics Center), which shows the importance of this province in terms of tourism. Therefore, given the potential of Razavi Khorasan province in terms of tourism, there is a need for detailed planning in this field to take advantage of this potential.

As mentioned above, the effects of investing in tourism on the economy of Razavi Khorasan province and Iran are investigated in the present research using the Input-Output technique. For this purpose, an input-output table of Razavi Khorasan province was first developed using the FLQ-RAS method based on the

input-output table of 2016. Then, the effects of tourism investment are investigated in different economic sectors of the province and Iran.

Theoretical Foundations and Literature Review

Over the past few decades, the tourism sector has continued to grow exponentially and has emerged as one of the main drivers of economic and social growth in many economies around the world. According to the United Nations World Tourism Organization (UNWTO), 1.5 billion international tourists were recorded worldwide in 2019, an increase of 4% compared to the previous year. The Middle East was the fastest-growing region for international tourist arrivals in 2019, growing almost twice the global average (+8%) (UNWTO, 2020). The UNWTO report emphasizes that, despite the global conditions of international trade tensions, social unrest, and geopolitical uncertainty, the growth of international tourism will continue to outpace the global economy. The forecast of strong tourism growth until 2030, along with changes in tourist demand patterns and travel behaviors, and intense competition between destinations and within destinations, has created a serious challenge for tourism destinations and an urgent need to increase tourism investment. This investment is needed not only to increase destination capacity and sustainably balance supply and demand but also to track recent changes and trends in markets, including technological advances, digitalization, safety and security issues, and the emergence of new outbound travel markets as a transition to sustainable practices (Sayed Ahmed, 2020).

The tourism sector is not a single clearly defined sector. On the contrary, it consists of many sectors such as hotels, restaurants, food and beverages, and transportation. Similarly, investments in tourism include various sectors, including infrastructure development, provision of basic public services such as water and sewage, and capacity building in the service sector, as well as measures to strengthen institutions to secure the governance interests of the tourism sector. Therefore, a framework that includes all economic sectors and their interlinkages is needed to assess the impact of any combination of political interventions, private investments, and external shocks that affect the tourism sector (Cicowiez and Ordoñez, 2021).

In economic terms, investment refers to expenditures that increase the inventory of tangible capital goods such as equipment, structures, or capital stock (Sayed Ahmed, 2020). Investment in tourism, in common sense, includes capital expenditures that mainly target the tourism sector to support tourism development and generate returns in the tourism sector (Dwyer et al., 2010). Investment in

tourism is a strategic determinant of tourism sector growth and income in a destination. In addition, due to the correlation between the tourism sector and the rest of the main economic sectors, the growth of investment and tourism income can cause growth in the rest of the economic sectors, including industry, agriculture, transportation, and services. This leads to increased GDP growth, increased job opportunities, and reduced poverty. In this regard, the development of a tourism investment policy that stimulates investment in regions to achieve national economic and social goals is of great importance for developing countries (Ashe, 2005). In general, both public and private investment are vital for tourism destinations. Public investment by the government is necessary to provide tourism infrastructure, access to tourist facilities, and promote private sector investment. However, especially in developing countries, the main burden of investment in tourism is on the shoulders of the private sector (such as hotel facilities, attractions, etc.) (Glocker and Haxton, 2020). Private investment is considered more efficient and effective than public sector investment. (Ngoma et al., 2019; Sayed Ahmed, 2020).

To evaluate the effects of investment in the tourism sector from a macroeconomic point of view, cross-sectoral analysis is one of the best options. In recent years, many researchers have investigated the importance of tourism in local economies (Daye et al., 2019; Nguyen, 2021; Mamirlulova et al., 2020; Wang et al., 2020). For the investigation of the economic and non-economic effects of tourism in the regions, one of the notable approaches is the top-down approach, which includes the input-output (I-O) model and the computable general equilibrium (CGE) model (Saayman and Rossouw, 2010; Matilainen et al., 2016; Tohmo, 2018; Lin et al., 2020). In general, the input-output table published by the statistics center has made the calculations easier. Studies in the field of tourism using the I-O approach in Iran are not widespread, but they have a long history. A reason for the mentioned limited research is the lack of satellite statistics related to tourism because access to satellite statistics related to the expenses of foreign tourists by economic sectors is necessary for using the input-output method. However, due to the non-preparation of satellite accounts of tourism in Iran by statistical institutions, researchers are forced to use other unofficial sources and individual studies or to integrate all sectors related to tourism (Bazzazan et al., 2019).

Table 1. A Summary of Literature Review

Researchers	Year	Research Title	Country (Region)	Research Method	Results
Cicowiez and Ordoñez	2021	The economic impacts of tourism-related private investment in Jamaica	Jamaica	Social accounting matrix General equilibrium model	Private tourism investments can have positive effects on the national economy in terms of gross domestic product (GDP), employment, household income, and poverty reduction.
Lee and Hlee	2021	The Intra-and Inter-Regional Economic Effects of Smart Tourism in Seoul	Seoul	I-o	Inside the city, it creates high-income effects, value-added, and a lot of employment and helps to provide tax revenues. Outside the city, the smart tourism city is expected to create high production effects.
Anter and Almaghraby	2021	Tourism Value Chain in the Egyptian National Economy	Egypt	I-o	The reverse link of the tourism sector in the region with agriculture, wholesale and retail, mining, transportation and support, and other business support activities.
Sayed Ahmed	2020	Macroeconomic Determinants of Tourism Private Investment in Egypt: An ARDL Model	Egypt	ARDL	In the long run public (government) investment, real exchange rate, tourist arrivals, and tourism income are positively correlated with private investment in the tourism sector, while real lending rate and political stability are negatively correlated with tourism.
Hasanli et al.	2019	Assessment of the Impact of the Tourism Sector on the Economy of Azerbaijan, Kazakhstan, and Iran Using Input-Output Models	Azerbaijan, Kazakhstan, and Iran	I-o	Comparing the efficiency of investments allocated to the tourism sector compared to other industries in each of the three countries of Azerbaijan, Kazakhstan, and Iran separately
Fauzel et al.	2016	Analyzing the Impact of Tourism Foreign Direct Investment on Economic Growth	Mauritius Island	VECM	Tourism FDI has helped boost economic growth
Banerjee and Cicowiez	2015	A Quantitative Framework for Assessing Public Investment in Tourism - An Application to Haiti	Haiti	I-o	Public investment in tourism helps lift some of the poorest people out of poverty in southern Haiti, reducing the number of poor by 1.6 percent, a result of increased employment, average wages, and non-labor income.
Banerjee et al.	2015	Reconciliation once and for all economic impact evaluation and social cost-benefit analysis	Haiti	Rcge-Ms	The investment has helped to reduce regional poverty and reduce the poor population by 1.6 percent and the positive effects of this investment will be 182 percent by 2040 in the hotel and restaurant sector and 2 percent in the regional gross product.
Bazazan et al.	2020	The economic effects of the arrival of domestic tourists in Razavi Khorasan Province	Razavi Khorasan	I-o	The sectors of industry, transportation, warehousing, wholesale, and retail have been most affected by tourism, respectively.

Source: Research findings.

The studies reviewed in this section are divided into several categories. In some studies, the relationship between investment and tourism has been investigated, and in some cases, this relationship has been two-way, and in other cases, the relationship is one-way from the tourism side towards investment or vice versa. Studies have also investigated the impact of tourism on the added value of different sectors. The results of the studies conducted in connection with the effects of investment in tourism and economic development show that in most studies, investment in tourism has positive effects on the economic growth and development of countries, creating employment and income in countries. Especially, investment in tourism infrastructure has had many positive effects on the economy of destination countries and their residents. Of course, none of these studies have been conducted using the input-output method.

