Research Article
Investigating Food Export Opportunities of the United State from a Global Perspective: Applying Shift Share Analysis

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Abstract: The paper aims to analyze the exported food data of the United States in order to forecast the future of the export. The export data were collected from export.gov. The U.S. export data on more than forty destination countries, six products, for a period of ten years were collected and analyzed. The shift-share analysis was employed in data analysis. The study was carried out based on the export figures of food products namely, food and kindred products, grain and oilseed milling products, starch and vegetable fats and oils, meat products (except poultry), dairy products and poultry, prepared or preserved. The result of the study gives managers and researchers new insights into future export and market trend based on the previous export data of the products.

Keywords: Food industry, Global marketing, shift share Analysis, the United States of America, the USA

INTRODUCTION

Globalization, which is a buzzword in today's international trade, is easing the process of exports and imports. In case of the saturated domestic market, companies are encouraged by the governments to export the products to boost the national economy and increase the GDP. There are domestic, export, international, multinational and global marketing as stages of marketing evolution (Kotabe and Helsen, 2011) (Fig. 1).

Exporting can be direct and/or indirect and there are government departments and agencies in the U.S. that are in charge of export control. According to ITA (International Trade Administration) (2012a, b) exports of the United States, which were $ 1.83 trillion in 2010, accounts for 12.5% of its GDP. The goal of The USDA (2012) Foreign Agricultural Service (FAS) is to increase export opportunities globally. In merchandise trade, the U.S. was the leading importer and second exporter country in the world in 2010 (WTO, 2011). Taking the above-mentioned facts into consideration, the importance of export for a nation's economy and marketing of to-be-exported products should not be underestimated.

LITERATURE REVIEW

The needs for food and water, which are physiological needs, are placed in the lowest part of the Maslow's pyramid of human needs. (Oleson, 2004) Abraham Maslow's hierarchy of needs can be applied to divide foods into six categories, namely, enough food, acceptable food, reliable and ongoing access to food, good-tasting food, novel food, instrumental food (Satter, 2007). Food plays a vital role in physical well-being and it can be a cause of stress, worry or pleasure (Wilcock *et al*., 2004). Goods (foods) are imported by countries based on the needs and demands of certain categories. The population of the world is predicted to exceed 8 billion by 2025 (McCalla, 1994) and there is a possibility of 10.6 billion people on the earth in 2050 (United Nations, 2004). Since the augmentation of the population will take place in developing countries, the needs for food and probability of importing foods will be boosted in these countries.

In the countries with a growing population, there should be increases in the supplies of foods; otherwise, foods have to be imported from the other countries. Based on the U.S. Census Bureau (2011) the population of the world and the resident population of the United States are 7,002,532,327 and 313,237,915 respectively. The country tends to keep a positive trade balance regarding the volume of export and import. Based on Export.gov (2010), National Export Initiative of the Obama administration aimed to double the U.S. exports in five years. Moreover, to promote exports of food the administration has requested a growth in funding. Throughout the food crises (2007-2008) numerous countries restrict exports, however the United States, one of the main grain exporters, left its border open (Abbott, 2011). In the USA, there are factors that have had impacts on product export such as export restriction and control (Berman and Garson, 1967) and exchange
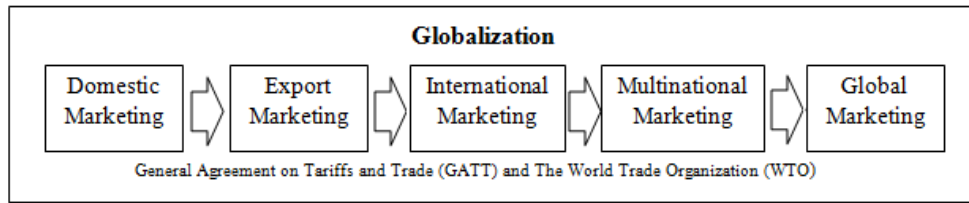
Fig. 1: Marketing evolution in accordance with the undergoing process of globalization

rate (Klein, 1990). The most attractive market for export of the United States food and agricultural products is currently China (USDA, 2012). According to the U.S. Census Bureau (2012) NAICS stands for North American Industry Classification System which is used for classifying business establishments.

