FOREIGN INVESTMENT LOCATION
SCREENING USING AN INVESTMENT INDEX

by

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ABSTRACT

The purpose of this research was to develop a decision tool to identify and rank potential locations for making a greenfield investment in flour milling. The driving characteristics of the tool developed are transparency, reproducibility, specificity and clarity. Currently, the approach to selecting countries in which to invest is driven purely by ad hoc frameworks that often lack the characteristics driving this investment index tool.

The investment index was designed to have three main components: market conditions, economic environment and supporting infrastructure. Market conditions for the product of interest – in this case flour – were defined to encompass per capita wheat-based food consumption growth rate, wheat production versus wheat consumption and wheat flour imports growth rate. The economic environment was defined to incorporate the growth rate of per capita gross domestic product, corporate tax rate , labor productivity, foreign direct investment growth rates, position on the World Bank's *Doing Business 2012* rankings, and the number and extent of the country's membership in regional economic and trade groups. Supporting infrastructure included electricity reliability, transportation quality, urbanization rate and the physical presence of the investing company in the country. The rationale for this last variable is that when the investing company already has a presence in the country under consideration, it has already incurred some of the hurdle costs that it would have to include in investments in a location where it does have current physical activities.

The study started by filtering the scope of potential opportunities by a set of well-defined criteria: target geographical locations; *Doing Business 2012* scores; and quantity of

wheat flour imports in 2009. This led to four countries emerging as leading candidates for investment considerations: Brazil, Malaysia, Indonesia and Thailand. The investment index ranked these countries according to their relative suitability for investment.

The three components of the index carry different weights because of their effect on the potential investment outcome. There is no data to support these weighting and therefore executives must utilize different probing approaches to weight the components. To this end, a base scenario and two other scenarios based on alternative weights were considered. The robustness of the ranking is revealed by the consistency of the rankings under the alternative weights applied to the components.

The results showed that under the base scenario Malaysia had the highest investment index score. The results also showed that varying the alternative weights for the scenarios did not affect the overall outcome with Malaysia leading with the highest overall index score for each of the three scenarios.

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CHAPTER I: INTRODUCTION

1.1: Situation

Cargill's vision is to be the global leader in nourishing people. Headquartered in Wayzata, MN, Cargill has assets that support that vision; there are approximately 140,000 people and have operations in 63 countries. Agriculture, food production, financial and the processing industries are all touched by Cargill businesses. The company's strategy is based on customer service and its mission is to become the partner of choice by providing innovative solutions to customers. In order to achieve these lofty goals, Cargill must continually look at global expansion opportunities that leverage its assets and enhance its production efficiencies. The importance of achieving this vision is underscored by increasing population, increasing income and increasing urbanization in developing countries changing the demands for food products (World Bank, 2010). Opportunities for expanding operations in the developed world have essentially become incremental as population and economic growth stagnates in the developed world.

Cargill's flour milling assets operate in Australia, South America and North America. The mills in Australia are operated through a joint venture with Graincorp, called Allied Milling, which operates three mills to help supply the flour needs of the Australian population. In South America, Cargill's flour mills operate primarily in Argentina and Venezuela under Flour Mercosur, a result of the merger between Cargill and Molonis Rio de la Plata in 1999. In North America, Horizon Milling is a joint venture between Cargill and Cenex Harvest States. Horizon Milling is the leading manufacturer of wheat products, including whole wheat flour, durum and semolina flour and bakery flours as well as specialty products for customers in the food processing and foodservice industries through

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its 21 flour mills and four bakery/mix production plants in North America. Additionally, Horizon Milling produces private-label flours for the retail market and exports products worldwide. Horizon Milling accounts for about 19% of the U.S. flour market.

According to Cargill's 2012 Annual Report, 2013 non-base capital spending will be utilized for greenfield projects, including acquisitions. Currently, Cargill has no flour milling operations in Asia or Africa, the regions with the fastest growing populations and incomes. While it may make sense to argue that these regions can be supplied efficiently from other locations, the reality is that there are locational advantages if the economic case can be made to seize them. Without a careful exploration of the potential opportunities available in locations that Cargill and its Horizon Milling investments currently have little to no footprint, the company risks missing out on the potential to achieve its vision, at least in the most effective manner.

1.2: Research Problem and Question

This research specifically looks at the opportunities for growth in Horizon Milling's business with a primary focus on Africa and Asia and a secondary focus on South America. This direction is driven by the inherent market opportunities presented by these locations. For example, according to UN Department of Economic and Social Affairs (2004), Africa's population is projected to grow by 1.0 billion people by 2050 and Asia is projected to add another 1.5 billion people over the same period. Thus, these two regions alone will account for some 83.3 percent of the 3 billion new people expected in the world by 2050. Contrarily, Latin America and the Caribbean are projected to only add another 250 million people by 2050 (a mere 10 percent of Africa and Asia), according to the same source. The research problem encompasses the process that allows the selection of a location to make investments in flour milling that would take the most advantage of these observed trends in

the global marketplace. The challenge is to develop a tool that will help decision-makers in all sectors make transparent, clear and objective decisions about where they should make investments in their operations to maximize their return on investment.

To this end, the research question addressed by this research is this: How do Cargill and Horizon Milling select a location for the expansion of their flour milling facilities to seize upon emerging market opportunities in the most effective manner while ensuring their ability to sustain and enhance their competitive advantage? What tool can they use in this selection process such that their decision is transparent, reproducible, specific and clear?

1.3: Objectives

The overall objective of this research is to identify a country or a country within a region that would provide the right production and marketing environment to create a profitable investment location for Horizon Milling's expansion outside North America. The selection of the investment location should also recognize Cargill's vision of becoming the global leader in nourishing people. The specific objectives are as follows:

1. Conduct a scan of the international flour industry and assess the flour trade flow data to determine the countries and regions with the highest import replacement opportunities given their locational resource endowments.

2. Select the "best" countries for the investment based on pre-determined economic and social characteristics as well as the fit between these and Cargill's guiding principles.

3. Create an investment index to use for comparison of each of the countries studied using supply and demand characteristics for wheat and wheat flour, the economic environment of each country and the infrastructure available for the market.

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1.4: Methods and Approaches

The research used two principal methods to achieve the foregoing objectives. First, it conducted a statistical scan of the critical variables contributing to the successful investment in flour milling in a particular location to facilitate the ranking of countries on the basis of their statistics. Second, it developed an investment index that encompasses those critical variables with the relevant weights to provide a simple tool to facilitate decision-making.

The research used secondary data from numerous sources to achieve its objectives. For example, country demographic and economic information from World Bank and trade data from U.S. Department of Agriculture's Foreign Agricultural Service were used in the assessment of country potential. Additionally, information on access to raw material and labor, transportation and other infrastructure were collected from trade publications, government reports and academic documents.

CHAPTER II: WHEAT AND FLOUR USAGE

This chapter provides an overview of the product environment. It provides a global

assessment of the wheat and flour supply and demand conditions and focuses on the market

opportunities in particular areas to begin focusing on the potential associated with making a

foreign direct investment (FDI) decision to build a flour mill. FDI decisions by

multinational companies are important in the global trade scheme and benefits are realized

by both countries involved in the investment outlay. Any time a company is investing in a

new market, it requires the company to utilize capital and cash flows that could be used

elsewhere, so it is important for the firm to do a thorough analysis prior to any investments.

There is also inherent risk in the investment process, particularly when entering a new

market as proposed with this thesis. The uncertainty of future sales as well as the time

before the investment becomes profitable is very important to understand in the decision

making process. The thrust of the chapter's argument is that the gap between demand and

supply provides the primary rationale for considering investments in any particular country

or region. This is driven by the assumption that the gap in demand and supply is indicative

of the state of competition in the market and provides some insights into how a strong and

compelling business plan could lead to significant performance.

