

ALFRED NOBEL UNIVERSITY
DEPARTMENT OF GLOBAL ECONOMICS

Bachelor's Thesis

Development and implementation of the international investment project
“manufacturing enterprise of plastic, biodegradable, compostable, paper packages
and gloves” in the USA.

Student: Grodz Mark

Group: MEB-17a

Specialty: 292 International economic relations

Supervisor: Professor Kuzminov S.V.

Dnipro, 2020

ALFRED NOBEL UNIVERSITY
DEPARTMENT OF GLOBAL ECONOMICS

First (bachelor) level
Specialty 292 International economic relations

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Head of the Department _____

(signature, last name, initials, scientific degree, academic status)

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The Bachelor's Thesis
Assignment

Grodz Mark _____

Student's full name

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CHAPTER 1. US ECONOMY: THE CURRENT SITUATION, DEVELOPMENT TRENDS AND MAJOR PROBLEMS

1.1. General characteristics of the development of the US economy

1.2. Export-import activity and problems of USA

1.3. Ways of doing foreign business activities in US

1.4 Current business environment at the pandemic time and general trends

CHAPTER 2. FOREIGN ECONOMIC ACTIVITY IN THE USA, DETAILED ANALYSE OF INTERNATIONAL BUSINESS.

2.1. Market analysis for plastic bags, restrictions, popularity and general trends

2.2. Structure of the manufacturing company

2.3. Analyze of needed space to rent and amount of investments for manufacturing facilities

CHAPTER 3. DEVELOPMENT OF AN INTERNATIONAL INVESTMENT PROJECT TO ESTABLISH A MANUFACTURING ENTERPRISE OF PLASTIC, BIODEGRADABLE, COMPOSTABLE, PAPER PACKAGES AND GLOVES

3.1. Total investment

3.2. Calculations of 1 bag production cost

3.3. Estimated income calculation and assessment of the economic attractiveness of the investment project

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1	Chapter 1	01.04.2021	15.04.2021
2	Chapter 2	15.04.2021	15.04.2021

3	Chapter 3	15.05.2021	15.05.2021
4	The whole paper	01.06.2021	01.06.2021

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Abstract

Grodz M.M. Development and ways of implementation of the international investment project “manufacturing enterprise of plastic, biodegradable, compostable, paper packages and gloves” in the US.

The paper analyzes and discovers current trends in the US economy, as the leading country in the world for doing business, market size and FDI attractiveness. Understanding that small and medium sized businesses are extremely popular and highly protected and supported by the government gives the great opportunity for successful foreign business activity in this country. There are full calculations of investments needed, ways of doing business analysis, understanding the risks and opportunities of this project idea. With help of the main indicators analyse the profitability and attractiveness of this business for investors.

Keywords: investment climate of US, plastic package, FDI, manufacturing business, NPV, payback period of the investment project

Анотація

Гродзь М.М. Розробка та шляхи реалізації міжнародного інвестиційного проекту "Виробництво по виготовленню із пластику, біорозкладаних, паперових упаковок та рукавичок" у США.

Стаття аналізує та виявляє сучасні тенденції в економіці США як провідної країни у світі за веденням бізнесу, розміром ринку та привабливістю ПП. Розуміння того, що малий та середній бізнес надзвичайно популярний, високо захищений та підтримується урядом, дає чудові можливості для успішної зовнішньоекономічної діяльності в цій країні. Ця робота містить повні розрахунки необхідних інвестицій, способи ведення бізнесу, розуміння ризиків та можливостей цього проекту. За допомогою основних показників проаналізовано прибутковість та привабливість цього бізнесу для інвесторів.

Ключові слова: інвестиційний клімат США, пластиковий пакет, ПП, виробничий бізнес, NPV, термін окупності інвестиційного проекту

INTRODUCTION

CHAPTER 1. US ECONOMY: THE CURRENT SITUATION, DEVELOPMENT TRENDS AND MAJOR PROBLEMS

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CONCLUSIONS

REFERENCES

INTRODUCTION

In this course work I will analyse the investment climate of the USA, find advantages and risks of investments on it, analyse the possible best location for the company. Understand the strength of the market, popularity of plastic bags, latest trends in reducing the usage of plastic, restrictions of plastic bags, popularity of paper packages and possibility of selling the biodegradable packages. The effect of COVID-19 on the economy of the USA, latest political trends, the fundamental features of the country and comparison of it with other leading countries in the aspect of doing business attractiveness . The main aim of this project is to develop a real business that can be implemented in real life and calculate its profit as close as possible to reality. The process of manufacturing will be described in detail and analyzed where exactly every dollar is spent. Moreover, in this work is discovered the market of plastic bags and chose the particular sector of it where the biggest amount of potential customers or partners are located.

CHAPTER 1. US ECONOMY: THE CURRENT SITUATION, DEVELOPMENT TRENDS AND MAJOR PROBLEMS

1.1. General characteristics of the development of the US economy

The United States is the world's largest economic and military power with global interests and unrivaled global reach. The United States is a nation of 50 states, the largest of which is Alaska. The country is located in the middle part of North America. This country is bordered by Canada to the north, and a 3000km long border with a wall to the south with Mexico. The United States of America was formed in 1776 as a result of the unification of thirteen British colonies that declared their independence. The War of Independence lasted until 1783 and ended with the victory of the colonists. In 1787, the US Constitution was adopted, and in 1791 - the Bill of Rights, which significantly limited the powers of the government over citizens. The political system of this country is based precisely on the Constitution of 1787. Enlightenment ideas such as freedom, progress, tolerance, fraternity, constitutional government, and separation of church and state were incorporated into the US Constitution. The main and fundamental advantage of the Constitution is that it guarantees political control over the government and does not give too much power to one person. There is a division of powers between its three branches, the so-called system of checks and balances: legislative, executive and judicial. The president is the head of state and head of government, he embodies the so-called center of power. There is also the US Congress, which consists of two chambers: upper and lower houses. The upper house contains the US Senate, and the lower house contains the US House of Representatives. 2 senators from each of the 50 states are sent to the Senate. At the moment, there are 2 main and the most powerful political parties in the United States: Republican and Democratic.

In general the investment climate is a combination of many social-economic factors, financial, political factors that show the attractiveness for the investors and the size of the market. In the case of the USA, it is one of the

biggest countries in the world with a highly developed economy. This country offers the largest market in the world with a GDP of 20 trillion \$US and more than 300 million people. Area of the country is 9.8 million sq km, major language is English, major religion is christianity and currency - US dollar.

The USA takes the first place in attracting foreign capital, the reason for it is a good understanding of its importance for the political head of the USA. (Tax Foundation, 2021) The American government is well aware that the functioning of foreign capital in the US economy can have a significant impact not only on industry, trade and inflation processes, but also on the national security of the state as a whole. As a result, the US gave great independence to choose the way of economic development for every state. Economic programs, laws, and tax systems differ from state to state. In this course work I will mainly focus on three most developed states: California, New-York and Texas. This system as a result gave opportunities for states to compete with each other and the openness of the US market gave such a big growth impulse for law development in the sphere of investments in the second half of the XX century.