METHODOLOGY

In 1960, the shift share analysis was initiated (Stevens and Moore, 1980) and it has been applied in numerous researches for decades afterwards. Green and Allaway (1985) introduced an approach to identify export opportunities by using shift-share analysis. The techniques employed by Russow and Okoroafo (1996) to develop a screening model from a global perspective. Papadopoulos *et al*. (2002) mentioned the fact that shift-share enables researchers to specifically estimate the industry demand. Rubin (2005) applied the analysis as a diagnostic tool to examine export opportunities. As such, shift share analysis was used to assess export opportunities of the United States food products. The formulas which were used by Sazmand-Asfaranjan and Ziaei-Moayyed (2012) to study exports of Malaysian palm oil products, were employed to analyze the collected data.

The series of eight arithmatic formulas used respectively as the methodological tools to conduct the analysis. In order to conduct the first step of analysis (actual change) collected data (12 years) must be divided into two even periods. The first period (from 2001 to 2005) is called initial period and the second one (from 2006 to 2010) is called terminal period. All the calculation processes are on the specified markets for the elucidated periods.

Actual change: Actual change measures the difference in the value of export (VoE) between the terminal and initial period. This formula assists to determine the absolute growth of the specified market.

$$\Delta V = \Delta V0Et - VoEi$$

From this formula three interpretation can be reported: 1) The market export value is declined ($\Delta V < 0$), 2) The market export value is hightened ($\Delta V > 0$) and 3) The market remains unchanged. The result of this formula reports the absolute growth of the market from initial period to terminal period.

Total growth rate: To obtain the total rate of growth ($\propto$) for the specified market (J), the sum of values for initial period and the terminal period will be calculated separately and then by dividing the latter over the former result will be extracted.

$$\propto = \frac{\sum_{j=1}^{m} VoEt}{\sum_{j=1}^{m} VoEi}$$

Expected value: To obtain the result of expected value (EV), total growth rate must be multiplied by export value of initial period. Through this analysis, the expected value for the terminal period will be predicted.

$$EV(VoEt) = \propto (VoEi)$$

Expected change: The expected change will be obtained by calculating the differences between actual value and the expected value.

$$\Delta EV = EV(VoEt) - VoEi = VoEi (\propto - 1)$$

Similarly, this calculation conducted on each market specifically.

Net shift: The diffence between the actual change and the expected value for the export value of terminal period gives the netshift value.

$$\sum_{j=1}^{m} N = \sum_{j=1}^{m} \Delta V - EV(VoEt)$$

Since the amount of Netshift would be equal to zero it can be concluded that there are equal positive and negative netshift values.

$$\sum_{j=1}^{m} N = \left(\sum_{j=1}^{x} N^+\right) + \left(\sum_{j=1}^{y} N^-\right) = 0$$
$$(x + y = m)$$

Total absolute netshift: To obtain the total absolute netshift for assessing the changes in the market only positive netshifts must be considered therefore, the equation for total absolute netshift (β) would be:

$$\beta = \frac{\sum_{j=1}^{m} N}{2}$$

The result of this calculation would be the sum of positive netshifts or the sum of negative netshift. Worth mentioning that the sign of netshift is not important to consider, the essential is the number itself.

Percentage net shift: The below formula shows how to achieve Percentage Net shift (P) after determining the netshift value and total absolute netshift.

$$P = \left(\frac{N}{\beta}\right) \times 100$$

RESULTS

Table 1 indicates the analysis of shift share on six major products within the food industry of the United States of America (USA) based on their absolute growth, percentage of growth, and shift-share (Net-Shift) values. It is worth mentioning that the calculated data in this table are ranked and listed according to their values from high to low. The calculation conducted on the data collected from ITA (International Trade Administration) (2012a, b) for the period of 10 years of export data. To conduct the calculation, the 10 years of secondary data divided into two periods of 5 years which the former period (from 2001 to 2006) is determined as the initial period and the later one (from 2006 to 2010) is considered as the terminal period. For this analysis, we referred to the products based on their North American Industrial Classification system of coding (NAIC). The main reason why we did not use Standard International Trade Classification (SITC) code

is that each Standard Industrial code (SIC) may contain several similar or close products and based on SITC each product should be coded differently under different category however, in NAIC similar product within an industry is formatted under one category.