Another group of studies has addressed the importance of the role of input-output models in the tourism economy. These studies have been carried out at different local and regional levels and for many countries including developed and developing countries. In most of these studies, the application of input-output models has been discussed in investigating the direct and indirect effects of tourism on the economy and various economic sectors with emphasis on employment, production, income, and added value. The point to consider is that all these studies have pointed to the role and importance of tourism in the rest of the economic sectors and increasing employment and added value in different countries.

Also, in some studies, multi-regional methods have been used to investigate the effects of factors such as tourism expenditures and the growth of the tourism sector on employment and production in some provinces along with the rest of the regions.

According to the mentioned summary of the existing studies in the field of research, the present research differs from the previous studies in the following aspects and expresses a new point of view regarding the effects of tourism on the multi-regional economy:

1. In the studies carried out so far, the focus has been on the general effects of tourism growth and tourism expenditures on the production and employment of the rest of the sectors. However, in the current study, the main focus is on the effects of investment in tourism in Razavi Khorasan province, one of the most important provinces in the country in the field of tourism.
2. In none of the studies reviewed in this section have the effects of investing in tourism in Razavi Khorasan province with a two-region approach been investigated.

3. In the present study, the spillover and feedback effects of investment in tourism in Razavi Khorasan province and the rest of the national regions are investigated.
4. The primary statistical information available in this study was related to the year 2016. To examine the impact of the shocks of recent years such as the Coronavirus, the investment growth scenario has been considered according to the investment growth in recent years (2018-2020), after adjusting the inflation, and the average annual increase of 700 billion Rials is considered as the scenario of increasing investment in the tourism sector. Thus, although the primary statistics are related to previous years due to limited access, the investment growth scenarios have been adjusted according to recent years so that recent shocks can also be included in the study
5. None of the reviewed studies have discussed the 13 sub-sectors of tourism, and this study has examined these sub-sectors completely.

Methodology

The essential purpose of preparing a regional input-output table is to analyze the dependence of regional economic sectors, which can be divided into two general forms. First is the dependence on the existing economic sectors in each region, and second, the dependence between the existing sectors in the region and the sectors of the rest of the regions. The second dependence type includes intra-country and inter-country trade exchanges (Shadab Far, 2017).

In the upcoming study, to investigate the effect of investment in tourism in Razavi Khorasan Province on the rest of the economic sectors of Razavi Khorasan Province and the rest of the national economies, the input-output model of two regions has been used. The structure of the mentioned model is in the format of the Razavi Khorasan province region with index (1) and the rest of the regions of the national economy with index (2) in a table, and the following signs show the matrices and vectors of the table. First, the structure of the two-region input-output table is in the following table.

Z11: Square matrix of inter-sectoral (intra-regional) trade exchanges in Razavi Khorasan Province

Z12: Matrix of exchanges (trade) between Razavi Khorasan province and the rest of the regions of the national economy, the origin of which is Razavi Khorasan province, and the destination is the rest of the regions of the national economy.

Z21: Matrix of exchanges (trade) between the rest of the regions of the national economy and Razavi Khorasan province, the origin of which is the rest of the regions of the national economy, and the destination is Razavi Khorasan province.

Z22: Square matrix of inter-sectoral (intra-regional) intermediary exchanges in the rest of the regions of the national economy (provinces)

Y11: Column vector of the final demand of Razavi Khorasan Province, which represents the flow of goods from the parts of Razavi Khorasan Province to the final demanders in the province, which includes private consumption, government consumption, capital formation, and inventory changes.

Y12: Column vector of the flow of goods and services from Razavi Khorasan province to final consumers in the rest of the provinces

Y21: Column vector of the flow of goods and services from the rest of the provinces to the final consumers in Razavi Khorasan province.

Y22: Column vector of final demand (flow of goods and services) from the rest of the national regions (provinces) to final demanders in the rest of the provinces.

E1: Column vector of the export flow of goods and services from Razavi Khorasan Province to abroad

E2: Column vector of the flow of exports of goods and services from the rest of the regions of the national economy to abroad

M1: Row vector of partial imports of Fars province from the outside world

M2: Row vector of imports of part of the rest of the national regions (provinces) from the outside world

V¹: a row vector containing the value added of a part of Razavi Khorasan province

V2: Line vector containing the value added of part of the rest of the regions of the national economy.

X1: Column vector containing the partial output of Razavi Khorasan province

X2: Column vector containing the output of the rest of the regions of the national economy (provinces) Therefore, the structure and components of the two-region input-output table for Razavi Khorasan province can be considered as follows.

Table 2. The Structure of Two-Region Table of Razavi Khorasan Province and the Rest Regions of the National Economy

total output	Final demand			intermediate demand		Buyers Sellers
	Overseas export	The rest regions of the national economy	Razavi Khorasan	Sectors of the rest regions of the national economy	Sectors of Razavi Khorasan	
X^1	E^1	Y^{12}	Y^{11}	Z^{12}	Z^{11}	Sectors of Razavi Khorasan
X^2	E^2	Y^{22}	Y^{21}	Z^{22}	Z^{21}	Sectors of the rest regions of the national economy
				V^2	V^1	Value added
				M^2	M^1	Overseas import
				X_2^1	X_1^1	total input

Source: Bazzazan (2011).

Regarding applied research, it is common to convert the input-output table into a model. For this purpose, the accounts in the table should be divided into two categories: exogenous and endogenous. In this model, regardless of the studied space, it is usual that endogenous intermediate exchanges and exogenous final demand and added value are considered. To derive the regional conventional stationary input-output model, we write the equations based on the structure of the two-region table given in Table (2):

$$X^1 = Z^{11} + Z^{12} + Y^{11} + Y^{12} + E^1 \quad (1)$$

$$X^2 = Z^{21} + Z^{22} + Y^{21} + Y^{22} + E^2 + E^1 \quad (2)$$

Using the assumption of linearity of the production function, technical coefficients and commercial coefficients, the above relationships can be written in the following matrix form:

$$A^{11} = Z^{11}(X^1)^{-1} \quad (3)$$

$$A^{12} = Z^{12}(X^2)^{-1} \quad (4)$$

$$A^{21} = Z^{21}(X^1)^{-1} \quad (5)$$

$$A^{22} = Z^{22}(X^2)^{-1} \quad (6)$$

Matrices A^{11} and A^{22} are the matrices of intra-regional direct intermediary coefficients of Razavi Khorasan province and the rest of the national economies, respectively; A^{12} and A^{21} are the inter-regional trade coefficient

matrices. If we put relations (3) to (6) in Equations (1) and (2) and arrange them, we have:

$$\begin{bmatrix} X^1 \\ X^2 \end{bmatrix} = \begin{bmatrix} A^{11} & A^{12} \\ A^{21} & A^{22} \end{bmatrix} \begin{bmatrix} X^1 \\ X^2 \end{bmatrix} + \begin{bmatrix} Y^1 \\ Y^2 \end{bmatrix} \quad (7)$$

We arrange the Equation (7) according to the endogenous variables of the model:

$$\begin{bmatrix} X^1 \\ X^2 \end{bmatrix} = \left[\begin{pmatrix} I & 0 \\ 0 & I \end{pmatrix} - \begin{pmatrix} A^{11} & A^{12} \\ A^{21} & A^{22} \end{pmatrix} \right]^{-1} \begin{bmatrix} Y^1 \\ Y^2 \end{bmatrix} = \begin{bmatrix} 1 - A^{11} & -A^{12} \\ -A^{21} & 1 - A^{22} \end{bmatrix}^{-1} \begin{bmatrix} Y^1 \\ Y^2 \end{bmatrix} \quad (8)$$

Equation (8) can be written as follows in the simplest form and the Leontief stationary input-output form: $X = BY$, where $X = \begin{bmatrix} X^1 \\ X^2 \end{bmatrix}$ and $Y = \begin{bmatrix} Y^1 \\ Y^2 \end{bmatrix}$ and $B = \begin{bmatrix} 1 - A^{11} & -A^{12} \\ -A^{21} & 1 - A^{22} \end{bmatrix}^{-1}$ is the inverse two-regional Leontief matrix. This is a simple inter-regional input-output model in which the economy is divided into two separate regions. This model, obtained from the input-output table of two regions, can be used for regional analysis, especially in short-term effectiveness analysis, such as the increasing coefficient of production, employment, and income, determining the pattern of trade between two regions, and many other applications. (Okamoto and Takeo, 2005; Bazzazan, 2011).