2.1: Wheat Production Trends

Optimal wheat growing temperature is 25 degrees Celsius, although it will grow

between four degrees Celsius and 30 degrees Celsius. The major wheat grades planted are

a combination of hard and soft, red and white, and spring and winter wheat or durum

wheat. Climatic conditions, soil quality and water availability dictate the types of wheat

grown in particular areas. Global harvested area for wheat was 221.7 billion hectares in

2011, up from 218.3 billion hectares the year before and more than the projected 219.79 billion hectares in 2012. (USDA ERS 2012)

In 2009, 65 percent of wheat produced was used for human food consumption, 17 percent was used for animal feed and the remaining 18 percent went to other usages, such as biofuel production and seed. Wheat is not a main food ingredient for animals, however with the increasing world demand for meat products as income levels raise, the need for additional feed stocks increases.   World livestock inventories have continually increased over the last ten years and they are expected to continue to increase with population growth.   Over the last 20 years, wheat feed use has grown 1.1 percent per year. However, this growth is 3.1 percent when only the last ten years are considered. Wheat production has grown 1.1 percent over the past 20 years due to increasing yields as harvested area remains relatively unchanged. Production is expected to continue to increase as demand increases with population growth. Yields will also be continually challenged when looking at additional area for planting to meet the future crop demand. Table 2.1 shows world wheat harvested area, yields, production, feed use and exports from 1992 through projections for 2012.

Figure 2.1 shows the trend in world wheat stocks over the past 20 years. The figure shows that stocks have been trending downwards since the late 1990s and reached their lowest levels in 2007. The primary causes of this trend were growing global demand, poor weather conditions in principal growing regions and high corn prices due to the growing ethanol market in the United States and other places   (USDA ERS 2012). Although the trend in world ending stocks has started going up since then, the outlook remains dim as the

global weather conditions and competition for resources from biofuel crops remains strong.

This is depicted in the figure with the emerging downward trend in the post-2008 period.

Table 2.1: World Wheat supply trends

Year	Area Harvested (million hectares)	Yield (MT/hectare)	Production (MMT)	Feed use (MMT)	Domestic disappearance (MMT)	Exports (MMT)
1992	222.061	2.53	562.634	111.589	547.703	110.04
1993	221.044	2.53	558.47	109.571	552.984	183.36
1994	213.326	2.45	523.031	101.359	542.139	98.215
1995	216.715	2.48	537.516	95.212	546.085	99.195
1996	227.132	2.56	581.47	99.642	573.391	106.19
1997	226.437	2.69	610.232	103.838	576.748	104.41
1998	219.239	2.69	590.436	106.816	578.32	101.3
1999	212.793	2.76	586.839	102.746	585.471	113.47
2000	215.74	2.7	583.075	108.75	586.711	101.53
2001	214.531	2.72	583.552	109.404	586.486	105.92
2002	213.788	2.66	569.597	113.745	604.522	105.67
2003	207.797	2.67	555.271	99.093	588.931	108.64
2004	216.104	2.9	626.673	108.695	606.281	111.45
2005	218.722	2.83	618.806	114.775	621.246	117.23
2006	212.231	2.81	596.112	110.092	615.694	111.88
2007	217.14	2.82	611.852	102.132	617.628	117.3
2008	224.562	3.04	682.754	121.186	643.11	144.53
2009	225.821	3.04	686.189	119.757	653.445	137.22
2010	218.344	2.98	651.14	116.328	654.458	132.43
2011	221.676	3.13	694.687	147.157	694.743	150.4
2012	219.79	3.03	665.326	130.328	680.061	134.71

(USDA ERS 2012)

Figure 2.1: World Wheat Ending Stocks (million metric tonnes)
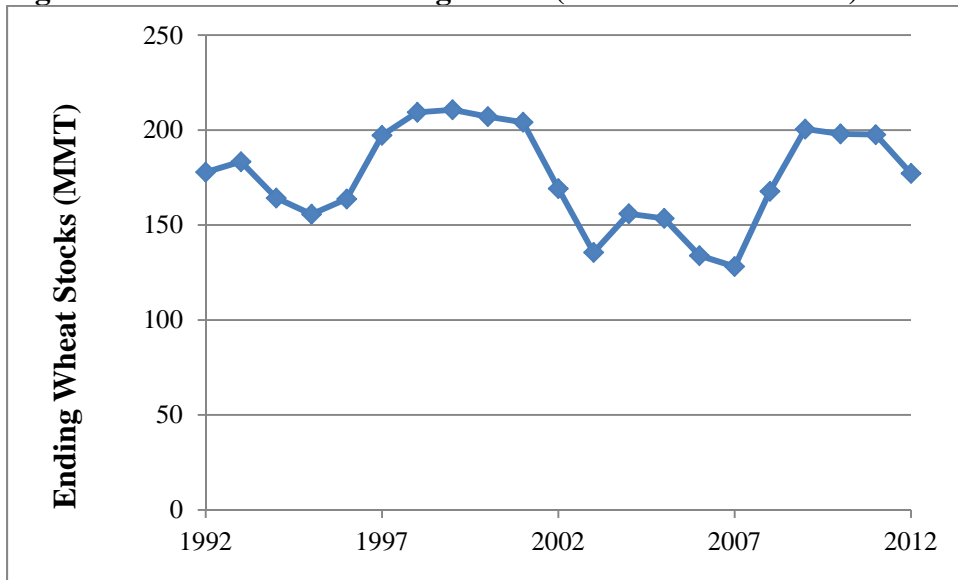
(USDA ERS 2012)

The above conditions created an environment for food prices to soar significantly. From 2007 to 2008, wheat prices increased by 120 percent to reach an all-time high price of $386 per metric ton (USDA ERS 2012). These price increases led to rioting and political unrest in many countries as the poorest felt the increase the hardest. In 2010, Russia banned all wheat exports, in effect removing ten percent of the previous year's export supply from the global market, and contributed to another spike in wheat prices. While wheat prices were relatively stable in the spring of 2012, CIMMYT (2012) predicted that increases in demand for wheat in developing countries combined with a reduction of wheat production in developed areas due to climate change will contribute to prices increasing by more than double current values.

According to the most recent FAO statistics (2010), imported quantity of wheat was 144,326,072 MT and exported quantity was 145,158,611 MT in 2010. The top-10 wheat producers in 2010 are presented in Table 2.1 with China, India, the United States, Russia and France being the top-five producing countries and accounting for 52 percent of the

world's wheat production in that year. China alone accounted for 18 percent of the global wheat supply in 2010.

Table 2.2: Top Wheat Producing Countries in 2010

Area	Production (MMT)
World	653,654,525.00
China	115,181,303.00
India	80,800,000.00
United States of America	60,062,400.00
Russian Federation	41,507,600.00
France	40,787,000.00
Germany	24,106,700.00
Pakistan	23,310,800.00
Canada	23,166,800.00
Australia	22,138,000.00
Turkey	19,660,000.00

(Food and Agricultural Organization, 2010)

The largest exporters of wheat are the United States, France, Canada, Australia and Russia and the largest importers are Egypt, Italy, Brazil, Japan and Netherlands. According to the Food and Agricultural Organization/ Economic Cooperation and Development (FAO-OECD) Agricultural Outlook 2009-2018, world wheat production and trade is expected to continue an upward growth trend. The Black Sea area countries of Kazakhstan, Ukraine and Russia are expected to see an increase in wheat exports over the next ten years, according to the USDA. (USDA ERS 2012)

Population growth conditions in developing countries in Africa and Asia will contribute to the increased demand for wheat. In developing countries, per capita consumption will maintain current levels, however rising incomes in countries like Indonesia and other newly industrialized countries will factor into the expected increase trade in wheat despite a slight decline in overall world wheat per capita consumption,

which is declining at 0.48 percent per year over the last 10 years (Food and Agricultural Organization, 2009). For all intents of this paper, wheat food consumption is considered equivalent with flour consumption due to the minimal other uses of wheat as a food product. According to the United States Department of Agriculture's Economic Research Service (USDA/ERS), approximately 97 percent of wheat used as a food product is wheat ground for flour production. (USDA ERS 2012)

2.2: Flour Consumption

Wheat is milled to meet customer specifications and processed into baked goods, noodles, tortillas, cakes, pastries and pastas for human consumption. Wheat flour proteins typically range from 8.0 to 11.0 for soft wheat and 9.0 to 14.0 for hard wheat. Higher protein hard wheat flour is used for leavened breads like French bread or pan-type sandwich breads. There is typically a higher gluten content, which gives the baker more flexibility in water absorption and kneading during the production process with higher protein flour. Unleavened products such as noodles, tortillas and chapatti utilize a medium to low protein hard wheat flour. Cakes, cookies and pastries are made with soft wheat flour, which is very low in gluten strength and requires high amounts of sugar and fat in the recipes for proper formulation.