Based on analysis of shift share (Net-Shift) value, food and kindred products (NAIC 311) with net-shift value of 35.18% had the best opportunity to export. Despite the fact that food and kindred products is not listed among six product categories of percentage of growth analysis, it had the highest growth of export amount with a value of 66,174,842 (in thousand dollars). The second most important category of products for exporting purpose was meat products (except poultry) (NAIC 311611) with the net-shift value of 17.66%. Similarly, although meat products (except poultry) were not listed among six product categories in the percentage of growth analysis column, it had the fourth absolute growth value which was 14,037,109 (In thousand dollars). The third major category of products was starched and vegetable fats and oils (NAIC 31122) with an export opportunity of 11.40% (net-shift value). This category of product had the second best growth rate of 31.96%. Furthermore, it ranked third in terms of value of export (absolute growth) with the amount of 14,347,109.00 (In thousand dollars). The fourth important category of products to consider for the exporting purpose was the grain and oilseed milling products (NAIC 3112) with the export opportunity of 10.50% (net-shift value). This category of product had the third best growth rate with the value

Table 1: Determination and assessment of major products categories

Assessing the Export opportunity of the food industry of USA by dividing the export data to the initial period (2001-2005) and terminal period (2006-2010) (In thousand dollars)

	Absolute Growth			Percentage Growth			Shift Share	
Market	NAIC	Growth ($)	Market	NAIC	Growth (%)	Market	NAIC	Net Shift (%)
Food and Kindred Products	311	66,174,842.00	Dairy Products	3115	41.31	Food And Kindred Products	311	35.18
Grain and Oilseed Milling Products	3112	17,710,550.00	Starch And Vegetable Fats And Oils	31122	31.96	Meat Products (Except Poultry)	311611	17.66
Starch and Vegetable Fats and Oils	31122	14,347,916.00	Grain and Oilseed Milling Products	3112	29.77	Starch And Vegetable Fats And Oils	31122	11.40
Meat Products (Except Poultry)	311611	14,037,109.00	Animal Fats, Oils And By-Products	311613	28.99	Grain and Oilseed Milling Products	3112	10.50
Dairy Products	3115	7,484,527.00	Poultry, Prepared Or Preserved	311615	27.63	Poultry, Prepared Or Preserved	311615	8.85
Poultry, Prepared or Preserved	311615	7,276,085.00	Bread and Bakery Products	31181	26.45	Dairy Products	3115	5.16

Table 2: Calculation based on major destination countries

Assessing the Export opportunity of the food industry of USA by dividing the export data to the initial period (2001-2005) and terminal period (2006-2010) (In thousand dollars)

Products	Absolute Growth (In thousand dollars)		Percentage Growth (%)		Shift Share (%)	
	Country	Growth	Country	Growth	Country	Net Shift
Food And Kindred Products	Canada	20,073,899.00	Morocco	1180.97	China	25.74
	Mexico	13,717,374.00	Vietnam	690.00	Canada	22.68
	China	6,668,070.00	Venezuela	260.24	Morocco	7.38
	Japan	2,507,228.00	China	235.12	Philippines	7.15
	Russia	2,162,968.00	Philippines	221.01	Mexico	5.60
	Philippines	2,042,241.00	Australia	206.39	Venezuela	5.33
Meat Products (Except Poultry)	Canada	3,342,920.00	Vietnam	1519.16	Canada	27.57
	Mexico	3,035,637.00	Philippines	639.07	Russia	14.69
	China	2,195,220.00	Australia	543.79	China	13.51
	Hong Kong	1,239,188.00	Netherland	459.60	Vietnam	11.22
	Russia	1,226,039.00	Russia	434.63	Hong Kong	10.59
	Vietnam	836,908.00	Egypt	403.39	Australia	5.52
Starch And Vegetable Fats And Oils	Mexico	3,604,228.00	Poland	1860.26	Mexico	22.13
	Canada	2,302,712.00	Morocco	1585.99	Morocco	17.39
	China	1,008,144.00	Vietnam	816.97	Venezuela	13.58
	Venezuela	889,578.00	Venezuela	425.68	China	13.37
	Morocco	865,205.00	China	346.06	Vietnam	7.40
	Philippines	766,085.00	Colombia	333.73	Colombia	6.78
Grain and Oilseed Milling Products	Mexico	4,429,270.00	Poland	1611.22	Morocco	19.08
	Canada	3,566,047.00	Morocco	1591.55	China	15.89
	Japan	1,045,517.00	Vietnam	816.37	Mexico	14.86
	China	1,039,097.00	Venezuela	395.65	Venezuela	14.63
	Venezuela	880,664.00	China	346.82	Korea	10.06
	Morocco	868,542.00	Korea	290.13	Vietnam	8.26
Poultry, Prepared or Preserved	China	2,123,521.00	Vietnam	1609.75	China	51.28
	Mexico	1,274,199.00	Iraq	1163.77	Iraq	7.44
	Canada	648,424.00	China	703.97	Vietnam	6.22
	Russia	529,808.00	Congo	566.83	Lithuania	6.12
	Cuba	334,540.00	Afghanistan	495.95	Cuba	5.42
	Ukraine	313,500.00	Lithuania	404.10	Ukraine	5.12
Dairy Products	Mexico	1,988,507.00	Morocco	23701.97	Indonesia	13.48
	Canada	739,249.00	Russia	1300.27	China	12.82
	China	598,366.00	Egypt	1179.86	Egypt	11.92
	Indonesia	508,952.00	Bangladesh	605.19	Morocco	9.04
	Philippines	492,089.00	Pakistan	486.55	Russia	7.88
	Japan	359,497.00	Netherlands	434.42	Vietnam	7.62