Regarding applied research, it is common to convert the input-output table into a model. For this purpose, the accounts in the table should be divided into two categories: exogenous and endogenous. In this model, regardless of the studied space, it is usual that endogenous intermediate exchanges and exogenous final demand and added value are considered. To Derivation of the regional conventional stationary input-output model, we write the equations based on the structure of the two-region table given in Table (2):

Two inter-regional exchange matrices are calculated to carry out the studies, one matrix for Razavi Khorasan Province's exchanges with the rest of the national economies and the other for the exchanges of the rest of the national economies with Razavi Khorasan Province. For this purpose, the diagonal matrix of Razavi Khorasan's imports from the rest of the national economies and the diagonal matrix of the rest of the provinces' imports from Razavi Khorasan province were used. Therefore, in this way, two matrices of inter-regional exchanges can also be calculated. The final demand vector of the two regions is calculated as a residual by aligning the table of the two regions.

The general steps for preparing the regional input-output table using the spatial contribution approach are as follows:

1. All statistical bases required for research are grouped into 71 economic sectors to harmonize and unify statistics and information,
2. The figures of both national and regional input-output tables are in terms of billions of Rials.
3. Choosing the right measure of space economy: In this study, the output is considered the space factor.
4. Estimation of imports of different sectors of the regions: due to the lack of statistics related to the number of imports and exports of a sector at the regional level, to calculate the cross-border imports of each sector at the regional level, it is assumed that the degree of dependence of each sector on the outside world is the same at the regional and national level. Therefore, the corresponding ratios at the national level have been used for regional levels, which is equal to the product of the ratio of national import to national output by regional output.
5. At this stage, the national input-output table for 2016 and the region accounts for 2016, the input-output table for both regions is estimated, and the statistical validity of the coefficients of both regions has been measured based on the minimum statistical errors.
6. Calculation of imports from the rest regions: to determine the scope of activities of each sector at the regional level and carefully examine the region's economic structure according to its spatial dimensions, imports from the rest regions for each sector at the regional level are intermediate costs.
7. One of the significant problems of location share methods is that using this approach makes it impossible to estimate cross-border exports and even exports to the rest regions. Under these conditions, export is considered as waste in the final demand. Therefore, in the spatial share approach, the final demand is a residual from the difference between the total demand and the intermediate demand.

Conclusion

This study investigates the effects of increased investment in tourism in Razavi Khorasan province on the value added of this province and the rest of the national economies. Since the tourism sector is not defined as a separate and specific activity among the economic activities mentioned in the input-output table, the economic effects of the tourism sector on the province were analyzed using the input-output table of the economic sectors related to the tourism sector and their aggregation. In this research, the following 13 activities were used as the main and

related activities of the tourism sector in the input-output table. These 13 activities are based on the supply chain of tourism services and have the main contribution to the cost of tourists, which have been mentioned in various studies (Rafiei Darani and Barati, 2014).

1. Residential buildings
2. Other buildings
3. Wholesale and retail, except for motor vehicles and motorcycles
4. Rail Transportation
5. Other ground transportation
6. Air transportation
7. Provision of space
8. Service activities related to food and beverages
9. Administrative activities and support services
10. Governmental activities related to human health
11. Activities related to private human health
12. Art, entertainment, and recreation
13. Religious and political services

Since the activities of all 13 tourism sectors are important in the economy of the province and Iran, the scenario of increasing 700 billion Rials of investment in each of the tourism activities of Razavi Khorasan province has been considered separately. According to the amount of investment in tourism in the province during 2017-2019, an average of 700 billion Rials was added to the amount of investment in tourism in this province (excluding land) (statistical yearbook of the General Directorate of Cultural Heritage, Tourism and Handicrafts of Razavi Khorasan Province 2019 and research calculations). To calculate the mentioned amount, the investment amounts in the province's tourism sector are first deflated to obtain the annual average investment. In this way, the effects of this change on the creation of value-added can be analyzed more precisely in a general way both directly and indirectly.

According to the obtained results, with the increase of investment in tourism in Razavi Khorasan province, the highest amount of value-added created in this province results from investment in the public human health sector, which ranks first in the total effect due to the increased investment in the province. This activity is followed by wholesale, retail, and administrative activities and support services. Due to the high share of value added in the province, the government's human health department will have a significant contribution to creating value added in the province in the case of increased investment; in other words, investment in the

health tourism of the province can create a significant value added to the province. The increase in the share of administrative activities and support services is also caused by the increasing effects of agencies' activities.

The increase of this amount of investment in the tourism sectors of Razavi Khorasan province has created the highest secondary value-added and, therefore, the total effect on the rest of the national economies in water and air transportation and rail transportation sectors. This problem shows the importance of the tourism effect of Razavi Khorasan province in the transportation of the rest of the provinces to travel to this province.

Table 3. Total Effect and Value-Added Created Due to Increased Investment in Tourism in Razavi Khorasan Province

Economic sectors	Razavi Khorasan Province		The rest of the national economies	
	Secondary value added	Total effect	Secondary value added	Secondary value added
Residential buildings	789055.65	448.578	14162375	175.19
Other buildings	789121.55	514.481	14162326	125.73
Wholesale, retail, except for motor vehicles and motorcycles	789238.44	631.374	14162256	56.4
Transportation by intercity railway	789019.99	412.928	14162401	201.26
Other ground transportation	789169.17	562.099	14162306	105.99
Water and air transportation	788969.46	362.392	14162439	238.73
Provision of space	789185.29	578.227	14162300	100.18
Service activities related to food and beverages	789214.28	607.213	14162256	55.86
Administrative activities and support services	789224.79	617.722	14162256	56.36
Activities related to government human health	789246.36	639.297	14162241	41.22
Activities related to private human health	789217.35	610.282	14162264	63.79
Art, entertainment, and recreation	789147.59	540.526	14162329	128.49
Religious organizations and membership organizations	789185.68	578.613	14162288	87.94

Source: Research findings.

The results of calculating the coefficients of production increase and spillover effects also show that the most significant coefficient of production increase in Razavi Khorasan province is related to the production of food products in two regions. This means that, at the national level, the most significant increase in production in this sector will be achieved by applying the policy of increasing one unit of investment in food production in both regions. The growth coefficient of this sector in Razavi Khorasan Province is lower than in the rest of the economies, which could be due to the need for this sector in the province to import from the rest of the economies. Meanwhile, the public secondary and technical and vocational secondary education sectors in Razavi Khorasan and the rest of the provinces have the lowest growth rate and the lowest potential for output growth in the economy as a whole. According to the results obtained from the feedback effect, the feedback effects of both regions have small values. In Razavi Khorasan, the biggest feedback effect is related to the production of all kinds of beverages and the production of basic metals. In the rest of the national economies, the largest feedback effect is related to the residential construction and apparel manufacturing sectors. Regarding the feedback effects of tourism sectors, the feedback effects of Khorasan Razavi province are smaller than those of the rest of the national economies. In other words, the return effects of tourism sectors in the province from the rest of the provinces are not many and the production growth of these sectors in Razavi Khorasan province is more affected by the changes made in this same province.