A 2007 consumption trends analysis of the FAO data for wheat indicate significant variation among Asian countries, with Bangladesh exhibiting the lowest per capita consumption of 14.7 kg/capita and United Arab Emirates the highest at 204.16 kg/capita. Flour products consumption is of pan breads and flat breads like naan and pita in Eastern Asian countries, while in western Asian countries the population is more likely to eat flour in the form of noodles, and they are sold in boiled, instant and wet forms. Western style pan breads and cakes can be found in Japan, Indonesia, Malaysia and Thailand.   Other

popular foods made with flour include chapatti in India and surrounding countries, Chinese-style steamed dumplings and buns, dim sum, cookies and crackers. In wheat consumption trends, Vietnam has had the highest growth in consumption over a 10 year period, increasing by 9.07 percent per year over the last ten years, however its consumption is the second lowest in Asia, at 14.79 kg/capita. Per capita flour consumption in Indonesia alone increased 33 percent over a 10 year period, and a new flour mill is being installed in Jakarta by Toyota in partnership with a Malaysian flour milling company. According to Toyota, "a review of the flour mill market in this country reveals that the consumption of wheat flour is growing steadily, while the traditional food culture of rice still remains (Schroeder 2011)."

Like Asian trends, consumption varies widely throughout Africa. Estimations using FAO data show that Tunisia had the highest per capita consumption in 2007 at 201.69 kg/capita/year and Burundi has the lowest at 2.01 kg/capita/year. The highest consumption growth rates are occurring in Africa with Uganda's flour consumption increasing at 16 percent over the last ten years; however consumption is low at 10.5 kg/capita/year. As population growth is seen in Africa, a shortage in dietary protein needs can be met with the addition of wheat protein into flour based products (Faridi and Faubion 1995). Popular African foods made from flour include pan breads in more urban areas and flat breads like naan and pita in rural areas in North Africa around Egypt and Tunisia. Because sub-Saharan Africa does not have a reliable food production and imports a majority of its flour needs, flour based products can be relatively expensive.

South American flour consumption is higher in countries with European backgrounds like Argentina, Chile and Uruguay. According to the FAO data for 2007, the

highest flour-consuming country in South America is Uruguay, with 122.58 kg/capita. In

Argentina, the third largest flour exporter in the world, per capita consumption is 87.51

kg/capita and consumption is declining while exports are increasing. In South America,

Paraguay's per capita flour consumption is growing at 4.39 percent and its consumption is

27.92 kg/capita, the lowest of South American countries. Breads, crackers and pastas are

the main products consumed in South American countries.

2.3: Flour Supply and Demand

Flour is also traded on the world market, but not to the extent of wheat. It is often

more costly to transport flour as a finished product than it is to transport wheat as a raw

commodity. The leading flour exporters are Kazakhstan, Turkey, Argentina, France and

Germany and the leading flour importers are Uzbekistan, Iraq, Indonesia, Brazil and the

Netherlands. Flour imports have grown four percent over the last ten years and exports

have grown three percent over the same period. (Food and Agricultural Organization,

2010).

For investment decisions in flour milling, it is important to know where areas of

supply and demand are for wheat flour specifically. Table 2.3 shows the rate of growth for

flour imports from 2001 to 2010 for the top importing countries in Africa, Asia and South

America from 2010. These countries have a lack of supply of flour being produced within

the country and offer a competitive advantage for any company looking into flour milling

expansion as there is a demand for product. The next chapter will look into differentiating

the investment decision to allow for the highest potential country to be chosen.

Table 2.3: 2001-2010 Wheat Flour Import Growth Rate

Country	Import Growth Rate
Iraq	42.0%
Uzbekistan	33.8%
Brazil	29.3%
Malaysia	26.0%
Canada	23.0%
Tajikistan	20.1%
Thailand	15.0%
Bolivia	11.4%
Indonesia	11.3%
Angola	6.9%

CHAPTER III: DEVELOPING THE INVESTMENT INDEX

3.1: Methods

To facilitate the research objective of determining the recommended country for expansion opportunities, an analysis was conducted of the key factors impacting investment decisions and an investment index was created. The investment index aims to provide a quick indicator of the attractiveness of particular countries for further in-depth feasibility assessment. It is defined to comprise three principal components; (Figure 3.1) market conditions, economic environment, and supporting infrastructure for flour milling and distribution.

Figure 3.1: Component Segments of the Investment Index Tool
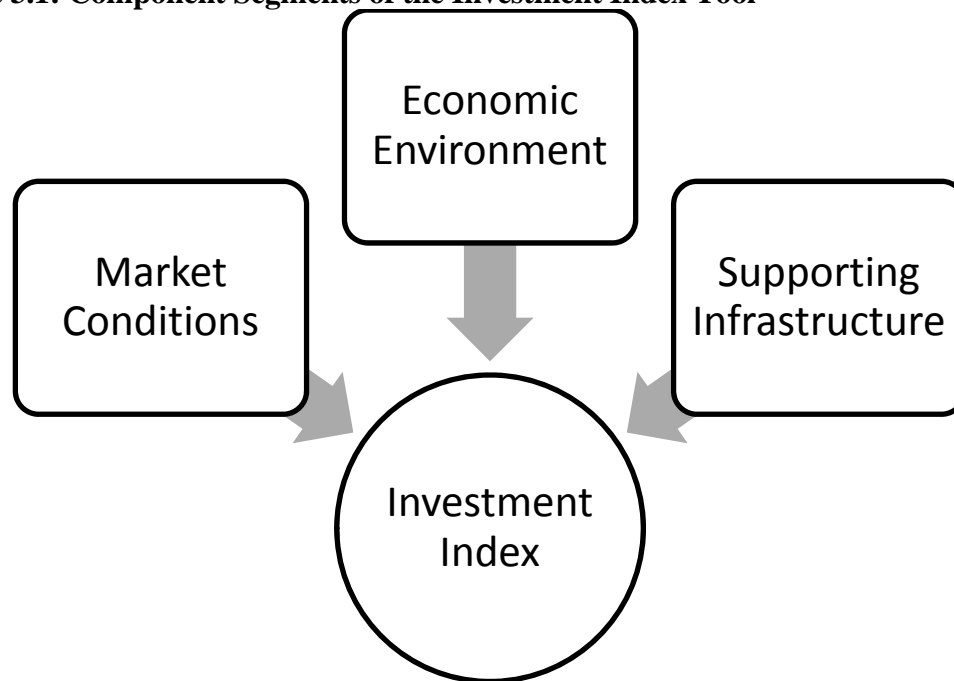
Market conditions assess the supply and demand conditions for wheat and flour, focusing on the gaps between them and their respective growth rates. The criteria used for assessing the market conditions are per capita wheat-based food consumption growth rate as it gives a picture of consumption trends. Wheat production was compared to wheat

consumption to show the gaps in existing production and wheat flour imports growth rate is also considered as it gives the researcher a metric for determining the existing competitive environment for supply.

The overall economic environment is a critical variable defining the attractiveness of investing in any country. The overall economic environment is defined to encompass consumer incomes, using the growth rate of gross domestic product per capita as an indicator. Other variables considered in the overall economic environment assessment are the country's tax rate on profits, labor productivity, foreign direct investment growth rates and the number and extent of the country's members in regional economic and trade groups. The reason for the membership factor is that it provides an indication of the opportunity to export products from the country into the region under favorable trade conditions. Also, the attractiveness of the country as a destination of foreign investment as indicated by the World Bank's "Doing Business 2012" ranking is used to evaluate the overall business environment.