1.2. Export-import activity and problems of USA

America is often accused of having a low share of real production in its economy compared to its hypertrophied service sector. This is partly true. But there are many nuances here. Indeed, in the structure of GDP, the production of material goods occupies only 20%. Everything else is a variety of services. Among them, financial activities - more than 30%. Education, healthcare and social services - 25%. Trade - 20%. At the same time, 70% of GDP is focused on domestic consumption. This picture began to take shape after the 1970s, when people started talking about the stage of post-industrial development. In the 80s, American companies were experiencing difficulties due to increasing competition and began to transfer production to Asian countries (to reduce the cost of production). This is the impetus for accelerating growth in China, whose

products are increasingly gaining market share. As a result, the industrial sector in the US economy begins to shrink even more.

It is incorrect to say that America produces a small amount of products. It is just using someone else's production facilities. At the same time, part of the production remains in the United States. And the quality of the products (which is very important) is at a high level. If it wishes, America can regain its industrial capacities taken out of the country. But this will be difficult and impractical. This has already been tried. However, the expensive dollar and high salaries in the United States pose serious obstacles to this.

According to the IMF, in 2013 the market share of the manufacturing sector in GDP structure covered 20% or 3.2 trillion \$US. In the case of such giant numbers and values, even not leading spheres or sectors of economy can give great impact in the world. For example, having in the GDP only 1% of the agricultural sector in the USA, It is the largest producer of soybeans and corn, it covers one third of the world market. From these examples it is clear that every, even tiny part of american market is huge compared to other countries.

FDI plays a big role in the US economy. There is a map of people supported by FDI (pic. 1.1). All data is showing the 2019 year, where 7.808.100 U.S Jobs were supported by FDI, 395.3 billion \$ were spent for expanding U.S. Exports and 66.9 billion \$ were invested in innovative R&D. The largest sources of FDI are: Japan(14.5%), Canada(13%), Germany(11.7%), UK (10%), Ireland (7.7%) and France (7%).



Pic 1.1 U.S. jobs supported by FDI

America is an import oriented country, which means that there is an imbalance in import/export activities of the country. It isn't a good indicator for any country, but the USA and its government have their reasons for this situation, plus this situation becomes a little bit easier if we take into account that capital inflows and outflows all happen in \$US. The main sectors of import are Oil and Gas.



Pic. 1.2 Import/export activities of the USA in 2019

From the chart below is shown the import and export activities of the USA in 2019 (pic. 1.2). The total US trade with foreign countries was 5.6 trillion \$.

For export, the United States supplies a large number of technological and high-tech products. Including - computers, cars, airplanes, helicopters, space technology, various equipment. But at the same time, many similar products (with the exception of aerospace) are imported from Asia, and often cheaper and of lower quality.

Moreover, according to the UNCTAD statistic, the US is getting the biggest amount of foreign direct investments of 246 billion dollars in 2019. There is a comparison with other countries from the top-20. (chart 1.1)

USA	246
China	141
Singapore	92
Netherlands	84
United Kingdom	59
Other countries	603

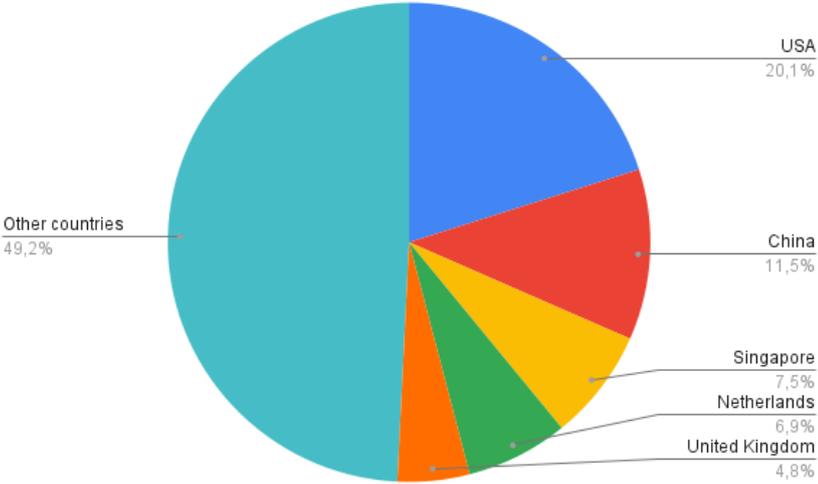


Chart 1.1 Foreign direct investment inflows in \$US billions.
(Unctad.org. 2021)

1.3. Ways of doing foreign business activities in US

So, why Investors may be interested in entering and investing in the USA? Of Course this is the best market in the world, the biggest financial movements are happening in the USA. The political stability and loyalty programs for foreign investors. American laws ensure that local and foreign investors are treated equally. Starting a new business is fun, but it can be daunting. The complexity of registering a company in a foreign country can be overwhelming. The good news is that the steps to register a US company, for foreigners, are pretty simple, and there are many resources to help along the way.

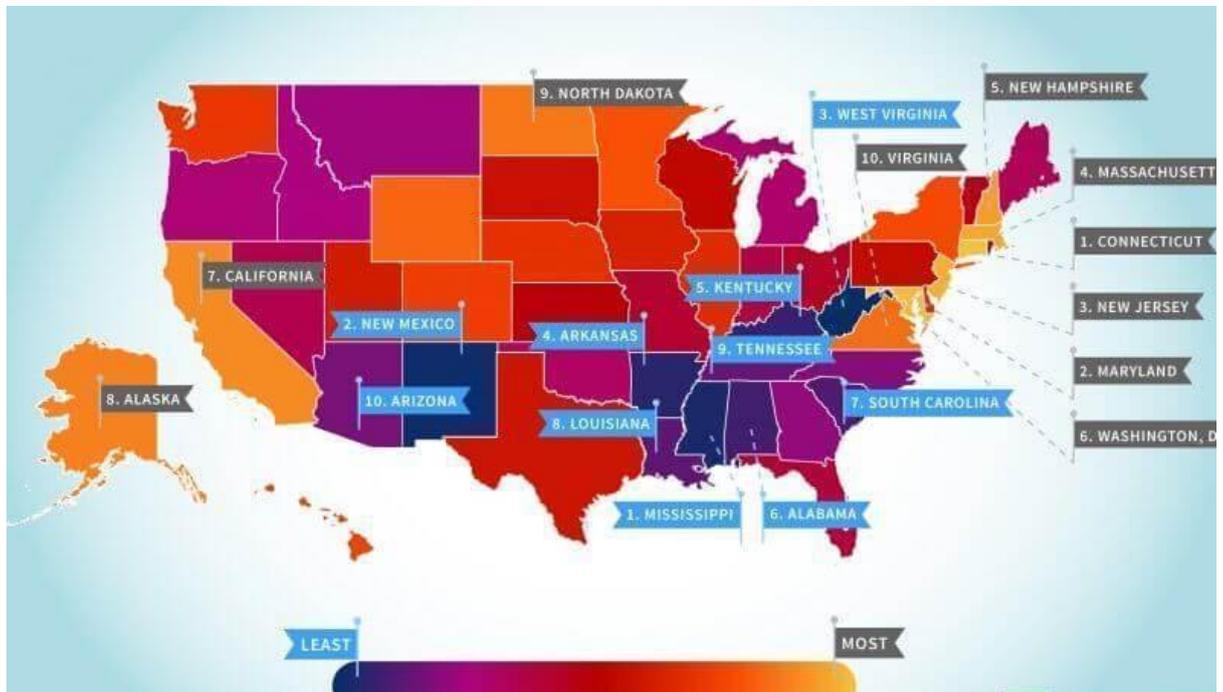
At the moment, there are two types of legal entities that foreign citizens can open in the United States:

- Limited Liability Company (LLC).
- Corporation (C-Corp).

To register a company it isn't necessary to have a visa, but it is needed to live and work in the USA. (World Business Culture. 2021) Ukraine is on the list of friendship agreements with the USA, so it isn't a problem to get an E-2 Visa if it is needed. This type of Visa is specially for investors who want or already invested big capital in the USA.

Also, the great question is where to locate the company. The USA is a big country, different states have different laws. For example many big companies from fortune 500 are registers in states with low tax rates, usually Delaware and Wyoming. Here is the rating of most and least successful states of America (pic. 1.3). The most developed states are California, Texas and New-York. Usually

the biggest market and the greatest competition is happening in these three regions.



Pic. 1.3 rating of most and least successful states of America

So, after mentioning the competition in the USA, during the preparation of this work I read a couple of interviews of foreigners who opened their successful companies in the USA. Both of them mentioned the fact of high competition in the local market, but the phrase that I remembered the most is: “What is competition? There are 300 million people that are spending trillions everyday, the hardest part of doing business in the USA is to find the first order.”

The wealth of a region is usually determined by incomes of the population, basic economic indicators and cultural sites. The highest incomes are in Maryland, the lowest are in Mississippi, California and Texas are leading in terms of GNP. (Bloom, 2021)

There is a GNP of different states: California 2,5 millions, Texas 1,6 million, New-York 1,4 million, Florida 888.000\$.

The medium income of one family in different states of course differs. For example, the leading states in this indicator are Maryland with 74.000\$, New-Jersey - 72.000\$, California - 62.000\$.

As the investor I must choose the best state for my activities to operate in the most effective way. For my business it is necessary to be located near the biggest number of potential customers, so I am choosing three states: New-York, California and Texas. I decided to produce biodegradable plastic and paper packages and mainly sell it for local shops (BI-AX International Inc. 2021), that's why it is really important to be located near the economical centers to short expanses of delivery, but also the labor force and rent shouldn't be too high.

California is the richest state in the country. The population is 80 million people and more than 600,000 of them are millionaires. Financial development has surpassed Great Britain. Also there is a world IT center in Silicon valley.

Texas is the fastest growing state of the USA. Texas has over \$ 100 billion in trade with other states. Among the state's largest and most fundamental industries is farming, with more than 16 million head of cattle. Texas is the main center for the development of computer components and systems, as well as software in the country.

New-York is the third most developed state of the country. The New York Stock Exchange is one of the most influential in the world. Leading center for financial transactions, communications and transport services. The state economy, in a sense, governs the entire country.

1.4 Current business environment at the pandemic time and general trends

Also, I must mention the fact that Covid-19 made a greater impact on the US economy and changed the processes and priorities of doing business. In today's situations many people switch to work from home and face a high cost of living in the economy centers, like New-York. That is

why the latest trend in America is migration to Texas in Ostin. For the last few years there have moved many giant corporations and people. The cost of living is lower than in California or New-York, but located in the most fast-growing state. So, on this stage Ostin is one of the most interesting places to locate a company at.

As a producer, there is also a great opportunity I can see in Detroit.

Recent governmental programs and stimulating companies to locate their production facilities in Detroit also need great attention.

Based on the above pros and cons of investing in the American economy:

- A high level of scientific and technological development, a large amount of funding in R&D (research and development work), the creation of new types of goods;
- A large volume of the economy in absolute terms, its huge impact on the world;
- An extremely developed financial system, on which other states depend, has levers of influence on world cash flows;
- High standard of living of the population and high level of consumption;
- Development of all major sectors of the economy.

But there are always be disadvantages and risks of doing business in America:

- The crisis of overproduction and consumer saturation, the high level of wages deprives the competitive advantage, there is no great potential for growth.
- Imbalance in the structure of GDP, too high a share of the service sector in comparison with industrial production

- Excessive debt burden of all economic entities (from citizens and companies to municipal and federal authorities), the concentration of a large amount of debt in the hands of China, as well as Japan, there are financial risks in the event of a conflict with China;

Also, Any business is constantly under threat of legal pressure. Everything in the USA is solved by lawyers and courts. There are many situations when big companies are trying to prevent or even bankrupt the company with a multitude of lawsuits, to refute that the owner simply does not have enough money to pay a lawyer.

At the moment, the United States is in a state of overproduction, credit and consumer saturation crisis for a long time. These problems appeared in 2008. Then, due to the lack of proper regulation in the financial sector, huge bubbles inflated, the collapse of which almost bankrupted the entire banking system.

For almost any country, entrepreneurship plays one of the most key roles in the path to the country's development. The United States can be considered the undisputed leader in the concentration of huge corporations and representatives of big business. But great attention is also paid to small businesses. It also plays a huge role in the United States, for example, over 60% of all jobs in the United States are provided by small businesses, like cafes, restaurants, clothing stores, grocery stores and many others. Usually in a small business there are no more than 20 hired workers, and the annual turnover usually does not exceed \$3 million. (United States Department of State. 2021)

The beginning of a small business in the United States can be considered the times of the Great Depression. Since then, small business has acquired the status of the most important attribute of the US economic system. The first federal programs to protect small businesses date back to 1932. The government

subsidized the entire business sector of those affected by the war, allowing the country to climb out and quickly build up the gaps in jobs. The US Small Business Administration was also created in 1953. Its main goal is to help small businesses, help in obtaining a loan, advice and technical support, subsidies, etc. A very important feature of this administration is that their offices are located in almost every major city, which allows them to cover the needs of all states to help small businesses. The US authorities assign one of the main roles to small business in their concept of economic development. In the reports of US government ministers, one and the same idea constantly creeps in that small business is an important lever for the recovery of the entire economy as a whole. The COVID-19 pandemic caused great damage to all economic sectors, and the biggest negative effect took small businesses. Because only a few businesses can pay salaries and rent while closed. According to a report by the Federal Reserve Bank of New York in the United States, among small businesses, only about 20% have enough funds to survive a lockdown. That's why the government of the USA made a supporting program to give the opportunity for all businesses to get salary loans for extremely low rates. In the first weeks after realising this supporting program there were a lot of problems with registration and getting the loans because too many people were trying to do it. But now, I hope, everything is solved and new programs are implemented and because of them small businesses survive.