Table 4. A Comparison of Spillover and Feedback Effects of Razavi Khorasan Province and the rest of the national economies Due to the Increase of One Unit of Final Demand in 2016

Economic sectors	Khorasan Razavi		The rest of the national economies	
	spillover effect on the rest of the national economy	feedback effects	spillover effect on Razavi Khorasan	feedback effects
Agriculture, horticulture and agricultural services	0.018	0.0015	0.142	0.002
Industrial and traditional animal husbandry	0.057	0.0046	0.303	0.005
Poultry	0.095	0.0058	0.354	0.009

Bee breeding, silkworms, hunting and other agricultural activities	0.068	0.0037	0.233	0.009
forestry	0.029	0.0016	0.133	0.005
fishing	0.043	0.0043	0.253	0.009
Extraction of crude oil, natural gas and mining support services and extraction of other mines	0.007	0.0006	0.053	0.001
Production of food products	0.097	0.0035	0.282	0.01
Production of all kinds of beverages and production of tobacco products	0.032	0.0195	0.793	0
Textile production	0.038	0.0059	0.425	0.004
Clothing production	0.058	0.0019	0.225	0.012
Production of leather and related products	0.043	0.0029	0.209	0.006
Production of wood and wooden products except furniture, mats and woven mat materials	0.041	0.0051	0.37	0.006
Production of paper and paper products, printing and reproduction of recorded media	0.046	0.0047	0.342	0.006
Coke production, oil refining products	0.01	0.0061	0.708	0
Production of chemicals and chemical products	0.042	0.0025	0.277	0.005
Production of medicines and medicinal, chemical, and herbal products	0.05	0.0059	0.415	0.007
Production of rubber and plastic products	0.033	0.0078	0.537	0.004
Production of other non-metallic mineral products	0.027	0.0044	0.394	0.004
Production of base metals	0.042	0.009	0.671	0.008
Manufacture of fabricated metal products, except machinery and equipment	0.049	0.0073	0.55	0.011
Production of computer, electronic and optical products	0.062	0.0025	0.283	0.011
Production of electrical equipment	0.032	0.0083	0.598	0.005
Manufacture of machinery and equipment not elsewhere classified	0.041	0.0049	0.367	0.009
Production of motor vehicles, trailers and semi-trailers	0.058	0.0043	0.299	0.007

Production of other transportation equipment	0.059	0.009	0.528	0.011
Furniture production	0.051	0.0019	0.238	0.01
Production of other products	0.032	0.0064	0.468	0.005
Repair and installation of machinery and equipment	0.005	0.0012	0.069	0.001
Electricity generation, transmission, and distribution	0.016	0.003	0.333	0.002
Production and distribution of natural gas	0.008	0.0004	0.047	0.001
Water supply, waste management, sewage and treatment activities	0.021	0.0021	0.172	0.003
Residential buildings	0.065	0.0053	0.438	0.013
Other buildings	0.04	0.0035	0.312	0.008
Wholesale, retail, except motor vehicles and motorcycles	0.014	0.0009	0.113	0.002
Wholesale, retail and repair of motor vehicles and motorcycles and repair of computers and personal goods	0.014	0.0032	0.24	0.002
Transportation by intercity railway	0.022	0.0062	0.461	0.002
Other ground transportation	0.017	0.0027	0.247	0.004
Transport by pipe	0.009	0.0014	0.117	0.001
Water and air transportation	0.024	0.0078	0.557	0.003
Warehousing and transportation support activities	0.021	0.0016	0.132	0.003
Post and courier activities	0.029	0.0022	0.138	0.003
Accommodation	0.007	0.0057	0.263	0
Service activities related to food and beverages (restaurants, etc.)	0.045	0.0025	0.153	0.004
connections	0.017	0.0053	0.457	0.004
Other information and communication activities	0.045	0.0066	0.451	0.008
Banks and financial institutions	0.029	0.0049	0.351	0.004
Compulsory insurance and social security	0.017	0.0013	0.117	0.002
Other financial services and insurance activities	0.003	0.0006	0.052	0
Services of residential units (private and rented) and non-residential	0.003	0.0009	0.055	0
Real estate broker services	0.014	0.0008	0.09	0.002
Research and Development	0.032	0.0025	0.189	0.002

Other professional, scientific, and technical activities	0.012	0.0035	0.34	0.001
Veterinary activities	0.012	0.0023	0.152	0.001
Administrative activities and support services	0.022	0.0012	0.122	0.003
Public affairs and city services	0.016	0.0008	0.078	0.002
defense affairs	0.017	0.0025	0.147	0.002
Police affairs	0.007	0.0016	0.083	0.001
State primary education	0.003	0.0003	0.022	0
Private primary education	0.015	0.0006	0.101	0.002
General secondary education and government technical	0.002	0.0003	0.022	0
Public secondary education and private technical and professional secondary education	0.023	0.0007	0.092	0.003
State higher education	0.028	0.0027	0.191	0.004
Private higher education	0.016	0.0018	0.149	0.002
Other public and private education	0.017	0.0014	0.138	0.003
Activities related to government human health	0.009	0.0016	0.099	0.001
Activities related to private human health	0.016	0.0016	0.138	0.002
Social work	0.015	0.0015	0.123	0.002
Art, entertainment, and recreation	0.012	0.0034	0.276	0.001
Religious organizations and membership organizations	0.022	0.0043	0.228	0.002
Other personal service activities	1.198	0.0012	0.132	0.002

Source: Research findings.

Another result obtained from the increase of 700 billion Rials in investment in each of the sub-sectors of tourism in Razavi Khorasan Province is the amount of direct and indirect effects of investment in each of the sub-sectors of tourism on the rest of the sectors. The results obtained for Razavi Khorasan province and the rest of the national economies are presented in Tables 5 and 6.

According to the obtained results, the increase in investment in each of the tourism activities of Razavi Khorasan province has created the most direct effect on those sectors. Among the direct effects, investment in housing, government health activities, and private health activities have created the most direct effects on these sectors with 96.33, 93.74, and 89.31% shares, respectively. The most indirect effect was related to residential buildings, water and air transportation, and other buildings, respectively. This issue shows the importance of transportation

sub-sectors and residential buildings in tourism (Hemmati, 2016). Therefore, increasing investment in the tourism sector will indirectly increase the value added to these activities.

However, investing in each of the tourism-related activities has had different effects on increasing the value added to each of the economic activities. An increase in investment creates directly 54.45%, 11.436%, 11.036%, and 8.52% value added in the sectors of residential buildings, other ground transportation, the production of other non-metallic mineral products, and wholesale and retail activities, respectively.

In the case of increasing investment in other buildings, a 70.53% direct effect will be created in this sector. It also indirectly creates value added in other ground transportation (7.88%), production of other non-metallic mineral products (5.97%), and wholesale and retail activities (5.68%). Therefore, the activities of other ground transportation and other non-metallic mineral products face an increase due to their importance in residential buildings and other buildings. Moreover, the increase in the construction of housing and buildings focusing on the tourism sector has been affected by the increase in accommodation facilities in the province, which affects ground transportation because an important path of tourists' arrival in Mashhad is through ground transportation. Furthermore, the equipment needed for the construction of residential units is mainly moved by ground transportation. Furthermore, the increase in accommodation facilities through the increase in the attraction of tourists will increase both the effect and the value added to wholesale and retail activities. The increase in investment in wholesale and retail sales creates 87.05% value added (directly) in the province. The indirect effects of this increase are on the services of residential and non-residential units (7.36%) and other ground transportation (2.31%).

The increase in investment in rail transportation of the province directly increases its value added by 71.72%. This increase in investment also causes a 10.76% increase in the value-added of administrative activities and support services, a 3.06% increase in other land transportation activities, and a 2.87% increase in warehousing and transportation support activities. Increasing investment in the land transport tourism sector will increase the value added by 88.58% to this sector. In addition, wholesale and retail sales and repair of motor vehicles (4.12%) due to the increase in the arrival of tourists through ground transportation, and wholesale and retail sales, except for vehicles (2.7%), have the largest increase in value-added. In addition to a 66.9% increase in the value-added of air transportation activity, wholesale and retail activities, other ground

transportation (5.23%), and administrative activities and support services (4.71%) face an increase in value-added, except for motor vehicles (5.8%).