The supporting infrastructure available in the country provides a foundation for the successful implementation of a flour manufacturing and marketing organization. It is defined to encompass the availability of reliable electricity, transportation network system, and an existing presence of Cargill's activities. Given that flour is a bulk product and requires the use of bulk inputs (i.e., wheat), an effective transportation system facilitates both raw material inbound and manufactured product outbound effectiveness. Port, rail and road facilities allow quick and easy movement of imported wheat (so that the lack of wheat production does not become a constraint for a potentially successful flour milling operation) and the effective distribution of finished flour products into the most lucrative

markets in the country and the region if deemed sensible. The strength of the transportation network allows the location of the mill to be determined solely by the most effective plant location economics. Electricity is the life blood of the modern processing facility and its reliability defines the operational efficiency of any manufacturing plant, hence, the inclusion of electricity and its reliability is an important part of the supporting infrastructure component of the Investment Index. Additionally, urbanization was included in this component due to the effect of the location of population with respect to the production facility.

For each of the thirteen variables in the three components, an assessment is made of its value through a rating. The more favorable the measure, the higher the rating the variable receives. These ratings were determined by the author based upon the data being analyzed and are subject to bias. To make this operational in an organization, the Delphi technique may be used to turn the subjective rankings into an objective ranking. The background information used by the author for this research will be provided to each of the participants to facilitate a conversation and each person will add their own biases to come up with a consensus ranking. The ratings are framed between zero and 10 for each of the variables to provide a boundary for estimating the Investment Index. The overall Investment Index is a weighted sum of all the scores accruing to each country under the identified components. The relative impact of the three components on the Investment Index is unknown. As such, the analysis involved the estimation of the Investment Index under alternative weight distributions to determine the robustness of the rankings that were revealed by the index. The scenarios and their related weights are discussed later in Section 3.3 of this chapter. The next section provides the underlying assumptions

supporting the development of the Investment Index to facilitate the ranking of selected

locations for further and in-depth feasibility assessment.

3.2: Investment Index Components

3.2.1: Market Conditions

The key variables defining the market conditions' component of the investment

index are as follows:

1. Per capita wheat-based food consumption growth rate – The per capita

   consumption rate growth trend is important for figuring out the future market

   demand of wheat flour. It is envisaged that any country presenting a negative

   growth rate (i.e., declining per capita what product consumption) is given a zero

   rating since by implication any investment in wheat processing in the country will

   need new markets for securing growth over time. However, the higher the per

   capita consumption growth rate, the higher the rating. Any growth rate in excess of

   five percent is deemed to be ideal for locating a flour mill and, thus, receives the

   perfect 10 rating.   The distribution of the rating for the per capita growth rate for

   wheat-based food consumption is presented in Table 3.1.

Table 3.1: Growth Rate Rankings, 1998-2007

Per-capita consumption growth rate	Index Rating
Less than 0.0 percent	0
0.1 – 2.5 percent	5
2.6 – 5.0 percent	7.5
Greater than 5.0 percent	10

2. Wheat production versus consumption – A picture of the raw material supply

   situation is important for any company looking to produce finished goods. The

   production situation, *y*, is defined as follows:

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$$y = (P - C)/C = NP/C \qquad (0)$$

where P is average production in the last decade, C is average consumption in the

last decade and NP is net production . When y is less than zero, it implies that the

country's wheat consumption exceeds its production and when y is positive, then

the country is self-sufficient in wheat. A negative y indicates an opportunity to fill

the gap through import substitution. Indeed, the importation of raw agricultural

commodities, such as wheat, to process in a domestic market is always an attractive

position for governments, making them frequently supportive of such investments.

The highest ranking of 10 was assigned to any country that is importing at least 75

percent of their wheat to meet the flour demand, or has a score of -0.75 or lower.

See Table 3.3 for the rankings used in the index.

Table 3.2: Wheat production rankings

Net Production	Index Rating
Greater than 0.0	0
-0.24 to 0.0	2.5
-0.49 to -0.25	5
-0.74 to -0.50	7.5
-1.0 to -0.75	10

3. Wheat flour import growth rate – The trend for wheat flour import growth was

   examined from FAO data for wheat flour imports from 2000-2009. A country that

   is unable to meet the demand for a product will find it necessary to import that

   product to meet consumer demand. An increasing demand shows the domestic

   market is continually unable to meet demand so the higher the demand increase, the

   higher the ranking. Conversely, any country with negative growth in this index

   category is not showing long-term growth to support new production operations

and is assigned a zero for this metric. Any country that has growth over 30 percent

is identified as showing a valuable potential for economic development in this

industry because substituting goods produced domestically for imports can improve

economics in the country. This factor is important as it relates to an increase in

demand that could be serviced through operations in-country and correlates to an

increase in either population or per capita consumption that is also accounted for in

the investment index. This also gives a picture of where the competition is at due to

the need for imports versus domestic production.

Table 3.3: Flour import rankings

Import growth rate, 2000-2009	Index Rating
Less than 0.0 percent	0
0.0 to 10.0 percent	2.5
10.1 to 20.0 percent	5
20.1 to 30.0 percent	7.5
Greater than 30.0 percent	10

3.2.2: Economic Environment

The key variables in calculating the investment index for the economic environment

portion are as follows:

4. GDP per capita growth – Including this in the index will allow countries with

   strong GDPs relative to population to stand out. GDP per capita numbers were

   gathered from the World Bank and growth was calculated over a four year period

   and it gives a measure of economic growth and the purchasing potential power of

   the country. A higher GDP per capita growth rate means consumer spending will

   increase as this variable grows.   GDP per capita that is growing faster than 10.0

   percent is identified as being a significant indicator of economic growth and was

assigned the highest rating of 10 points. A negative GDP growth rate shows

negative economic growth and declining purchasing power and is not a favorable

business development climate so is assigned a zero metric for this index

component.

Table 3.4: 2007-2011 GDP per capita growth Rankings

GDP per capita growth rate	Index Rating
Less than 0.0 percent	0
0.0 – 5.0 percent	5
5.0 – 10.0 percent	7.5
Greater than 10.0 percent	10

5. Trade membership participation – For countries participating in trade agreements

   and organizations, the trade between member countries flows easier. The more

   trade memberships a country participates in, the more open its borders are to

   exportation and the higher score assigned within this index component. When

   looking at new investments this is important due to the possibility of other markets

   for supply being opened up through the trade agreements. A country that is open to

   trade has a potential foreign market to supply as well as the domestic market. If a

   country is not participating in any trade memberships, their trade policies may make

   the export market unattractive and thus are assigned a zero rating for this index

   component. Information for this metric was gathered from the International Trade

   Administration.

Table 3.5: Trade Membership Rankings

Number of Trade Associations	Index Rating
0	0
1-3	5
4-7	7.5
Greater than 7	10

6. *Doing Business* Score – *Doing Business 2012* is a report released by the World Bank that assesses the business environment in 183 countries focusing on about a dozen areas, including the tax codes and regulations around starting a business, applications for construction permits, getting electricity, registering property, obtaining credit, protecting investors, paying taxes, trade across borders, enforcing contracts, resolving insolvency and employing workers. The report uses case studies to communicate the results and assumes the business is operated in the largest business city in the country. The rankings put together by the World Bank are targeted for companies looking to start up new businesses in countries and provide a valuable rating system. There are 183 countries evaluated for the *Doing Business* report, so the country score for each was subtracted from 183 and divided by 18.3 to put it on a 10 point scale for the investment index with 10 being the most favorable investment and 0 being the least favorable.

7. Labor productivity – According to the International Labor Organization, economic performance can be predicted by comparing labor productivity, which is a measure of the amount of output required to produce a unit of input goods. In order to enable comparison across economies, labor productivity results from the International Labour Organization's report *Key Indicators of the Labor Market* were gathered. The labor productivity is calculated by utilizing purchasing power

parity (PPP), which is the cost of goods from a foreign currency in US dollars. The

higher the productivity, the more value received from labor inputs, which equates to

a higher score for the investment index. The average for 2001-2010 was used to

calculate the index ranking for each country. An economy with a PPP of greater

than $50,000 was determined to be the ideal for this index component and was

assigned a value of 10, with lower PPPs assigned a lower value. Table 3.7 lists the

rankings for this variable.