I paid so much attention to the current situation of the business environment in the USA because many small and medium sized shops and companies are my potential customers or partners. This work will be paid attention to doing businesses not with big corporations, but with small businesses. According to an annual report (pic. 1.4) in the state of small businesses there are 610,765 small firms in New-York in 2018 which is 3% more than in 2014. The amount of small companies and the understanding how

it is powerful in all states gives a great potential for the manufacturing company of different disposal, plastic, paper packages and gloves.

Average Employment, Average Quarterly Wage Private Sector Firms With Average Employment Between 1 And 99 2014 vs. 2018				
	Small Firms	Share of All Firms	Average Small Firm Employment	Share of All Employment
2014	592,913	98%	3,987,901	55%
2018	610,765	98%	4,173,719	54%
Percent Change	3%		4.7%	

Source: Quarterly Census of Employment and Wages
Data are subject to revision
Firms with average quarterly employment less than one are excluded from this analysis

Pic. 1.4 Annual report of average employment in small firms

The share of employment by small companies was already covered and proved in New-York, but still there are some problems with unemployment. In march 2019 in the US the unemployment rate was 3.8%, that is pretty low in comparison with other countries, but in the same year and month only in New-York city there were 4.2% of people unemployed. The rate is bigger than an overall country statistic, but still is showing great results, there are not a lot of developed countries with such low unemployment rates. If we are taking the data before COVID-19 pandemic, from the end of the 2019 the unemployment rate of the USA was 4.1%, and there is a list of developed countries that can compete on this point:

- Japan: 2.4%
- India: 3.5%
- Germany: 3.6%
- United Kingdom: 3.9%
- United States: 4.1%
- China: 4.8%
- Canada: 5.9%
- France: 8.6%

- Italy: 10.4%
- Brazil: 11.6%

(Unemployment Rates: The Highest and Lowest in the World, 2021)

According to information from the official site of Joe Biden, the president of America is very worried about small businesses in the USA. There are future plans for establishing new government programs and giving more abilities for small companies to make their life easier. (Joe Biden for President: Official Campaign Website. 2021) Even now, after discovering the vaccine from the Covid, Joe Biden signed into the law a two-month extension of the Paycheck Protection Program (PPP) that gives the opportunities for everyone to apply for a forgivable loan till 31 of May. The development of small business is now very important for the US financial policy, since it can potentially solve the problem of unemployment. During the crisis period, a significant number of layoffs have affected small enterprises - now these workers can again get the opportunity to find a job.

In terms of average wages, the United States is a very expensive country, especially in the leading states. According to the Bureau of Labor Statistics (BLS), the median wage for workers in the United States in the fourth quarter of 2020 was \$984 per week or \$51,168 per year. For example the median salary in New-York for Engineers with a masters degree gets 99000\$ per year.

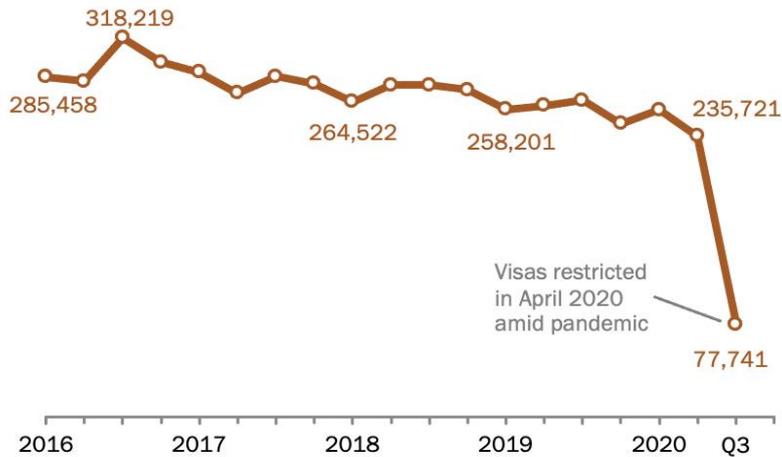
Taking into account three potential future sites to locate a company at: New-York, Ostin and Detroit. The median salaries at these cities are: Michigan \$59,093, New York \$67,727, Texas \$56,536.

Also, the big problem and risk for a business is a migration problem in the USA. On the one hand, there is a common idea that immigrants are taking jobs from citizens, but in reality it isn't 100% true. America has a status of a nation of immigrants, and throughout its history the USA showed openness for

everyone over the globe, people were migrating to find better jobs, higher salaries and bigger opportunities. So, it isn't fair to treat immigration as something negative, this is absolutely a natural and common scenario for every country. But the real problem is illegal immigration, there were over 10 million people living illegally in the USA in 2019. During the elections, Joe Biden paid a lot of attention to migration problems and gave promises about legalization of all illegal migrants who are living in the country. The main problem of illegal migrants is that they are working illegally and get much lower salaries than citizens. They don't have so many rights and law protection. Some companies are hiring them to decrease expenditure on salaries, that gives a big advantage over other competing businesses. It is an absolutely illegal and unfair situation that is very common in the USA right now. During the last 5 years, Donald Trump was trying to build the wall on the border with Mexico, but now this project is paused. On January 23, 2021, Biden introduced the Immigration Bill to Congress. As presented, the bill will provide citizenship to the 11 million undocumented immigrants currently residing in the United States. The bill will also make it easier for foreign workers to stay in the United States. Most likely, the law will be much more modest as it goes through Congress. According to the latest statistics, in February 2021 over 100,000 people were trying to illegally cross the Mexican-US border, that is 30% more than in January. Such big changes can cause big influence on the business sector, but the new migration programs that are focused on getting the opportunity to legally migrate to the USA easier, can potentially solve this problem. The key idea of it is to give a path to citizenship for 11 millions immigrants currently living in the USA and organize the process of taking more new migrants from other countries. Joe Biden has already declined pandemic restrictions connected with green cards, the number of which was reduced from 235,000 in the beginning of 2020 to 77,741 in the third quarter of 2020.