Increasing investment in providing space and food and beverage activities, in addition to creating the most direct effect in each of the activities itself, causes an increase in value added in agriculture and horticulture activities and wholesale and retail sales, except for motor vehicles, other ground transportation, and food and beverage activities. In other words, the increase in investment through these activities in tourism can increase the value added in all three sectors of agriculture, industry, and services. The increase in investment in the tourism sector, administrative activities, and supporting services caused an increase in the value-added of residential and non-residential services (6.68%), wholesale and retail sales, except for motor vehicles (2.43%), and other ground transportation (1.47%). In other words, improving tourism support services, such as the activities and services provided by tourism agencies, can increase the value added to the above-mentioned activities through increasing the attraction of tourists.

About government health activities, private health, art and entertainment, and religious organizations, the highest value added created in the province is related to these activities themselves. The increase in investment in each tourism sector can have a significant impact on increasing the value added of wholesale, and retail, except for motor vehicles and motorcycles and services of residential and non-residential units. Finally, the increase in investment in the tourism sectors of these activities has the greatest effect on the wholesale, and retail, except for motor vehicles and motorcycles and other ground transportation sectors at the level of the national economy.

Table 5. The Effectiveness of Investment in Tourism-Related Sectors of Razavi Khorasan Province on the Rest of the Economic Activities of the Province (Percentage)

Economic sectors	Residential buildings	Other buildings	Wholesale and retail except for motor vehicles and motorcycles	railroad transportation	Ground Transportation	Water and air transportation	Provision of space	Food and beverage activities	Administrative activities and support services	Government health activities	Private health activities	Arts and Entertainment	Religious organizations	Average row
Agriculture, horticulture, and agricultural services	0.337	0.389	0.078	0.646	0.037	0.801	0.42	5.052	0.397	0.395	0.253	0.48	1.652	0.841
Industrial and traditional animal husbandry	0.107	0.1	0.025	0.091	0.012	0.235	0.136	1.981	0.105	0.093	0.062	0.085	0.624	0.281
Poultry	0.028	0.022	0.006	0.022	0.004	0.056	0.026	0.396	0.023	0.018	0.015	0.017	0.121	0.058
Bee breeding, silkworms, hunting, and other agricultural activities	0	0	0	0	0	0	0	0.001	0	0	0	0	0	0
forestry	0.02	0.025	0.002	0.004	0.012	0.005	0.001	0.006	0.007	0.003	0.005	0.004	0.005	0.008
fishing	0	0	0	0.001	0	0.002	0.001	0.001	0	0	0	0.001	0.001	0.001
Extraction of crude oil, natural gas, and mining support services and extraction of other mines	0.067	0.039	0.004	0.025	0.014	0.04	0.01	0.005	0.005	0.004	0.005	0.009	0.01	0.018
Production of food products	0.245	0.246	0.064	0.243	0.022	0.591	0.273	5.077	0.265	0.214	0.136	0.192	1.477	0.696
Production of all kinds of beverages and production of tobacco products	0.014	0.017	0.002	0.01	0.002	0.03	0.045	0.275	0.012	0.005	0.005	0.011	0.127	0.043
Textile production	0.091	0.087	0.015	0.024	0.024	0.065	0.119	0.03	0.025	0.03	0.054	0.089	0.06	0.055
Clothing production	0.031	0.013	0.002	0.011	0.001	0.01	0.002	0.004	0.005	0.005	0.008	0.014	0.002	0.008
Production of leather and related products	0.013	0.013	0.002	0.004	0.003	0.007	0.006	0.005	0.005	0.02	0.005	0.032	0.007	0.009
Production of wood and wooden products except furniture, mats, and woven mat materials	0.297	0.484	0.006	0.014	0.005	0.016	0.003	0.01	0.027	0.009	0.029	0.022	0.016	0.072
Production of paper and paper products, printing and reproduction of recorded media	0.094	0.074	0.034	0.059	0.011	0.084	0.023	0.036	0.243	0.06	0.117	0.104	0.102	0.08
Coke production, oil refining products	0.009	0.006	0.001	0.007	0.004	0.013	0.002	0.001	0.001	0.001	0.001	0.002	0.002	0.004
Production of chemicals and chemical products	0.055	0.025	0.004	0.021	0.021	0.029	0.011	0.009	0.013	0.007	0.022	0.012	0.011	0.018
Production of medicines and medicinal, chemical, and herbal products	0.006	0.004	0.001	0.004	0.002	0.008	0.002	0.014	0.005	0.18	0.171	0.005	0.009	0.032
Production of rubber and plastic products	0.772	0.554	0.112	0.112	1.243	0.194	0.037	0.133	0.264	0.1	0.184	0.082	0.199	0.307
Production of other non-metallic mineral products	11.036	5.972	0.101	0.169	0.127	0.116	0.081	0.099	0.237	0.109	0.197	0.127	0.441	1.447

Production of base metals	0.857	0.557	0.01	0.067	0.014	0.044	0.01	0.009	0.025	0.01	0.023	0.013	0.035	0.129
Manufacture of fabricated metal products, except machinery and equipment	0.194	0.13	0.005	0.023	0.011	0.019	0.005	0.015	0.025	0.01	0.063	0.01	0.015	0.04
Production of computer, electronic, and optical products	0.008	0.009	0	0.002	0.001	0.003	0	0	0.005	0.001	0.001	0.002	0.001	0.003
Production of electrical equipment	0.265	0.941	0.01	0.129	0.031	0.112	0.007	0.012	0.041	0.01	0.016	0.024	0.123	0.132
Manufacture of machinery and equipment not elsewhere classified	0.167	0.067	0.003	0.022	0.037	0.019	0.001	0.003	0.006	0.003	0.006	0.003	0.007	0.026
Production of motor vehicles, trailers and semi-trailers	0.255	0.207	0.019	0.157	0.371	0.238	0.009	0.03	0.044	0.021	0.032	0.022	0.04	0.111
Production of other transportation equipment	0.006	0.004	0	0.001	0.001	0.001	0	0	0.001	0	0.002	0	0	0.001
Furniture production	0.036	0.037	0	0.001	0.001	0.001	0	0	0.001	0	0.001	0.001	0.001	0.006
Production of other products	0.036	0.024	0.012	0.031	0.01	0.038	0.005	0.017	0.15	0.148	0.212	0.086	0.064	0.064
Repair and installation of machinery and equipment	0.013	0.007	0.001	0.012	0.005	0.038	0.002	0.002	0.003	0.001	0.001	0.002	0.003	0.007
Electricity generation, transmission, and distribution	0.558	0.352	0.559	0.275	0.112	0.942	0.125	0.408	0.365	0.141	0.244	0.391	0.325	0.369
Production and distribution of natural gas	0.325	0.193	0.09	0.121	0.265	0.634	0.05	0.132	0.12	0.046	0.121	0.14	0.087	0.179
Water supply, waste management, sewage, and treatment activities	0.425	0.149	0.125	0.552	0.053	0.557	0.161	0.154	0.216	0.064	0.146	0.369	0.155	0.24
Residential buildings	54.456	0.056	0.028	0.066	0.007	0.032	0.004	0.011	0.045	0.002	0.016	0.02	0.072	4.217
Other buildings	0.543	70.835	0.114	0.38	0.033	0.088	0.108	0.113	0.12	0.042	0.231	0.198	0.329	5.626
Wholesale, retail, except for motor vehicles and motorcycles	8.525	5.683	87.055	1.773	2.701	5.808	0.794	7.942	2.434	2.024	2.037	1.465	3.509	10.135
Wholesale, retail, and repair of motor vehicles and motorcycles and repair of computers and personal goods	0.895	0.618	0.179	0.486	4.126	1.701	0.054	0.245	0.45	0.095	0.126	0.304	0.281	0.735
Transportation by intercity railway	0.189	0.122	0.105	71.727	0.06	0.337	0.009	0.047	0.148	0.015	0.036	0.068	0.041	5.608
Other ground transportation	11.436	7.889	2.314	3.068	88.581	5.232	0.296	1.624	1.476	0.631	0.903	0.707	1.617	9.675
Transport by pipe	0.032	0.021	0.169	0.01	0.017	0.041	0.005	0.021	0.01	0.006	0.009	0.01	0.011	0.028
Water and air transportation	0.084	0.062	0.057	0.895	0.056	66.983	0.004	0.017	0.015	0.007	0.011	0.02	0.042	5.25
Warehousing and transportation support activities	0.105	0.058	0.157	2.817	0.157	2.199	0.007	0.029	0.025	0.012	0.016	0.019	0.024	0.433
Post and courier activities	0.019	0.041	0.06	0.017	0.008	0.094	0.007	0.012	0.049	0.017	0.035	0.073	0.089	0.04
Provision of space	0.053	0.061	0.007	0.243	0.006	0.424	96.332	0.006	0.118	0.033	0.008	0.057	0.064	7.493
Service activities related to food and beverages (restaurants, etc.)	0.223	0.226	0.02	0.319	0.018	2.031	0.061	72.203	0.186	0.555	0.057	0.397	0.517	5.909
connections	0.021	0.017	0.033	0.023	0.008	0.027	0.005	0.007	0.022	0.019	0.008	0.01	0.009	0.016
Other information and communication activities	0.015	0.014	0.006	0.025	0.004	0.02	0.004	0.005	0.027	0.004	0.012	0.006	0.011	0.012
Banks and financial institutions	0.472	0.634	0.275	0.261	0.115	0.187	0.032	0.111	0.114	0.069	0.147	0.078	0.028	0.194
Compulsory insurance and social security	0.853	0.966	0.113	0.418	0.562	1.538	0.071	0.131	0.114	0.171	0.127	0.123	0.069	0.404