Table 3.6: Labor Productivity Rankings

Purchasing Power Parity	Index Rating
$0 - $10,000	0
$10,001 - $20,000	2.5
$20,001 - $30,000	5
$30,001 - $50,000	7.5
Greater than $50,000	10

8. Tax rate on profits – Taxes on profits vary by country and will affect the

    profitability of a business. The percentage of profits taxed was gathered from

    Doing Business 2012 and compared for the investment index with the rankings in

    Table 3.8. For any American-based corporation, if the tax rate is over the US tax

    rate of 46.7 percent, they will pay additional taxes on their profits to the country

    where those profits originate. For that reason, the highest ranking of 10 was

    assigned to countries with equal or lower rates to the US tax rates.

Table 3.7: Tax rate rankings

Tax rate on profits	Index Rating
Greater than 75 percent	0
46.71 - 75 percent	5
46.70 percent and less	10

9. Foreign direct investment (FDI) growth rate – Foreign direct investment is important for this investment index as the growth rate shows where existing companies are currently investing their assets. Growth in FDI indicates the location is a potentially profitable country with an attractive regulatory climate for foreign investors because other companies are investing their funds and accepting the risk of doing business in that country.   Depending upon the industry, FDI can contribute to a country's growth through the influx of technology sharing and management practices (Alfaro 2003). Within manufacturing, FDI contributes to growth due to the physical presence of resources and assets. For that reason, FDI is an important indicator for economic development. For this index rating, FDI levels were gathered from the World Bank sources and growth was calculated. Growth over 15 percent is identified as an ideal situation for investment and assigned the highest rating of 10. Any country with a decreasing FDI rate is assigned a zero for this rating due to the possible economic factors that are affecting the declining FDI.

Table 3.8: FDI growth rate rankings

FDI growth rate, 2007-2011	Index Rating
Less than 0.0 percent	0
0.1 – 5.0 percent	4
5.1 – 10.0 percent	6
10.1 – 15.0 percent	8
Greater than 15.0 percent	10

3.2.3: Supporting Infrastructure

The key factors for calculating the investment index for the supporting

infrastructure component are as follows:

10. Presence of existing Cargill business units. Wheat milling margins are dependent

    upon the milling yields achieved as well as the merchandising conducted around the

    wheat supply chain. Cargill's broad experience and resources provide a significant

    competitive advantage versus smaller competitors operating in a similar

    environment. While Cargill may not be familiar with the wheat milling industry in

    the end country opening operations in a country that already has a Cargill presence

    can allow Cargill to capitalize on the country knowledge already possessed by their

    employees. The existence of Cargill operations already working within the country

    will provide an easier entrance into the market as relationships and understanding

    of local policies already exists, so a factor was added in for this based upon the

    number of business units in operation in each country. Any country with more than

    five locations operating in the country will have a sufficient network of contacts to

    facilitate opening up the new location, so the highest rating of 10 was assigned to

    these countries. See Table 3.9 for the rankings.

Table 3.9: Cargill location rankings

Number of locations	Index Rating
0	0
1-5	5
5+	10

11. Transportation Infrastructure – The information on the quality of available

    roadways, railways and ports is important for businesses to consider due to the

transportation requirements of moving product around. If adequate infrastructure does not exist to move product, studies show that foreign direct investment is not as desirable for manufacturing facilities due to the challenges that arise on the distribution side of operations (Indonesia: Infrastructure bottlenecks imperil growth 2010). Information for this factor was gathered from the World Economic Forum's report, *The Global Competitiveness Report 2011-2012*. An Executive survey was sent out to randomly selected companies in 142 economies to evaluate 13 components of competitiveness and the quality of roads, rail and port is included as a response on the survey. An average of the road, rail and port quality responses was taken and used for this factor and put in a 10 point scale versus the 7 point scale of the survey to maintain consistency with the other index components.

12. Electricity supply – The ability to gain a reliable source of electricity is very important for a flour mill with large electrical demands for a 24 hour a day basis, up to seven days a week, basis demand and runtime for the new manufacturing facility. The *Doing Business 2012* ranking on the ease of getting electricity for start-up companies is used as this measure, subtracted from 183 and divided by 18.3 to put it on a 10-point scale with 10 going to the country where obtaining electricity is the easiest. According to Atsushi Iimi in a World Bank publication titled *The effects of improving infrastructure quality on business costs*, "firm costs significantly increase with an increase in electrical power outages". For a manufacturing company that is dependent upon a reliable electricity supply to produce the goods, this is an important factor in the infrastructure component.

13. Urbanization – The percent of population residing in urban areas is another factor

of the infrastructure that is important. Urbanization rates give an idea of the

location of the market population and results for this ranking were gathered from

Worldstat (2012). It makes logistical sense to build a plant near population centers

that are providing the demand for the product produced to allow for the shortest

transportation route to the customer.   If a country does not have a population living

near city centers and the population is spread throughout the country, there is an

increase in logistical costs that could be eliminated by having the production facility

located near the population creating the demand. Thus, any country with an

urbanization rate greater than 75 percent is deemed an ideal location and is assigned

a ranking of 10 and an urbanization rate less than 25 percent is given a zero due to

the additional challenges that arise on the transportation side.

Table 3.10: Urbanization rankings

Urbanization	Index Rating
Less than 25.0 percent	0
25.1 to 50.0 percent	2.5
50.1 to 75.0 percent	5
Greater than 75.0 percent	10

3.3: Assumptions

As this is a new research approach to create an Investment Index, the relative

impact of the three components of the Investment Index is unknown. Therefore, to

determine the robustness of the ranking, alternative weights are assigned to the three

components and the rankings assessed under these alternative weight scenarios. The base

scenario describes the most probable scenario and assumes that market conditions have the

most impact on the Investment Index and supporting infrastructure affects it the least

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(Table 3.11). Market conditions were assigned the highest weight under the base scenario

due to the assumption that more favorable market conditions ameliorate the investment risk

embedded in the environment (Ming-Tien 2002).

Table 3.11: Investment Index Category Weights by Scenario

Category	Scenario 1	Scenario 2	Scenario 3
Market Conditions	45	33.34	30
Economic Environment	35	33.33	45
Supporting Infrastructure	20	33.33	25
Total	100	100	100

It is assumed that the overall economic environment provides an indicator of the

investment potential. However, this is tempered by the fact that the overall economic

environment is determined by history and may not reveal changes that have only been

made recently that support the future growth opportunities in the country. For example,

FDI growth rate was calculated using data between 2007 and 2011. This period marked the

economic recession that affected most parts of the world and is thus expected to influence

investment decisions. The historical nature of this particular component contributed to it

being given a lower weight than market conditions in the base scenario. The supporting

infrastructure component received the lowest rating in the base scenario because it was

assumed that the processing facility will be located in an area that minimized the impact of

existing infrastructure on its competitiveness. It is argued that selecting location sites

within the context of competitive location of industries would allow the firm to perform no

worse than its competitors in the identified markets. The other two scenarios challenge

these assumptions and organize the distributions of the weights differently. The Investment

Index tool provides robust outcomes when the rankings produced under the alternative

scenarios are maintained.

CHAPTER IV: INVESTMENT INDEX RESULTS

4.1: Country Selection

In order to narrow the scope for this research, overall guidelines were established to align with the research objective of determining a region or country that would provide the right production and marketing environment to create a profitable investment location for Horizon Milling's expansion outside North America. Flour production, like any product business, needs demand for it to succeed. Additionally, because flour is a commodity, it extracts small margins and must thus be produced and marketed in large volumes to generate acceptable revenues and profits so scale is critical in the economics of flour production.

Flour imports show a lack of available domestic flour production to meet demand and show the available market opportunity for new business. The larger market opportunities are the countries with the highest import quantities, and for this reason, any country not in the top 20 of wheat flour importers for 2009 was removed from consideration for this research. Another decision criteria was the country's *Doing Business 2012* score. Any country in the bottom 75 percent of rankings, or with a score of 135 or less was removed from consideration due to the additional challenges that would arise from doing business in those countries. The other focus for this research is the target areas of Africa, Asia and South America, so any countries outside those regions were also removed from the research analysis. The preliminary analysis driven by these selection criteria led to a focus on Brazil, Indonesia, Malaysia and Thailand. This chapter focuses on these four countries and ranks them using their estimated Investment Index. The outcome of the ranking is to identify the country or countries for which in-depth scouting and feasibility assessment need to be performed. This saves the company money and enhances

its focus because it can convince itself that the selected countries offer the best potential
outcomes for the investment.