of 29.77% while according to its absolute growth it ranked second with the export value of 17,710,550.00 (In thousand dollars). The other two remained categories of products are poultry, prepared or preserved (NAIC 311615), and Dairy Products (NAIC 3115) with the net-shift values of 8.85% and 5.16% respectively. The fifth percentage growth with value of 27.63% belonged to poultry, prepared or preserved category while this category of product accounted as the sixth major group according to its export value of 7,276,085.00 (In thousand dollars). Although the dairy product has the lowest percentage of net-shift, it is accounted for the highest percentage of growth (41.31%). Moreover, this category of products ranked fifth based on its export value of 7,484,527.00 (In thousand dollars).

Animal fats, oils, and, by-product category (NAIC 311613) and bread and bakery product category (NAIC 31181) have the fourth (28.99%) and sixth (26.45%) percentage of growth respectively however; they were not counted as the major products based on their net-shift and absolute growth analysis.

Table 2 enlightens the major destination countries for exporting purposes according to the six major product categories determined in Table 1.

In terms of exporting food and kindred products (NAIC 311), China had the highest net-shift value of 25.74% followed by Canada (22.68%). China has 235.12% growth while, Canada had not shown a significant percentage of growth compared to the other five major destination countries. The analysis of absolute growth (export value) revealed the fact that

Canada ranked first and China ranked third with the values of 20,073,899.00 and 6,668,070.00 (In thousand dollars) respectively. The net-shift analysis made clear that although Morocco (7.38%), Philippines (7.15%), Mexico (5.60%), and Venezuela (5.33%), are determined major among destination countries worldwide, they are not as prominent as China and Canada. Nevertheless, Morocco, which had the third net-shift value, had the highest rate of Growth (1180.97%), though it was not a major country based on the absolute growth analysis. Philippines which had the fourth net-shift value, was regarded as number five in terms of percentage of growth (221.01%) while this country had the absolute growth of 2,042,241.00 (In thousand dollars). Mexico, which ranked fifth according its net-shift analysis, posited itself as a second major country in terms of growth rate of export opportunity with the value of 13,717,374.00 (In thousand dollars), although not listed as a major country based on percentage growth. Venezuela with the lowest value of net-shift, owned the third percentage of growth (260.24%), though not listed as a major country according to absolute growth analysis. The other two countries, Vietnam and Australia, had the second (690%) and sixth (206.39%) percentage of growth while not listed elsewhere in the calculation for this product category. Japan and Russia also major only in terms of absolute growth with values of 2,507,288.00 and 2,162,968.00 (In thousand dollars).

In meat products (except Poultry) category (NAIC 311611), Canada with the outstanding net-shift value of 27.57% ranked first. Furthermore, this country had the highest export value of 3,342,920.00 (In thousand Dollars), though not listed as a major destination country regarding the percentage of growth analysis. Russia had the second best net-shift (14.69%) followed by China (13.51%), Vietnam (11.22%), Hong Kong (10.59), and Australia (5.52%).