Other financial services and insurance activities	0.054	0.026	0.009	0.017	0.002	0.034	0.004	0.01	0.008	0.003	0.007	0.003	0.006	0.014
Services of residential units (private and rented) and non-residential	1.342	0.959	7.368	1.77	0.838	1.806	0.296	3.206	6.681	0.381	3.716	3.812	0.753	2.533
Real estate broker services	0.025	0.017	0.122	0.124	0.023	0.03	0.006	0.049	0.112	0.009	0.063	0.059	0.034	0.052
Research and Development	0.007	0.002	0.001	0.002	0.001	0.003	0	0.001	0.002	0.001	0.001	0.006	0.012	0.003
Other professional, scientific, and technical activities	3.088	0.403	0.162	0.32	0.022	0.227	0.132	0.067	0.371	0.018	0.095	0.294	0.23	0.418
Veterinary activities	0.001	0.001	0	0.001	0	0.002	0.001	0.016	0.001	0.001	0.001	0.001	0.005	0.002
Administrative activities and support services	0.853	0.303	0.1	10.766	0.042	4.714	0.044	0.059	83.917	0.239	0.152	0.62	0.419	7.864
Public affairs and city services	0.025	0.013	0.006	0.222	0.005	0.212	0.003	0.004	0.313	0.008	0.005	0.073	0.054	0.073
defense affairs	0.017	0.017	0.001	0.015	0.001	0.245	0.003	0.003	0.012	0.033	0.004	0.017	0.022	0.03
Police affairs	0.008	0.008	0.001	0.012	0.001	0.076	0.012	0.002	0.009	0.021	0.002	0.016	0.02	0.007
State primary education	0.003	0.003	0.002	0.004	0	0.023	0.002	0.001	0.003	0.006	0.001	0.007	0.03	0.014
Private primary education	0.001	0	0	0	0	0	0	0	0	0	0	0	0	0
General secondary education and government technical	0.004	0.003	0.002	0.004	0	0.025	0.003	0.001	0.004	0.007	0.001	0.009	0.033	0.001
Public secondary education and private technical and professional secondary education	0.001	0.002	0	0.001	0	0.002	0	0	0	0.001	0	0.001	0.002	0.007
State higher education	0.001	0.001	0.001	0.001	0	0.006	0.001	0	0.002	0.002	0.001	0.002	0.006	0.002
Private higher education	0.059	0.045	0.048	0.102	0.015	0.176	0.008	0.034	0.081	0.026	0.03	0.069	0.05	0.057
Other public and private education	0.051	0.021	0.046	0.109	0.006	0.108	0.019	0.016	0.053	0.018	0.022	0.066	0.259	0.061
Activities related to government human health	0.032	0.019	0.022	0.02	0.005	0.022	0.003	0.014	0.026	93.742	0.553	0.015	0.013	7.268
Activities related to private human health	0.025	0.016	0.01	0.012	0.007	0.029	0.002	0.012	0.013	0.012	89.307	0.006	0.006	6.881
Social work	0.012	0.005	0.007	0.09	0.008	0.073	0.001	0.004	0.006	0.005	0.029	0.023	0.008	0.021
Art, entertainment, and recreation	0.032	0.027	0.015	0.026	0.012	0.071	0.023	0.03	0.029	0.014	0.016	88.798	0.061	6.858
Religious organizations and membership organizations	0.06	0.05	0.088	0.93	0.089	0.194	0.056	0.024	0.224	0.034	0.058	0.184	85.454	6.727
Other personal service activities	0.008	0.005	0.006	0.064	0.009	0.232	0.011	0.002	0.14	0.01	0.017	0.014	0.084	0.046
total effect	448.578	514.481	631.374	412.928	562.099	362.392	578.227	607.213	617.722	639.297	610.282	540.526	578.613	-
direct impact	54.45	70.84	87.05	71.73	88.58	66.98	96.33	72.2	83.92	93.74	89.31	88.8	85.45	-
indirect effect	45.54	29.16	12.94	28.27	11.42	33.02	3.67	27.8	16.08	6.26	10.69	11.2	14.55	-

Source: Research findings.

Table 6. The Effectiveness of Investment in Tourism-Related Sectors of Razavi Khorasan Province on the Rest of the Activities of the National Economy (Percentage)