4.2: Market Conditions results

The important characteristics under market conditions included wheat per capita
food consumption growth rate, wheat production versus consumption and wheat flour
imports growth rate. For these three components of market conditions, the weights were not
distributed equally. For any business to succeed there must be a demand for the goods
being supplied. Therefore, the factor assigned the highest weight for market conditions
was per capita consumption growth rate. An increasing per capita consumption shows an
increasing demand for wheat flour in the country and an increasing market for goods being
produced and sold. Wheat flour imports was assigned the next highest rate, as it shows that
there is not enough flour supply to meet the demand. The lowest factor in this component
was wheat production versus consumption because the raw materials can be sourced from
outside the country. This is also related to trade relations, which is addressed in investment
infrastructure. Table 4.2 details the assigned weights for each component and factor.

Table 4.1: Market Conditions Component Weights

Component	Weight (%)
Per capita consumption growth	50
Wheat flour import growth	30
Wheat production versus consumption	20
Total	100

The analysis showed that per capita consumption is increasing within all of the
countries that met the final criteria, with Malaysia seeing the highest growth in per capita
consumption from 2000-2009. None of these countries was producing enough wheat to
meet domestic flour demand. Furthermore, only Brazil is producing a measureable amount

of wheat, 40 percent of which is being consumed as flour. For this reason, all four

countries are on the higher end of flour importers and are experiencing net growth in flour

imports from 2001-2010.   Refer to Table 4.3 for the results for each country in market

conditions.

Table 4.2: Market conditions Results

	Brazil	Indonesia	Malaysia	Thailand
Per capita wheat-based food consumption growth (2000-2009)	1.73%	3.15%	5.67%	3.34%
Wheat production versus consumption	-0.595	-1	-1	-0.999
Wheat flour import growth rate (2001-2010)	29.26%	11.29%	25.96%	15.02%

Figure 4.1 shows the ranking of the four countries under the market conditions

category using the weighting from Table 4.2. The figure shows that based on the market

condition criteria considered in this model, Malaysia presented the strongest market

opportunities followed by Thailand. It is important to note that both countries belong to the

Association of South East Asian Nations (ASEAN), and thus, have preferential trade

arrangements with the other eight member countries, including Indonesia, the Philippines

and Viet Nam. However, Malaysia's physical and geographic proximity to Thailand also

presents both counties with potential scale opportunities because of the trade potential.

Figure 4.1: Market Conditions Rankings
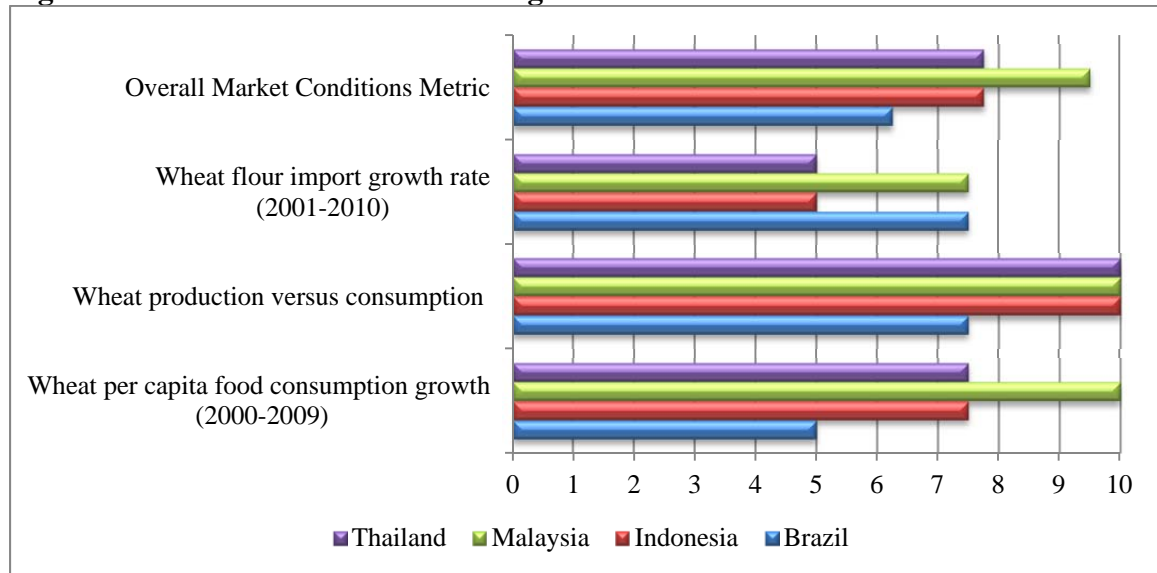
4.3 Economic Environment results

The specific important characteristics under economic environment included GDP

per capita growth rate, trade membership participation, *Doing Business 2012* score, labor

productivity, tax rate on profits and FDI growth rate. For these six components the weights

were not distributed equally. The factor assigned the highest weight for economic

environment was GDP per capita growth due to the importance of an improving economy

for building a new manufacturing facility. This was followed closely by the *Doing*

Business 2012 score due to the nature of the score with regards to opening new businesses.

Trade membership associations was a mid-ranking variable for this index, as openness to

trade is important for the circumstances being considered where each country in this study

is reliant on imports for the raw materials. Openness to trade also relates to the ability to

supply foreign markets as well as the domestic market for any new production facility. The

lower ranking items for economic environment were FDI growth rate because while the

growth rate gives a picture of the trend, it is limited in giving a perspective of actual FDI

since the rating does not take into account percent of FDI in comparison to GDP. Tax rate

and labor productivity were also weighed on the lower end because they can be offset by

margins charged to the customer. Table 4.4 details the assigned weights for each

component and factor.

Table 4.3: Economic Environment Component Weights

|	Weight (%)
GDP per capita growth	30
Original Trade Association Membership	15
Doing Business Score	25
Labor productivity	10
Tax rate on profits	10
FDI investment growth rate	10
Total	100

Indonesia's GDP per capita is increasing at the highest rate over the time period

studied, and it also has the highest FDI growth rate. However, Indonesia was the lowest on

labor productivity. All four countries were involved in three major trade agreements, with

Indonesia, Malaysia and Thailand all a part of the same three trade organizations; Asia

Pacific Economic Cooperation (APEC), Association of South East Asian Nations

(ASEAN) and Global System of Trade Preferences among Developing Countries (GSTP).

Doing Business 2012 scores were highest for Malaysia and Thailand and this difference led

to the largest difference in index rankings for this component. Refer to Table 4.5 for the

results for each country within the economic environment component.

Table 4.4: Economic Environment Results

	Brazil	Indonesia	Malaysia	Thailand
GDP per capita growth	13.61%	15.69%	7.04%	7.67%
Trade Assn. Memberships	3	3	3	3
Doing Business Score	126	129	18	17
Labor productivity	$12,448.90	$9,204.20	$22,417.90	$14,382.70
Tax rate on profits	67.10%	34.50%	34.00%	37.50%
FDI investment growth rate	13.90%	23.20%	6.70%	-10.40%

Figure 4.2 shows the ranking of the four countries under the economic environment category using the weighting from Table 4.4. The figure shows that based on the economic environment criteria considered in this model, Malaysia again presented the strongest investment opportunity followed by Thailand, Indonesia and Brazil.