The number of people who received a U.S. green card declined sharply in fiscal 2020 amid the pandemic

New U.S. lawful permanent residents *per quarter*, fiscal 2016-2020



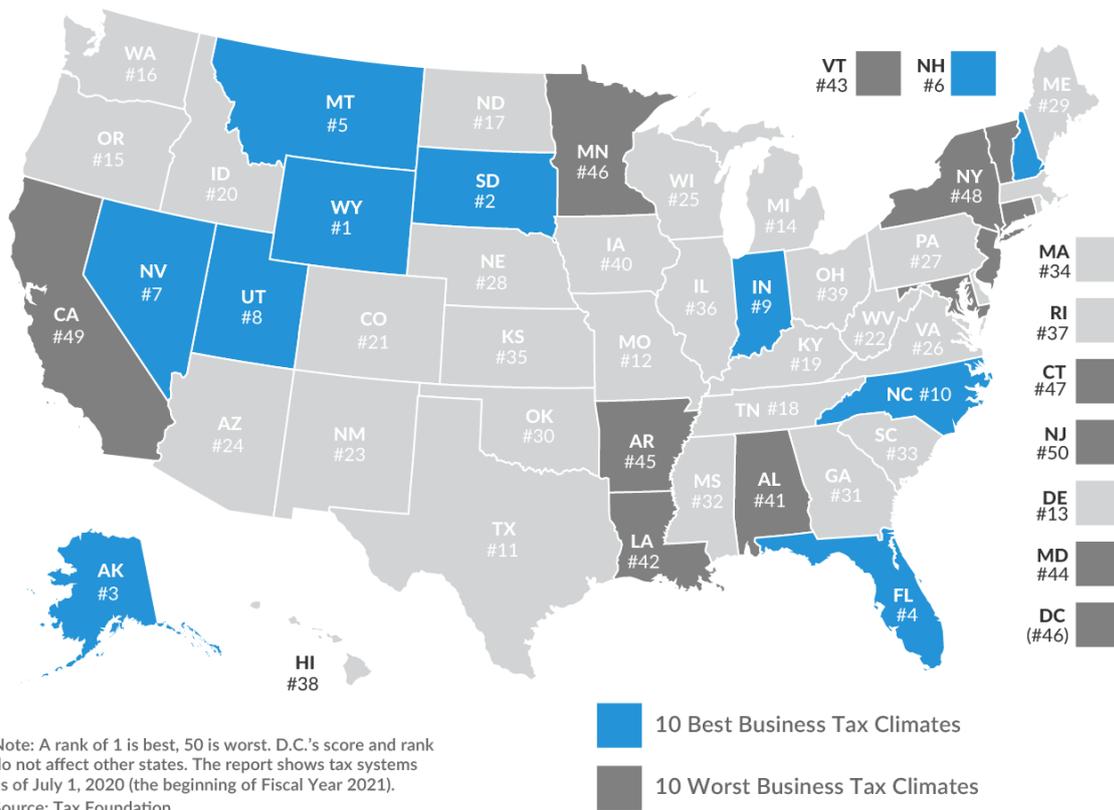
Note: Quarterly data for fiscal year 2020 is through the third quarter, April to June 2020.
Source: U.S. Department of Homeland Security.

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Chart 1.5 The number of people who received a US green card declined sharply in fiscal 2020 amid the pandemic.

Today many people don't have an optimistic opinion about the effectiveness of new migration programs. According to a recent poll, about 57% of all citizens think that this program isn't effective and causes damage for the country. From the business point of view, the new legal workforce, less unfair competing companies are good aspects but the records of migrants entering the country should also be taken into account as a possible risk for the market. The plan of future development of a country was changed after elections, instead of closing the country, controlling the migration, developing the programs that forces big corporations to locate their manufacturing facilities within the country, now the USA is again transforming to more open countries and predicting how it will influence the economy really hard. Billions of dollars are spent for helping the immigrants to survive during the pandemic and reunite with the family from the taxes, which causes complaints from the working citizens.

2021 State Business Tax Climate Index



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pic. 1.6 2021 State Business Tax Climate Index

CHAPTER 2. FOREIGN ECONOMIC ACTIVITY IN THE USA, DETAILED ANALYSE OF INTERNATIONAL BUSINESS.

2.1. Market analysis for plastic bags, restrictions, popularity and general trends

The aim of this part of work is providing the most possible detailed plan for the future foreign project: manufacturing enterprise of plastic, biodegradable, compostable, paper packages and gloves. All data and formulas are taken from real life experience. I choose this project because it is showing good potential especially in such a big market as the US and the latest trends such as pandemic and waste control are changing the situation on the market of plastic packages and forcing it to evolve. There are different ways for starting the business for

different budgets, it can be a full cycle production with recycling line or more simple production from the bought plastic film.

In general, plastic packages are used for carrying the goods, usually from the shop to home. According to the statistics, the average customer is using such a package only once and for 12 minutes (Biologicaldiversity.org. 2021). Nevertheless, even with so short-term use this product is extremely popular and used everyday by customers of any shop, still only 3 states are making the steps for banning plastic packages because of pollution of the environment. Moving back to the statistics, every year in the USA 100 billions of plastic packages are used, and this number is continuing to grow. In contrast to Europe, the USA chose another way of reducing single-used plastic. Americans prefer using paper packages rather than compostable plastic bags, but the trends of eco-friendly products are similar. (EcoBahn. 2021)

Packaging is the most requested product in the B2B business model. Everybody needs packages every day. According to statistics, this is the best-selling product in the world! But due to the intensive development of industry, nature as a human habitat is constantly polluted with various industrial and household waste.

The key idea of my project is to cover the biggest amount of customer needs. In the case of plastic and compostable bags from corn and other materials that can be used in compostable films - the process of production is very similar and can be transformed really fast, only that's why I am still considering this option even with real potential of future total ban of single-used plastic bags.

With the Covid-19 pandemic the situation in market and people mind changed, everyone now is paying much more attention for the personal safety and avoid touching anything with hands, even after the end of pandemic the situation wouldn't change, the usage of gloves in shops grown for the last year and its effectiveness is proved by many customers. In the case of implementing

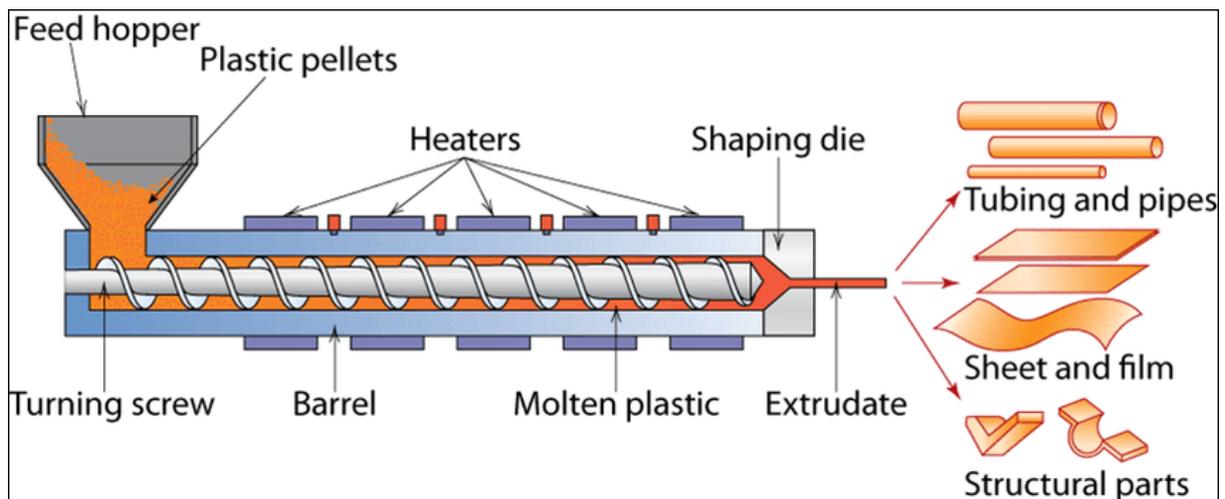
this project in the near future i would give the biggest attention especially on the plastic bags.