Although Russia owned the second best shift-share (net-shift) value, it ranked fifth (434.63%) of according to growth percentage analysis, and absolute growth (1,226,039.00 in thousand dollars). China, which had the fourth rank of net-shift value, was only listed as a major country according to its absolute growth with the value of 2,195,220.00 (In thousand dollars). The highest percentage of growth belonged to Vietnam (1519.16%) with absolute growth of 836,980.00 (In thousand dollars) which showed its high potential to grow in future. Hong Kong, which was number five among major destination countries based on their net-shift value, had the export value of 1,239,188.00 (In thousand dollars). Australia as the last major countries according to its net-shift value was listed as the third best regarding its percentage of growth (543.79%), though not determined as one of the major countries based on its absolute growth. Philippine, Netherland, and Egypt only showed a significant growth rate of

639.07%, 459.60%, and 403.39% respectively. Mexico also indicated its significant absolute growth of 3,035,637.00 (In thousand dollars) by owning the second best rank in this case, though not elsewhere mentioned as a major country in this category of products.

In the starch and vegetable fats and oil category of products (NAIC 31122), Mexico had the highest value of Net-Shift (22.13%) and absolute growth of 3,604,228.00 (In thousand dollars). The next one, according to net-shift analysis from high to low, was Morocco with the value of 17.39%. This country had the percentage of growth of 1585.99% (ranked second) and absolute growth of 865,205.00 (In thousand dollars). After that, Venezuela posited itself in third place according to its net-shift value of 13.58%. This country had 425.68 percentages of growth and demonstrated the absolute growth in 889,578.00 (In thousand dollars). China with the net-shift value of 13.37% ranked fourth. This country had rate of growth of 346.06% and export value (absolute growth) of 1,008,144.00 (In thousand dollars). Vietnam and Colombia although not significant according their net-shift values (7.40% and 6.78% respectively) among major countries, were still on the edge compared to other countries (not-major countries) worldwide. These two countries had percentage of growth of 816.97% and 333.73% respectively, though they were not believed to be as the main destinations in terms of their absolute growth analysis. The growth percentage of Poland was the best one (1860.26%) despite the fact that this country did not show a significant net-shift value and absolute growth. Canada and the Philippines were only considered major regarding their export values of 2,302,712.00 (In thousand dollars – ranked second) and 766,085.00% (In thousand dollars – ranked last).

In the grain and oilseed milling category of products (NAIC 3112), Morocco had the highest net-shift value of 19.08% with the percentage of growth of 1591.55 (ranked second). In addition, this country had the absolute growth of 868,542.00 (In thousand dollars). China with second best net-shift value of 15.89% posited itself as the number fifth according to its rate of growth (346.82%). This country ranked fourth in terms of export with the value of 1,039,097.00 (In thousand dollars). Mexico with net-shift value of 14.86% had the best absolute growth 4,429,270.00 (In thousand dollars). The next best country regarding its net-shift value, was Venezuela (14.63%) followed by Korea and Vietnam with the value of 10.06% and 8.26% respectively. Venezuela demonstrated the percentage of growth of 395.65% and absolute growth of 880,664.00 (In thousand dollars). Korea's percentage of growth was 290.13% while for Vietnam the rate of growth was 816.37%. Although Poland did not show itself among major countries regarding net-shift values,

it had the best percentage of growth (1611.22%) for this product category. Moreover, Canada and Japan also had the second (3,566,047.00 in thousand dollars) and third (1,045,517.00 in thousand dollars) best absolute growth however; they did not have a significant net-shift value.

As for the poultry, preserved or prepared category of products (NAIC 311615), the best market opportunity belonged to China with the net-shift value of 51.28%. This country was the largest importer with the absolute growth of 2,123,521.00 (in thousand dollars). Comparatively, the other major countries illustrated the lower market opportunity. These countries were Iraq, Vietnam, Lithuania, Cuba, and Ukraine with net-shift values of 7.44%, 6.22%, 6.12%, 5.42%, and 5.12% respectively. The best market growth belonged to Vietnam and Iraq with the growth percentage of 1609.75%, and 1163.77% respectively. Then China (703.97%), Congo (566.83%), Afghanistan (495.95%), and Lithuania (404.10%) exhibited their growth percentage as major destination countries. The second best importer in terms of value is Mexico with the amount of 1,247,199.00 (In thousand dollars) followed by Canada, Russia, Cuba, and Ukraine with the value of 648,424.00 (In thousand dollars), 529.808.00 (In thousand dollars), 334,540.00 (In thousand dollars), and 313,500.00 (In thousand dollars) respectively.