Figure 4.2: Economic Environment Rankings
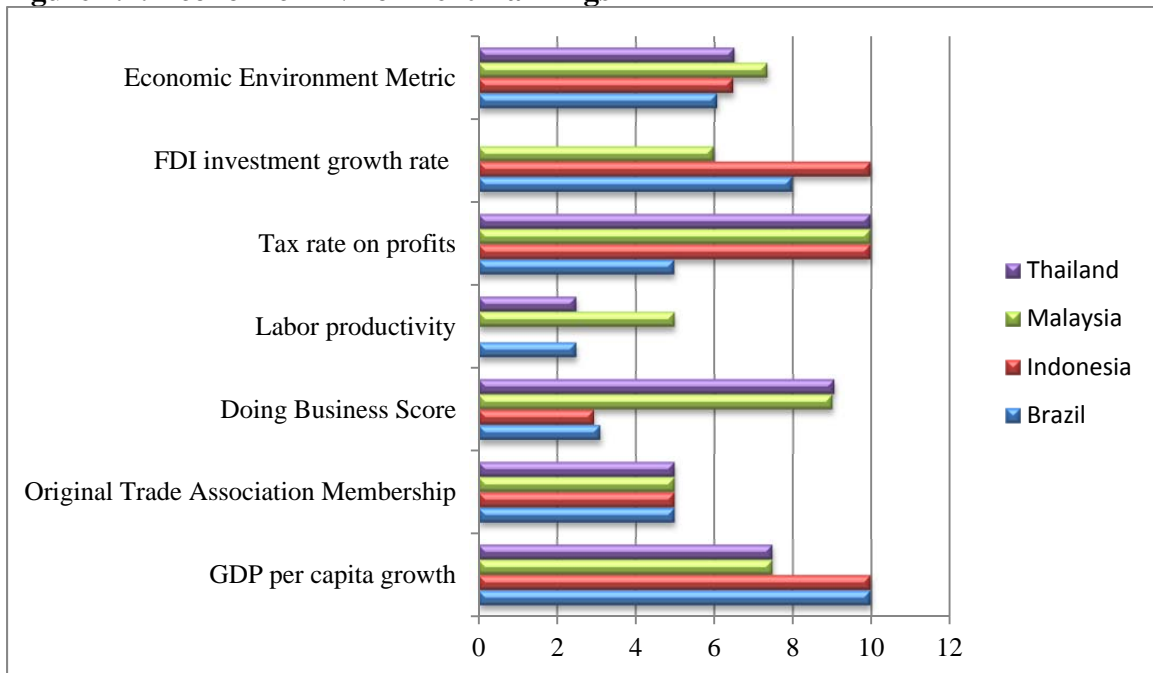
4.4: Supporting Infrastructure results

The important characteristics under supporting infrastructure include the presence of existing Cargill business unit operations, the quality of the transportation infrastructure,

the electricity supply quality and the percent of urbanization. For these four components of

supporting infrastructure, the weights were also not distributed equally. Two factors were

deemed the most important for this factor and given the highest weighting; quality of

transportation infrastructure and presence of Cargill locations. According to Glass,

infrastructure quality is an important factor in determining foreign direct investment. For

manufacturing operations, it is important to have an infrastructure that supports operations

and allows for transportation of goods produced. Existing Cargill operations was also

ranked high for this component due to the opportunities and connections already available

through the existing supply chain and customer relations. Electricity supply quality and

urbanization were equally rated. Table 4.6 details the assigned weights for each component

and factor.

Table 4.5: Supporting Infrastructure Component Weights

|	Weight
Number of Cargill business units	30
Transportation infrastructure	30
Electricity supply quality rating	20
Urbanization	20
Total	100

Brazil has the most Cargill business units (BUs) operating in the country with

Malaysia having the least. Transportation quality ranged from 3.5 in Brazil to 7.8 in

Malaysia, with Brazil's lowest quality being their rail structure and their highest quality

their roads. Brazil also has the highest urbanization rate, so road quality can become more

important in this circumstance. For Malaysia, the roads, ports and rail were closely rated in

quality. Refer to Table 4.7 for the results for each country in supporting infrastructure.

Table 4.6: Supporting infrastructure Results

	Brazil	Indonesia	Malaysia	Thailand
Number of Cargill business units	10	9	7	8
Transportation infrastructure rating	3.5	4.9	7.8	5.9
Electricity supply quality rating	7.21	1.2	6.78	9.51
Urbanization	87%	44%	72%	34%

Figure 4.3 shows the ranking of the four countries under the supporting infrastructure category using the weighting from Table 4.6. The figure shows that based on the supporting infrastructure criteria considered in this model, Malaysia again presented the strongest market opportunities followed by Brazil, Thailand and Indonesia.

Figure 4.3: Supporting Infrastructure Rankings
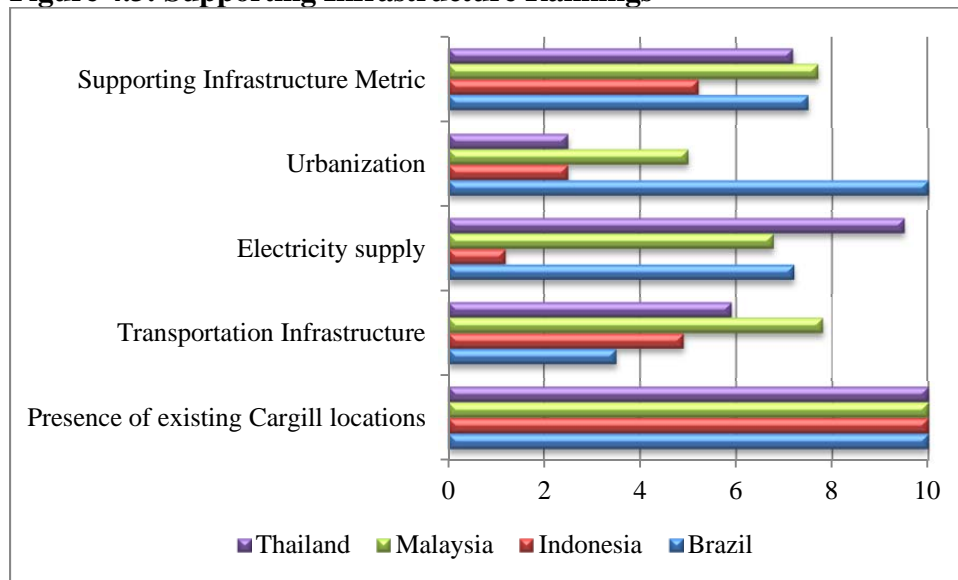
4.5: Overall Investment Index Results

As stated in section 4.1, not all components of the investment index were ranked equally. The base scenario outcome was estimated for the four countries using the foregoing segment results. The value of each component of the investment index was calculated as follows:

$$I_i = \sum w_{ij} X_j / 100 \tag{0}$$

where I_i is the weighted index for each of the three major components i and X_j define the subcomponents of each major component while w_j define the weights applied to each of the sub-components. The assigned weights for the sub-components are presented in Table 4.7 below.

Table 4.7: Sub-component Variable (X_j) Weights

	Weights (w_{ii}) (%)
Market Conditions	
Wheat per capita food consumption growth	50
Wheat flour production	30
Wheat flour import growth rate	20
Market Conditions Total	100
Economic Environment	
GDP per capita growth	30
Original Trade Association Membership	15
Doing Business Score	25
Labor productivity	10
Tax rate on profits	10
FDI investment growth rate	10
Economic Environment Total	100
Supporting Infrastructure	
Presence of existing Cargill locations	30
Transportation Infrastructure	30
Electricity supply	20
Urbanization	20
Supporting Infrastructure Total	100

The overall investment index, *I*, is defined as the weighted sum of the component indices:

$$I = \sum_{i=1}^{3} r_i I_i / 100 \tag{0}$$

where r_i is the weight assigned to the component under each scenario.[1] The scenario results were generated from the sum product of the individual sub-component variable rankings and their respective weights, multiplied by the sub-component variable weight under each scenario. As an example, Brazil's market condition is 2.81 in Scenario 1 from Table 4.8. This was derived from Tables 3.1, 3.2 and 3.3 rankings applied to the data in Table 4.2. These results were multiplied by the weights from Table 4.1 to calculate the market conditions score for Brazil. This number was then multiplied by the weight assigned to market conditions in Scenario 1 to give the overall investment index result for market conditions for Brazil.