2.2. Structure of the manufacturing company

Lats take a closer look on the enterprise structure, I want to divide it on 5 different sectors that doing different things:

- Extrusion
- Painting
- Forming, cutting and developing the final good
- Recycling
- Managerial office

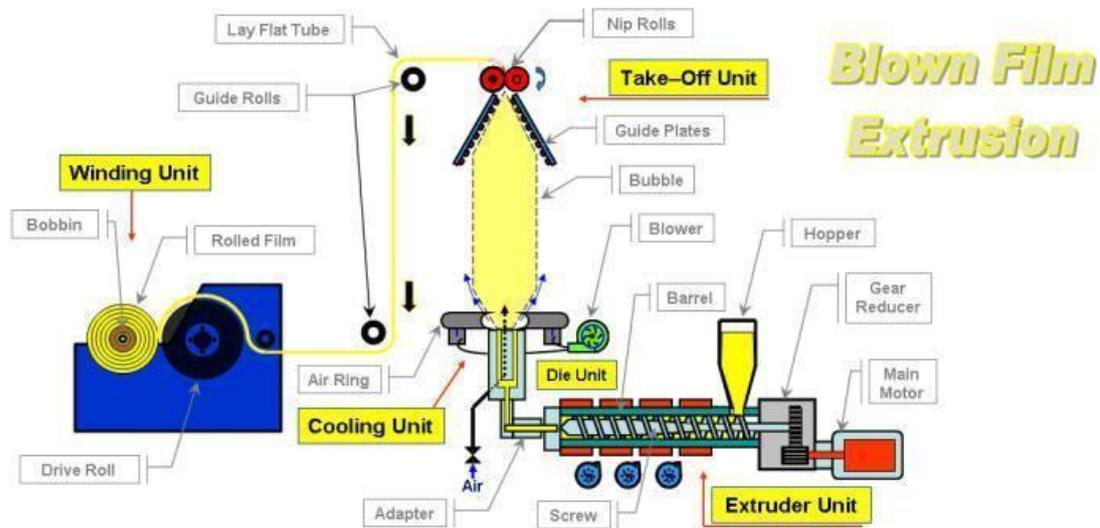
Extrusion is the production of a polymer film, which consists in melting the polymer, as a result of which it turns into a product of a given shape and size.



Pic. 2.1 part of extruder machine

In this image is shown the part of the extruder machine (Pic. 2.1). In the case of plastic bags the feed hopper is filled with polyethylene or compostable plastic from corn starch granules and transferred to the long heater with the help of a

turning screw.



Pic 2.2 Blown film extrusion

After delivering the molten plastic to the die unit the hardest and most important part begins, so the cold bubble from the picture (Pic 2.2) is the place where melted plastic becomes like the film. The process of controlling the size and structure of the bubble takes a lot of time and experience, because the size and quality of the film depends on how well the machine is tuned. After the die unit, the film is formed and goes for the final step of winding on a roll. It is a really brief explanation of the extrusion process, also the film usually goes through the step of “activation” to make the process of painting simpler.

The next step of producing the plastic bag is painting. It is an extra step and can be done in different ways. I will use 2 most common ones in this project: using the painting machine for a polymer film and silkscreen method. At the start of the business it isn't necessary to buy a big painting machine, because it is used for large orders to make a lower price, but in my particular case of doing business with small or medium companies it is more useful a silkscreen method (pic. 2.3).



Pic 2.3 Silkscreen machine

With its help the logo of the shop can be placed, this method can be used not only for polymer materials but also for paper. The biggest question is the speed of painting, there are not so many automated silk screen machines, and most of them require a manual workforce.

After producing the film and before a silkscreen process, it is required to develop a finished package. There are a lot of different types and sizes of bags and for each type it is necessary to have a specific machine. The most common package type is t-shirt or semi t-shirt. It is really easy to produce from the film, it only needs a cutting machine that can not only make the right form of future bag but also place a soldering line and cutting line. This machine also requires an operator, but there is no need for big experience and deep understanding of production. The main work of the operator is to control the quality of the bags and pack the bags for the painting or for selling.



Pic. 2.4 Cutting machine

In this photo is the example of a typical cutting machine (pic. 2.4) for bags t-shirt type, this particular one is only one lined, so only one bag is cutted in each tact. Also near this machine must be placed a table where a finished product is placed before packing it and moving to the warehouse.

Recycling department is also can be very useful not only for reducing the costs of production but also for receiving the bonus points of saving environment enterprise. In the process of production there are a lot of wastes on every stage and everything can be moved to the recycling, but also it is often effective to buy used plastic bags and recycle them. The US market differs from Ukrainian in the attitude of recycled products. In Ukraine recycled materials in plastic bags production is used to reduce the final price of the bag, it is used certain percent of recycled plastic in every plastic bag in Ukraine. But in the USA 100% recycled plastic bags have a higher status and can even cost more than a simple bag. In the case of a medium sized enterprise for a well developed recycling shop is needed 2 machines: chopper machine that chop bags and any plastic material and deliver to a washer to make a clean pieces of plastic.



Pic 2.5 Chopping machine

In this picture is shown the final result of the chopping machine (pic. 2.5). And the second machine is a granulator (pic. 2.6). With help of it the plastic from the picture transforms to the granulas that can be used in the extruder.



Pic 2.6 Granulator

In the case of the recycling department it can be operated by one person, or 2 maximum. But the salary in this department is usually higher in comparison with the operators of cutting machines, because the working conditions are lower and the noise of working machines is loud.

Last but not least, the department in a managerial office. It contains a selling department, auditor's office, head office. The amount of people needed for controlling, selling and operating everything in an enterprise depends on its size. In the case of a new-opened business it may be small. For example: 2 selling managers, director, head auditor and production director.

Moreover, there are two sectors of production that weren't mentioned at this stage: gloves and paper packages.

Both of these sectors aren't so complex in my project, as a plastic bags production. In the case of disposable gloves it is required only one machine (pic 2.7) for making the final product from the plastic film, also there can be used a disposal, recycled or compostable materials. It isn't big, usually contains two lines of cutting film and requires one operator to collect made gloves, make a cutting line and attach a card.