Economic sectors	Residential buildings	Other buildings	Wholesale and retail except for motor vehicles and motorcycles	railroad transportation	Ground Transportation	Water and air transportation	Provision of space	Food and beverage activities	Administrative activities and support services	Government health activities	Private health activities	Arts and Entertainment	Religious organizations	Average row
Agriculture, horticulture, and agricultural services	0.796	0.301	0.71	1.934	0.388	2.036	9.489	18.774	2.593	5.744	2.087	3.47	9.104	4.42
Industrial and traditional animal husbandry	0.213	0.071	0.191	0.265	0.122	0.52	2.75	5.662	0.621	1.222	0.452	0.554	2.911	1.2
Poultry	0.055	0.017	0.045	0.062	0.037	0.123	0.477	1.237	0.14	0.239	0.108	0.111	0.58	0.25
Bee breeding, silkworms, hunting, and other agricultural activities	0.002	0.001	0.001	0.001	0.001	0.002	0.011	0.013	0.002	0.005	0.002	0.003	0.008	0
forestry	0.115	0.044	0.056	0.032	0.213	0.034	0.063	0.086	0.141	0.104	0.106	0.06	0.089	0.09
fishing	0.026	0.007	0.018	0.046	0.015	0.068	0.152	0.217	0.048	0.103	0.044	0.053	0.171	0.07
Extraction of crude oil, natural gas, and mining support services and extraction of other mines	6.375	1.519	2.434	2.888	4.268	3.928	2.541	2.397	2.394	2.486	2.195	1.8	2.786	2.92
Production of food products	0.452	0.156	0.436	0.731	0.199	1.381	6.481	10.044	1.361	2.751	0.943	1.318	6.569	2.52
Production of all kinds of beverages and production of tobacco products	0.023	0.009	0.016	0.031	0.011	0.067	1.112	0.456	0.063	0.06	0.036	0.075	0.53	0.19
Textile production	0.259	0.08	0.14	0.092	0.255	0.179	2.93	0.191	0.23	0.464	0.431	0.636	0.347	0.48
Clothing production	0.059	0.012	0.019	0.045	0.024	0.036	0.075	0.029	0.036	0.076	0.063	0.118	0.029	0.05
Production of leather and related products	0.04	0.013	0.021	0.023	0.032	0.03	0.175	0.04	0.04	0.277	0.052	0.251	0.055	0.08
Production of wood and wooden products except furniture, mats, and woven mat materials	0.551	0.293	0.105	0.098	0.079	0.079	0.15	0.132	0.249	0.228	0.315	0.238	0.181	0.21
Production of paper and paper products, printing and reproduction of recorded media	0.574	0.126	0.367	0.422	0.206	0.378	0.818	0.392	1.556	1.112	1.077	1.001	0.794	0.68
Coke production, oil refining products	0.703	0.176	0.41	0.499	0.762	0.743	0.362	0.398	0.352	0.367	0.295	0.263	0.399	0.44
Production of chemicals and chemical products	1.489	0.359	0.724	0.787	2.464	0.832	1.675	1.367	1.113	1.496	1.387	0.928	1.291	1.22
Production of medicines and medicinal, chemical, and herbal products	0.039	0.011	0.026	0.041	0.041	0.054	0.143	0.298	0.071	2.444	1.312	0.077	0.171	0.36
Production of rubber and plastic products	2.104	0.593	1.387	0.71	7.601	0.895	1.281	1.338	2.037	1.981	1.803	0.881	1.662	1.87

Production of other non-metallic mineral products	13.622	2.883	1.193	0.611	0.856	0.38	2.065	0.743	1.727	1.607	1.684	1.088	2.276	2.36
Production of base metals	2.395	0.641	0.353	0.608	0.6	0.411	0.605	0.372	0.675	0.7	0.821	0.444	0.752	0.72
Manufacture of fabricated metal products, except machinery and equipment	0.578	0.154	0.169	0.236	0.276	0.193	0.433	0.337	0.345	0.373	0.661	0.25	0.371	0.34
Production of computer, electronic, and optical products	0.04	0.011	0.016	0.037	0.026	0.026	0.027	0.013	0.044	0.028	0.025	0.042	0.027	0.03
Production of electrical equipment	0.44	0.509	0.111	0.38	0.238	0.287	0.183	0.096	0.275	0.163	0.153	0.185	0.622	0.28
Manufacture of machinery and equipment not elsewhere classified	0.31	0.071	0.07	0.116	0.316	0.115	0.076	0.063	0.096	0.098	0.086	0.059	0.104	0.12
Production of motor vehicles, trailers and semi-trailers	0.574	0.18	0.287	0.486	2.443	0.64	0.212	0.271	0.43	0.379	0.309	0.202	0.317	0.52
Production of other transportation equipment	0.021	0.005	0.008	0.009	0.026	0.01	0.015	0.013	0.013	0.011	0.021	0.009	0.013	0.01
Furniture production	0.076	0.026	0.014	0.015	0.022	0.012	0.019	0.013	0.023	0.021	0.025	0.02	0.021	0.02
Production of other products	0.13	0.033	0.101	0.112	0.097	0.104	0.135	0.119	0.777	1.928	1.419	0.607	0.332	0.45
Repair and installation of machinery and equipment	0.43	0.102	0.203	0.362	0.259	0.502	0.299	0.274	0.215	0.25	0.203	0.177	0.276	0.27
Electricity generation, transmission, and distribution	2.596	0.62	4.657	1.424	1.623	3.085	3.79	2.718	3.151	2.99	2.616	3.576	2.694	2.73
Production and distribution of natural gas	3.311	0.776	2.144	1.46	3.397	2.94	2.652	2.051	2.165	2.298	2.305	2.276	2.086	2.3
Water supply, waste management, sewage, and treatment activities	0.936	0.164	0.855	1.573	0.476	1.383	3.996	0.785	1.222	0.948	1.042	2.591	0.888	1.3
Residential buildings	4.394	0.042	0.517	0.258	0.098	0.129	0.149	0.176	0.525	0.094	0.293	0.293	0.399	0.57
Other buildings	0.972	0.781	1.056	1.261	0.394	0.391	2.837	0.58	0.979	0.754	1.73	1.649	1.717	1.16
Wholesale, retail, except for motor vehicles and motorcycles	14.822	3.924	11.482	6.048	16.875	14.362	19.519	21.34	14.002	27.203	14.964	10.862	18.14	14.89
Wholesale, retail, and repair of motor vehicles and motorcycles and repair of computers and personal goods	2.813	0.736	2.229	1.666	21.7	4.226	1.343	1.739	2.882	1.736	1.321	2.199	1.861	3.57
Transportation by intercity railway	0.393	0.095	0.648	6.643	0.378	0.807	0.223	0.242	0.771	0.247	0.287	0.481	0.249	0.88
Other ground transportation	19.807	5.174	14.213	9.248	16.075	12.957	7.532	8.532	9.424	9.76	7.602	5.654	9.606	10.43
Transport by pipe	0.22	0.054	0.98	0.096	0.232	0.2	0.181	0.252	0.177	0.226	0.175	0.139	0.177	0.24
Water and air transportation	0.185	0.05	0.378	2.418	0.335	5.824	0.103	0.118	0.136	0.121	0.104	0.148	0.224	0.78
Warehousing and transportation support activities	0.672	0.164	1.407	9.614	1.317	6.591	0.442	0.554	0.672	0.585	0.435	0.458	0.519	1.8
Post and courier activities	0.076	0.03	0.369	0.065	0.065	0.228	0.173	0.082	0.275	0.237	0.248	0.497	0.418	0.21
Provision of space	0.129	0.036	0.068	0.626	0.047	0.949	0.262	0.04	0.534	0.403	0.065	0.379	0.282	0.29
Service activities related to food and beverages (restaurants, etc.)	0.357	0.121	0.194	0.951	0.157	4.647	1.515	0.204	0.878	6.676	0.42	2.675	2.213	1.62
connections	0.539	0.137	0.693	0.726	0.621	0.673	0.616	0.593	0.616	1.001	0.541	0.533	0.582	0.61