As for the dairy products category (NAIC 3115), Indonesia had the best market opportunity for importing purposes with the net-shift value of 13.48% followed by China and Egypt as the second and third best destination countries with values of 12.82% and 11.92%. Morocco, Russia, and Vietnam had the import opportunity of 9.04%, 7.88%, and 7.62% respectively. However, the highest growth rate belonged to Morocco with 23701.97% increase and then to Russia with growth of 1300.27%. The growth rate of other major destination countries, which were Egypt, Bangladesh, Pakistan, and Netherland also enhanced by 1179.86%, 605.19%, 486.55%, and 434.42% respectively. In terms of value of export, the largest growth referred to Mexico with the value of 1,988,507.00 (In thousand dollars) followed by Canada, China, Indonesia, Philippines, and Japan with absolute growth in 739,249.00 (In thousand dollars), 598,366.00 (In thousand dollars), 508,952.00 (In thousand dollars), 492,089.00 (In thousand dollars), and 359,497.00 (In thousand dollars). In this category of products, despite the low amount of export compared to other major products, regarding absolute growth, there is an extremely high growth rate, which elucidates the fact that this category, in the future might be a very good source of export opportunity, especially to distinguish major destination countries.

CONCLUSION

Within the six specified product categories, according to Table 1, food and kindred products (NAIC 311) compared to the rest, has the outstanding Net-shift value, which indicates the high opportunity of export. Additionally, it has the best absolute growth, which indicates the high value of export. Within this product category, it is advisable to consider the high export opportunity to China and Canada and the large amount of export to Canada, Mexico and China. On the other hand, Morocco also has a noticeable growth showing its great potential to become a major importer in upcoming years. Meat products (except poultry) (NAIC 311611), and starch and vegetable oils and fats (NAIC 31122), have the second and the third best opportunity to export. In the former, the best export opportunity belonged to Canada with the largest export value while the highest growth went for Vietnam indicating the attractiveness of Vietnam for exporting purposes. In the latter, Mexico has the highest value and highest opportunity to import while Poland pointed out its noticeable growth showing its great potential to become a major importer in upcoming years. In Grain and Oilseed Milling Products' category (NAIC 3112), it seemed that although the best opportunity to export belonged to Morocco and China, the highest value of export belonged to Mexico and Canada. Furthermore, Morocco and Poland have shown a significant parentage of growth, which illuminate that probably these two countries are willing to consume more of these products in following years. In poultry, prepared or preserved product category (NAIC 311615), the insatiable consumption of China as a dominant destination country is undeniable. Moreover, Vietnam and Iraq are destination countries who have a high growth rate and perhaps in the future they become highly prominent. In dairy products category (NAIC 3115), Indonesia had the highest opportunity for the exporting purposes however, Mexico had the largest amount of import. It is notable to say that Morocco has highlighted itself with the highest growth rate.

Comparatively speaking, according to Table 1, meat products are still more popular and has the more export opportunity than vegetable products and dairy products however; growth percentage analysis revealed the fact that dairy products and starch, vegetable, oils and fats products, and grain and oilseed milling products will supersede meat products in future. It can be argued that regarding the healthier nature of these categories of products compared to meat products and more awareness of people in terms of ingredients and importance of dairy products, vegetables, oilseeds, there would be more demand in future for consumption.

DISCUSSION AND MANAGERIAL MPLICATION

It seems that marketers should comprehensively assess and monitor these products' markets and consumption patterns of the countries for exporting purposes. The trend shows that no market saturation in destination countries has happened so far however, the attractiveness of these industries leads companies to invest more in order to gain good returns on their investments. Therefore, late movers cannot position themselves very well in the highlighted market and may face an intense rivalry and saturation, consequently sustainability becomes tougher for them.

According to this paper it can be explained that countries like Canada, and Mexico and China all have comparative advantage and that is why these destination counties to some extent had higher amount of growth, higher opportunity, and higher export value. The attributions that may cause the uniqueness of these destination countries are geographical location, transportation costs, and population, to name a few. However, regarding the current oil crisis worldwide with direct impact on transportation costs, a higher cost of transportations is expected.

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