Pic 2.7 Glove making machine

There is an example of gloves with paper card and cutting line (pic 2.8)



pic 2.8 gloves with paper card

In the case of paper packages the way of production is very similar with plastic packages, but requires more complex machines. If we are talking about the using of a semi finished material as a paper roll, it is required a machine for cutting, forming, glue and placing the handles:



Pic 2.9 Paper packages making machine

It is a heavy and expensive machine(pic 2.9), but it provides much higher speed of production then a sami-automated or even manual production of paper bags.

2.3. Analyze of needed space to rent and amount of investments for manufacturing facilities

So, in the case of a manufacturing company it needs a large space. For a manufacturing sector, recycling, warehouse and office. The optimal space for a manufacturing sector and small warehouse is 500 meters and 200 for office space. So, in the case of Ostin, the average price for such a building to rent is 8,000\$ a month. In New-York- 12.000\$ and 7,500 in Detroit. These prices are taken from a lease company Loopnet and the situation in the market may differ in future, maybe it is possible to save some money by renting the building outside the city.

For the effective start of a business it is necessary to buy at least 2 extruders, 4 silk screen machines, 2 cutting machines, 1 glove making machine, 1 paper bags making machine, chopper machine and granulator. There are different companies that produce these machines, mainly located in Europe, China and the USA. From real life experience the most effective and cheap one are produced in China. There are plenty of different companies, like Songshan machinery co. Every new machine after delivery needs deep learning and customization. At least 2 weeks is needed to make the machine working effectively. Also, engineers who know how to repair such machines are needed, something unexpected is happening everyday in similar manufacturing enterprises. The process of preparing for the opening in sectors of doing basic interior repair for the office and setting up the machines should take at least 1 months, and it depends from the rent(lease) contract how much money should be paid during this period.

Before choosing the final location, should be analysed the amount of potential customers near the potential company location. It doesn't mean that it is impossible to deliver the final goods from state to state, but the best price can only be provided for businesses near the manufacturing company. According to government site statistics, in 2012 in Ostin were registered more than 96,000

companies, and according to the overall country data that 82% of all businesses are working in service sector, there are at least 78,720 potential customers, but this data is from 2012, and during last 5 years Ostin showing the big boost in economic attractiveness for companies of all types. Many people are migrating to Texas and the number of businesses must be much higher nowadays. It isn't the record, in New-York the number of small businesses are higher, as I mentioned in the first part of work, but according to the tax climate index from the first part and doing business rating, the optimal location for the company is Ostin.

The number of companies doing plastic, paper packages in the USA is high, but it isn't the secret because packages are the most popular good in the country. Usually big companies like Walmart have their own manufacturing departments and the focus of my project is in small and medium companies in the service sector. It can be restaurants, shops, bakeries, markets. In the case of big leading manufacturers in this sphere, it would be easy to compete, because they are focused on sales in much much higher wholesales to big companies.

Also there are a lot of medium-sized manufacturers that are the real competitors for my project, that production facilities, suppliers, process of production, market sector is the same, and the only one way to compete with them is working with the customers, increasing the effectiveness of production and preparing the effective strategy.

The third type of companies that must be mentioned are the silk screen images or logos doing on the bags. They are buying the final plastic or paper package from the large manufacturer in big amounts and reselling it with logos for small companies. The reason why it is cheaper to use the silkscreen companies instead of working with big manufacturers for customers sometimes is more profitable I will describe later in the part of competing advantages analysis.

The way of doing business in my project is simple. In the case of film production the most expensive part of manufacturing is the beginning, it requires a lot of time to set up the machine for doing the needed size, thickness and structure of the film. This process may cost for the customer thousands of dollars, that's why the plan of my project isn't focused on taking individual orders for bags, but producing the average ones with fixed size that is the most popular. Also, in the step of painting there are also big problems facing large manufacturers because the same situation is happening again. The automated painting machine for the film requires some time for setting up, when the paint and produced film is spent in big amounts. That's why companies are buying semi-finished packages from large manufacturers to produce bags with logos for small businesses. Silkscreen method of painting is cheaper in case of small or medium orders. Also, another tactical advantage over other competitors is the developed way for recycling of production wastes or used film, it may decrease the percent of new plastic granules for producing the packages and give better price for customers. Moreover, the biodegradable packages in United States aren't so popular and the competition in this market isn't so high, but the steps of reducing the usage of plastic are continues everyday, so this nich of the market can be formed today and popularise it for businesses who want to be eco-friendly but paper packages aren't comfortable for them.

To calculate the potential amount of money needed to invest for this project. I will take the medium prices for chinese machines, the actual price may be lower because of wholesale price. In the case of extruders, this project doesn't require a large one, and both of them will be about the same size and cost about 20,000\$. The silk screen machines are not automated and need the operator, that's why this machine doesn't cost much and can be bought for only 2000\$. Cutting and forming machines cost 18,000\$, the most expensive machine is for paper packages production with the medium price of 35,000\$, to equip the recycling department is needed 15,000\$ and finally, fully automated glove

making machine costs 24,000\$. Moreover, it may be necessary to buy from the manufacturer some amount of consumables before finding the local producer like blades, belts and ather, that will cost for 6,000\$ in sum. The total price for buying all necessary equipment is 164,000\$.

Also, there would be spendings of computers, office repair, tables and other small and necessary spendings that depend from place to place. I decided to form the general budget for all the necessary stuff for 20,000\$.

In the case of staff, this project requires at least 2 extruder operators, 4 silk screen machine operators, 2 cutting machine operators, 1 glove-making machine operator, 1 operator for recycling department, 3 sales managers, 1 auditor, 1 director, 1 director of the manufacturing department.

The salaries for these workers in the case of operators should be above the medium wages in the state in this industry.

The sallaris for operators of cutting and silk screen machines should be about 60,000\$ a year. In the case of extruder operators and recycling department operators: 75,000\$ a year, selling managers can have a certain percent from sales, but in this step I will take the 80,000\$ salaries a year. The Average Auditor's salary in Texas is 85,900\$. And the last step is setting the directors wages, which will depend only on the profit of the company, but let's set it for 100,000\$ in this step.

The same types of companies are reporting the optimal payback period in 2 years.

CHAPTER 3. DEVELOPMENT OF AN INTERNATIONAL INVESTMENT PROJECT TO ESTABLISH A MANUFACTURING ENTERPRISE OF PLASTIC, BIODEGRADABLE, COMPOSTABLE, PAPER PACKAGES AND GLOVES

3.1. Total investment

Taking into account that the total amount of investments in equipment for opening this project equals 184.000\$ we should calculate the cost of production and the price of the goods to understand the payback period of the project.

The cost of production consists of spendings on raw materials and all other spendings as salaries, electricity, taxes etc.