Other information and communication activities	0.251	0.075	0.263	0.434	0.226	0.304	0.335	0.252	0.376	0.336	0.334	0.24	0.307	0.29
Banks and financial institutions	1.674	0.599	2.722	1.588	1.533	1.281	1.546	1.33	1.517	1.977	1.941	1.327	0.949	1.54
Compulsory insurance and social security	1.605	0.607	1.085	1.501	3.39	4.036	1.898	0.78	0.925	2.491	1.094	1.046	0.639	1.62
Other financial services and insurance activities	0.235	0.043	0.165	0.248	0.175	0.301	0.213	0.135	0.161	0.185	0.164	0.142	0.166	0.18
Services of residential units (private and rented) and non-residential	5.034	1.043	39.384	5.668	6.938	4.983	7.525	9.949	30.7	6.437	23.656	26.253	5.119	13.28
Real estate broker services	0.111	0.023	0.956	0.36	0.182	0.099	0.17	0.288	0.785	0.163	0.535	0.479	0.199	0.33
Research and Development	0.033	0.006	0.02	0.028	0.021	0.024	0.028	0.019	0.034	0.037	0.024	0.079	0.094	0.03
Other professional, scientific, and technical activities	3.793	0.222	0.997	0.877	0.191	0.547	3.261	0.309	1.807	0.301	0.668	1.982	1.074	1.23
Veterinary activities	0.004	0.001	0.003	0.004	0.002	0.008	0.037	0.114	0.011	0.019	0.008	0.008	0.046	0.02
Administrative activities and support services	1.64	0.298	1.266	29.058	0.584	11.363	1.239	0.709	3.336	3.218	1.306	4.54	2.17	4.67
Public affairs and city services	0.061	0.014	0.06	0.642	0.046	0.516	0.075	0.034	1.329	0.115	0.05	0.509	0.254	0.29
defense affairs	0.03	0.01	0.017	0.062	0.014	0.575	0.07	0.014	0.061	0.398	0.031	0.122	0.103	0.12
Police affairs	0.014	0.005	0.007	0.036	0.005	0.174	0.305	0.007	0.048	0.247	0.015	0.108	0.088	0.08
State primary education	0.008	0.002	0.012	0.012	0.003	0.054	0.057	0.005	0.017	0.073	0.009	0.049	0.127	0.03
Private primary education	0.001	0	0.001	0.001	0.001	0.001	0.002	0.001	0.002	0.002	0.001	0.002	0.002	0
General secondary education and government technical	0.009	0.002	0.013	0.013	0.004	0.059	0.071	0.005	0.018	0.079	0.009	0.061	0.14	0.04
Public secondary education and private technical and professional secondary education	0.002	0.001	0.003	0.003	0.001	0.005	0.007	0.002	0.003	0.007	0.003	0.005	0.01	0
State higher education	0.005	0.001	0.005	0.007	0.003	0.016	0.016	0.003	0.011	0.025	0.007	0.019	0.03	0.01
Private higher education	0.131	0.034	0.277	0.287	0.113	0.414	0.19	0.125	0.387	0.346	0.207	0.471	0.24	0.25
Other public and private education	0.126	0.024	0.273	0.322	0.063	0.271	0.485	0.087	0.277	0.248	0.165	0.464	1.128	0.3
Activities related to government human health	0.081	0.019	0.13	0.067	0.052	0.063	0.069	0.058	0.137	0.275	3.315	0.109	0.076	0.34
Activities related to private human health	0.08	0.02	0.071	0.047	0.067	0.081	0.05	0.058	0.084	0.165	13.375	0.05	0.052	1.09
Social work	0.024	0.005	0.042	0.24	0.046	0.172	0.023	0.018	0.035	0.064	0.176	0.159	0.04	0.08
Art, entertainment, and recreation	0.088	0.024	0.105	0.081	0.083	0.172	0.568	0.131	0.164	0.199	0.118	11.099	0.291	1.01
Religious organizations and membership organizations	0.225	0.048	0.558	2.463	0.536	0.479	1.388	0.161	1.106	0.462	0.409	1.248	11.448	1.58
Other personal service activities	0.024	0.006	0.045	0.197	0.053	0.545	0.285	0.017	0.595	0.133	0.114	0.101	0.368	0.19
total effect	175.19	125.73	56.4	201.26	105.99	238.73	100.18	55.86	56.36	41.22	63.79	128.49	87.94	
direct impact	4.39	3.2	11.48	6.64	16.07	5.82	0.26	0.2	3.34	0.28	13.38	11.1	11.4	
indirect effect	95.61	96.8	88.52	93.36	83.93	94.18	99.74	99.8	96.66	91.72	86.62	88.9	88.55	

Source: Research findings.

The increase in investment in the sectors related to tourism creates different effects on the rest of the sections of the national economy. According to the obtained results on the averaging of the effects, the increase in investment in the aforementioned activities generally has the greatest effect on increasing the value added of wholesale activities, and retail sales, except for motor vehicles and motorcycles, services of residential (private and rented) and non-residential units, and other land transportation in the rest of the national economies.

Summary and Recommendation

The main purpose of this study was to investigate the effects of investment in each of the 13 tourism-related sectors in Razavi Khorasan province and its effects on the economic activities of this province and the rest of the national economies. For this purpose, the effects of the scenario of an increase of 700 billion Rials in each of these activities were evaluated and analyzed on the rest of the activities. With the increase of investment in each of the tourism sectors of Razavi Khorasan Province, the highest amount of value-added created in the province belongs to the increase of investment in the government human health sector, in which the investment creates the maximum total effect in the province. After that, there are activities related to wholesale and retail and administrative activities and support services. In the rest of the national economies, the most value-added created is related to investment in water and air transportation, rail transportation, and residential buildings activities.

Investing in the tourism of Khorasan Razavi province can create many positive effects by investing in the mentioned activities in the economy of the province and the rest of the national economies.

The greatest impact of investment in each of the tourism-related activities in Razavi Khorasan province is in the form of direct effects in the province and indirect effects in the rest of the national economies.

Regarding indirect effects in both regions, investment in residential buildings in both regions has the greatest effect on other ground transportation, which is similar to investing in other buildings as well. Most effects of investment in the wholesale and retail tourism sector are indirect effects on the services of residential (personal and commercial) and non-residential units. Indirect effects of investment in rail transportation in both regions have the greatest effect on administrative activities and support services.

The indirect effects of increased investment in land transportation in both regions are the same for the wholesale, retail, and repair of motor vehicles and

motorcycles and computer and personal goods repair. The indirect effect of investment in the water and air transportation sector is the same in both regions and related to the warehousing sector and transportation support activities. The indirect effects of investment in wholesale and retail activities, except for vehicles and food and beverage activities, are the same in both regions and related to agriculture, horticulture, agricultural services, and food production. The most significant indirect effects of investment in the tourism sector are administrative activities and support services of residential (private and rented) and non-residential units. In both regions, the support services and administrative activities are mostly affected by the indirect effects of investment in rail transportation. The biggest indirect effect of increasing investment in the tourism sector of government health activities of Razavi Khorasan province on the rest of the national economies is related to the creation of value added in the wholesale and retail sectors, except for motor vehicles. The most indirect effect of investment in private healthcare in both regions is related to the service sector of residential (private and rented) and non-residential units.

Investing in tourism sectors in the Khorasan-Razavi province has more indirect effects on wholesale and retail activities, except for motor vehicles and motorcycles in the rest of the national economies. The increase in investment in most of the activities related to the tourism sector in Razavi Khorasan province increases the value-added of wholesale and retail sales in the province and the rest of the national economies, and the share of this increase is much higher in the rest of the national economies.

Therefore, increasing investment in tourism in Razavi Khorasan province as one of the main and most important tourism destinations in Iran has positive and significant effects on increasing the value added for the economy of this province and the rest of the national economies. Especially, investing in public health, wholesale, and retail sectors, except for motor vehicles and motorcycles, administrative activities, and support services in the economy of Razavi Khorasan province, as well as investing in water and air transportation, rail transportation, and residential buildings creates much value added at the level of the rest of the national economies. However, these works have differences according to the type of activity as well as direct and indirect works in both regions. In the meantime, wholesale/retail and other ground transportation are among the activities that are greatly affected by the increase in investment in the tourism sectors of Razavi Khorasan province in both regions. As a result, in the case of appropriate and targeted planning, investment in the tourism sectors of Khorasan-Razavi province

can be the source of an increase in production and income at the regional and national levels.

So, according to the results obtained from this research, the following suggestions are suggested for the development of tourism in Khorasan-Razavi province:

1. Considering the effects of an investment in each of the sectors related to tourism, investing in medical tourism, investing in selling souvenirs, food, and beverages for tourists, administrative and support activities related to the tourism sector, such as the activities of tourism agencies, developing air and rail transportation, and improving the facilities of residential houses rented to tourists can improve the economic situation of the province and the rest of the national economies
2. Considering the positive impact that tourism has had on the economy of Khorasan-Razavi province and the rest of the regions of the national economy, it is recommended to develop it.
3. Due to the wide applications of the multi-regional input-output table, this table can be used to calculate spatial links in the form of internal and external links and to check the policies of price changes in different parts of the regions.

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