The results show that Malaysia received the highest overall Investment Index score, coming in at 8.38 compared to Thailand's 7.20. Indonesia and Brazil's score were respectively 6.80 and 6.44. On the individual components, it is observed that while the supporting infrastructure of Brazil was scored similar to Malaysia's, its market condition score was 34.2% lower, giving Malaysia a commanding overall position in the ranking over Brazil. For the second scenario, Malaysia again received the highest overall Investment Index score, with a score of 8.18 versus Thailand at 7.15, Brazil at 6.61 and Indonesia at 6.48. There was the least variability between countries in Scenario Three, which assigned a higher weight to Economic Environment. The gap between the four countries was 19.8 percent in the third analysis versus 23.2 percent and 20.8 percent respectively in the two previous scenarios. In the last scenario, Malaysia again had the highest ranking at 8.08, followed by Thailand with 7.05, Indonesia at 6.55 and Brazil at 6.48. For all three scenarios, Supporting Infrastructure is the differentiator between Indonesia and Thailand, as their other results are scored similarly.

[1]   See Table 3.11 for these weights for the three scenarios.

Table 4.8: Investment Index Sensitivity Analysis

Scenario #1	Brazil	Indonesia	Malaysia	Thailand
Market Conditions	2.81	3.49	4.28	3.49
Economic Environment	2.13	2.27	2.57	2.28
Supporting Infrastructure	1.50	1.04	1.54	1.43
Overall Investment Index Score	**6.44**	**6.80**	**8.39**	**7.20**
Scenario #2				
Market Conditions	2.08	2.58	3.17	2.58
Economic Environment	2.03	2.16	2.45	2.17
Supporting Infrastructure	2.50	1.74	2.57	2.39
Overall Investment Index Score	**6.61**	**6.48**	**8.18**	**7.15**
Scenario #3				
Market Conditions	1.88	2.33	2.85	2.33
Economic Environment	2.73	2.92	3.31	2.93
Supporting Infrastructure	1.87	1.30	1.92	1.79
Overall Investment Index Score	**6.48**	**6.55**	**8.08**	**7.05**

Figure 4.4: Results of the Scenario Analysis
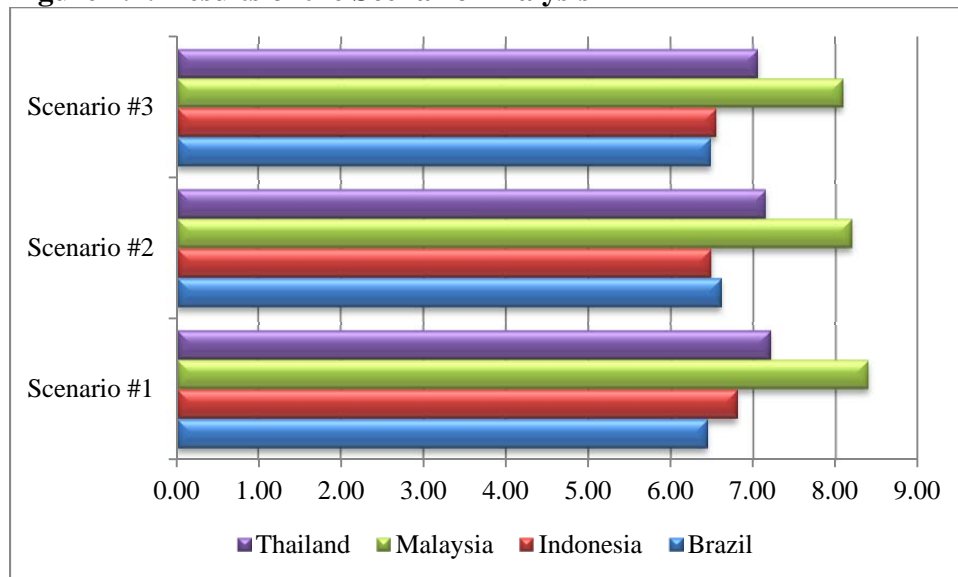
Additional sensitivity analysis could also be conducted on the weights attributed to

the subcomponents, w_{ij}'s. However, this was not done given the absence of a clear rationale

for altering them. Also, the Investment Index was applied to four countries that met the

screening criteria mentioned in Chapter 4.1. This focus was to allow the index to be utilized

to compare different countries in a manageable format. However, any country could be

evaluated within the Investment Index metric as a potential for development. All 13 of the

Investment Index sub-components were chosen independently from the country choices

and are based upon data that can be gathered for any world country for comparison. This

makes the investment index here developed very transparent, reproducible, specific and

clear.

CHAPTER V: SUMMARY AND CONCLUSIONS

5.1 Summary

The research question was this: "Where should flour milling facilities be located to enable Cargill and Horizon Milling to capture the emerging market and maintain competitive advantage." To answer this question, an investment index was constructed to provide a ranking of opportunity countries and direct resources for further feasibility assessment. The investment index was defined to comprise market conditions, economic environment and supporting infrastructures in each of the qualifying countries. The selection criteria used to limit the number of potential locations for consideration involved wheat flour import quantity, wheat flour importer status, *Doing Business 2012* results and geographical location. Under these criteria, all countries in the lower 25% of "Doing Business" ranking were excluded. Only the top 20 flour importing countries from 2009 were examined and countries with declining per capita consumption were removed from the analysis. Countries outside of Africa, Asia and South America were also eliminated. This led to four countries that were subjected to the investment index analysis: Malaysia, Indonesia, Thailand and Brazil.

Malaysia emerged as the clear leader in all three scenarios of the investment index, leading to a conclusion that it is, indeed, an excellent candidate for further investigation and economic feasibility assessment for flour milling opportunities. For Scenario one, Malaysia's score was 8.39 versus Thailand's score of 7.20. For all three scenarios, Malaysia was the top ranking country with Thailand in second rank and Brazil and Indonesia vying for third position based upon the Investment Index weightings. As it turns out, Malaysia also has other advantages through its trade strategy with bordering countries. Brunei, Singapore and Thailand already receive wheat flour imports from Malaysian

producers in accordance with the Malaysian government's strategy of adding value to products (Lyddon 2010). A flour milling expansion into the Malaysian market would be a potential expansion into the bordering countries as well through trade.

In Cargill's 2012 Annual Report, Ivan Fernandes of Cargill Kenya stated "We are a company that moves food from areas of surplus to areas of need, every day." Further investigation into Malaysia would allow Cargill to continue that trend as it is an area of need with regards to wheat flour. The next step is to allocate resources to do an in-depth country analysis to determine the competitive situation and the best location for the new facility within the country. Involvement from sales, technical service and in-country experts is needed to put together the business case for this capital investment. It will also be important to find out what the competition's plans are prior to any finalization of the investment decision, as that is a limitation of the Investment Index.

5.2 Future Research

Now that the investment index has been created, other countries that fall outside the assumptions made could be evaluated for their potential. The criteria were assessed and facilitated a sample for the Investment Index creation, however removing that criteria could open up other opportunities. The *Doing Business 2012* score is already a component of the Investment Index, so removing it as a criteria could open up other markets that are potentially profitable but offer a higher risk due to the challenges from doing business in that country. Countries such as Iraq, Uzbekistan and Tajikistan may pose an opportunity for flour milling growth for a company who is willing to navigate the challenges of doing business in those environments. However, the economic environment in these countries could be hampered by the political and security conditions, especially in the case of Iraq.

This would suggest that these variables be explicitly included in future expansions of the Investment Index.

An examination of countries that are top wheat flour importers for other years outside of 2009 could also give other options that would remove any variability introduced in 2009 alone. Another future area for research could be looking at countries that are net exporters of flour. If a Cargill location is already operating in the country, acquisition of existing assets could provide another way for Cargill to increase their global footprint and utilize their existing milling knowledge and efficiencies to improve a plant already in operations.

While the Investment Index was created to facilitate flour milling expansion decisions, the concept could be adapted to analyze investment decision requiring the selection of physical locations. Minor adjustments of the market conditions data to fit the specific characteristics of the industry of interest may be required; however the economic environment and supporting infrastructure metrics could apply to multiple industries and are not specific to flour milling. Future opportunities for further development of the index exist in order to enhance its comprehensiveness. This research has contributed a small step in helping organizations make transparent, reproducible, specific and clear choices among alternative locations for their greenfield production expansion decisions.

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