Product	Amount	Cost for 1ps
Extruders	2	20,000\$
Silk screen machines	4	2000\$
Cutting and forming machines	2	18,000\$
Glove-making machine	1	24,000\$
Paper packages production machine	1	35,000\$
Recycle department	1	15,000\$
Consumables		6,000\$
Repair cost		20,000\$
		Total 184.000\$

Table 3.1 Amount of investments needed for equipment

3.2. Calculations of 1 bag production cost

To understand the general trend and spendings of the company I will calculate the total amount of spendings for 1 final plastic bag size 30 x 32 cm and thickness 7 microns. In the case of raw materials its cost is hard to find in the US, but knowing that in Ukraine high density polyethylene costs 40UAH for 1kg, we can calculate that by purchasing power parity in USD its price equals 4\$ for 1kg of raw materials. The cost of production must be divided by three departments, first of all the cost of film manufacturing, painting costs and cutting/forming cost. During the extrusion money spendings consist from operator salaries, manufacturing director salary, raw materials. Knowing that the total amount of time machine working during the day is 16 hours and speed of production is 300 bags a minute by two extruders, we know that 288,000 bags are made during one day. The salaries of extruder operators and manufacturing director wage equals 685\$ a day. For calculating the amount of used materials for the film there is a formula: $30*32*7*2*0.0001*0.95$ (in case of HDPE) = 1,2768kg is the amount of raw materials used to make a 1000 bags. So, one day 1470\$ is spent on raw materials. The total cost of extrusion of 1000 bags is 7,5\$.

Moving to the next department - cutting and forming we should consider that there are three machines that use plastic film as a material: 2 cutting machines and 1 glove making machine. The total amount of time these machines work during the day is 8 hours with a speed of 200 bags a minute that equals 600 final products in sum. The spendings in this department consists of operator salaries, film costs. So, the total amount of products produced during the working day by all three machines is 288,000 bags and gloves. The salaries of 3 operators is 493\$, It is needed to calculate how much it cost to make 1000 final goods in this department: $493/24/60*5/3=0,57$ \$ costs a procedure of cutting and forming.

In the case of the painting department it is much harder to predict the speed of production because it depends on the operator's qualification and the level of automation is low. So, let's consider that one operator can print 20 packages per minute, having 4 machines this is 80 bags a minute. So, the salary of 4 operators equals 657\$ a day. And the 1000 bags to paint costs 5,7\$ of operator's salary and 30 cents of actual inc.

Also there is spendings on the selling department, auditor, director that also should be transformed in the same format to understand how much money it costs in 1000 bags to cover spendings on wages. The managerial department costs 948\$ a day in this project and taking into account that the manufacturing power gives the opportunity to produce 288,000 bags a day - it costs 3,3\$ for every 1000 bags to cover the spendings on the management office.

Summarizing all calculations it is considered that the manufacturing price of not painted bags is $7.5+0.57+3.3=11.37$ \$ and 17,37 for painted packages.

These values are not final because there are no electricity calculations, repairing costs, depreciation of equipment and impact of the recycling department not included, because in this stage there is no way to find the contract with other companies who can provide the used plastic packages, because the manufacturing wastes in this project aren't so high in case of this particular project. Also, the electricity usage amount and costs are also hard to predict. But, the recycling department is a key for reducing the price of production and can affect the final price even by 10-15%, according to my research during the production there is a certain percent of film that isn't used and cutted from the final good. As an example, the bag t-shirt type contains 12% of film waste on every bag, and in the case of gloves- 45% of film is cutted out. So, I will consider the recycling department to cover the salaries of operators, electricity, repair costs and depreciation of equipment.

Companies with similar model of work reporting the payback period for 2 years (Polyplex.com. 2021), so to the spendings on equipment and lease I want

add one additional month of setting the equipment without any sales and profits, so $184000+16000(1 \text{ month of lease and deposit})+41325(\text{salary of auditor, managers, extruder operators and manufacturing director})=241,325\$$

There are no salaries for some operators because it isn't necessary to hire them in the first month, but it should include an additional 10,000\$ for the salary of engineers who will set up the machines with help of extruder operators and manufacturing director. The total amount of investments that will be calculated as a payback is 251,325\$.

operators of cutting and silk screen machines	7	60,000\$
extruder operators	2	75,000\$
recycling department operator	1	75,000\$
selling managers	3	80,000\$
auditor	1	85,900\$
directors	2	100,000\$

Table 3.2 Salaries spending per year

Salaries	97,575\$
electricity	6250\$
amortization rate	2190\$

utilities	1500\$
rent	8000\$
raw materials cost	48000\$

Table 3.3 Spendings per month

3.3. Estimated income calculation and assessment of the economic attractiveness of the investment project

So, the planned amount of spendings in salaries is: 97,575\$ in a month (table 3.2). The amount of electricity spent in similar types of companies is 100,000-150,000kWh and with the price of 5 cents per kWh the electricity bill should be 6250\$ per month (Rates, E., 2021). The amortisation rate for the equipment will be calculated with the term of planned usage for 7 years or 84 months. So, $184,000/84 = 2190\$$, the average price for utilities in Austin for manufacturing companies is 1500\$ a month, rent 8000\$ (LoopNet, 2021). The raw materials cost 44000\$ per month and inc 4000\$. So, the overall spendings per month on this project equals 162,015\$ (table 3.3) and the amount of goods produced for this period is 8,640,000 with the retail price 20.8\$ per 1000 bags. The total profit after all expenses equals 17.697\$ and it should be paid 26.71% (SmartAsset, 2021) income tax

So, the minimal discount rate for this project is:

$$i = (1+Hn)^x(1+\pi)^x(1+rk)-1$$

$$i = (1+0.04)^*(1+0.026)^*(1+0.05)-1=0.12 \text{ or } 281,484\$.$$

In the case of Net Present Value (NPV) the formula is

$$NPV = \sum_{k=1}^n \frac{P_k}{(1+i)^k} - I$$

And in the case of discount rate 12%, the return in equal parts of $17,697*12*73.29\% = 155,632\$$ for 2 years. The NPV equals \$11,701.02, that is more than 0, so the project is effective.

Profitability Index (PI) = $263026.02 / 251325.00 = 1.0466$, so $PI > 1$, the international project should be accepted.

Expected Cash Flows: \$263,026.02

Payback period: $251,325/155,632=1,6$ years

So, according to the calculations, the dynamic payback period for 2 years is real and this project is marked as effective and profitable.

Conclusion

So, according to this work, manufacturing plastic packages and gloves is profitable. After researching the US market it is clear that it is one of the best countries to open this type of business. There are several reasons for it: entering the biggest market in the world, large numbers of potential customers as small and medium sized businesses, and protection of the government. There are some potential risks that are connected with the latest trends in the world, such as banning of plastic packages, but the situation in the USA differs from Europe and there are no such ideas to implement in the near future. Also there is a risk of potential competition with importing companies that locate their companies where labor force and production spendings are lower and importing final goods to the US market. But, because there are no privilege programs for plastic packages it isn't so dangerous because of high import rates that should be paid on the border.

Generally, the USA gives the opportunity to implement any idea of business and easily find the customers on the market, and this is the biggest difference from Ukrainian economy where many spheres are not so profitable, or it is hard to find a customer for the niche product.

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