

SAIMAA UNIVERSITY OF APPLIED SCIENCES
Business Administration
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International Business

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**EXPANDING BUSINESS TO SPAIN
CASE: FUNGITUBE TREATMENT FOR
CONTAMINATED SOILS**

Bachelor's Thesis 2010

TIIVISTELMÄ

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Liiketoiminnan laajentaminen espanjan markkinoille Case: FungiTube käsittely saastuneille maa-aineksille, 38 sivua

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Opinnäytetyön aiheena oli laajentaa suomalaisen MZYMES Oy:n saastuneiden maiden käsittelyyn kehittämä FungiTube -menetelmä Espanjan markkinoille. Yrityksellä oli valmiita kontakteja Espanjan maankäsittelyteollisuuteen, ja merkit viittasivat siihen, että tarvetta menetelmälle olisi. Tulevaisuudessa MZYMES aikoo laajentaa toimintaansa myös muihin Euroopan maihin.

Työssä käytetty tieto on kerätty eri tietolähteistä, kuten kirjoista, tieteellisistä julkaisuista, tietokannoista, maanpuhdistus- alan julkaisuista sekä internetistä. Kokopäiväinen työskentely yrityksessä opinnäytetyön tekovaiheessa laajensi tietopohjaa ja teki työstä omakohtaisemman. MZYMES:n ja erään espanjalaisen yrityksen kanssa yhteistyössä toteutettu yhteinen hakuprosessi suureen EU-rahoitteiseen projektiin oli myös erittäin opettavainen kokemus.

Ennen liiketoiminnan laajentamista yrityksen täytyy analysoida uusi liiketoimintaympäristö erittäin huolellisesti. Näiden analyysien pohjalta yrityksen tulee tehdä selkeä toimintasuunnitelma siitä, kuinka laajentaminen toteutetaan. Tämän opinnäytetyön tarkoitus oli kuvailla, mitä kaikkea MZYMES:n kaltaisen yrityksen tulee ottaa huomioon, kun se haluaa laajentaa toimintaansa ulkomaille. Kerätyn tiedon analysoimisessa auttoi PESTEL- analyysi.

Opinnäytetyön tuloksena syntyi malli siitä, kuinka MZYMES Oy:n tulisi edetä tulevaisuudessa suunnitellessaan uusille markkinoille siirtymistä. Opinnäytetyön konkreettisenä tuloksena mainittakoon myös, että yrityksellä on meneillään lupaavia projekteja espanjalaisten yritysten kanssa.

Asiasanat: pilaantuneen maan käsittely, vienti, Espanjan markkinat, ympäristötekniikka

ABSTRACT

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Expanding Business to Spain

CASE: FungiTube treatment for contaminated soils, 38 pages

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Degree Program in International Business

Specialization in International Business

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Instructor: Principal Lecturer Kirsi Viskari

The target of this bachelor's thesis was to commercialize the novel, FungiTube treatment for contaminated soil to Spanish markets. Treatment was created by a Finnish company MZYMES. The company saw potential in Spain and decided to bring technology there, because they already had some contacts to the Spanish soil treatment industry. In near future MZYMES aims to expand its actions to other European countries also.

Information was collected from existing sources, such as books, databases, magazines and the Internet. Also interviews of the specialists were made. Full time working in the company during the process gave a lot for the thesis; and application process for a big project between MZYMES and a Spanish company was very educational.

Before taking the first steps to expand business, the company had to analyze the new business environment very carefully. Based on these analyses the company had to make a clear action plan how to run the business and gain success. The purpose of the thesis was to create a model that needs to be taken into consideration when a company such as MZYMES wants to go overseas. A PESTEL- analysis was used to help to analyze the gathered information.

As a result of the thesis, a step-by-step model was created on how MZYMES should penetrate the new markets in future.

Also as a concrete result it can be mentioned that there are some promising projects going on between MZYMES and Spanish companies. It takes time to get into new markets, but MZYMES is on its way to international success. A lot of work is needed before the first FungiTubes are sold in Spain, but this thesis project was a good beginning.

Key words: Soil Treatment, Exports, Spanish Markets, Environmental Technology

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1 INTRODUCTION

1.1 Targets and purpose of the thesis

The purpose of this final thesis is to bring new FungiTube technology to Spanish markets. The technology is used to clean contaminated soils, and it was created by a Finnish company, MZYMES Ltd. At the moment MZYMES is operating in Finland with a close cooperation with the biggest operators of the soil treatment industry, big land owners and waste treatment plants.

The thesis concentrates on monitoring what is needed from a company like MZYMES to be taken into consideration when planning to expand to international markets. Finnish markets are small in a world scale, and green technologies are what markets around the world are looking for. That supports the timing of MZYMES to go abroad with its FungiTube technology.

The target of this final thesis is to find out the right way to launch business in Spain. Finding the right cooperators, knowing the legal issues and contacting the right persons are in a key role when measuring success in this kind of a project. One target is also to create a launching model, which can be used when expanding technology in other European countries in the future. Spain is chosen to the first target market abroad because there are already some contacts existing and investigations done over the Spanish markets by MZYMES.

1.2 Research methods

The research was done by using literature as a theory and interviews to gather information about technical issues and Spanish markets. In such a “knowledge-based” company as MZYMES is, often the knowledge is not available in any documented form. This is basically because there is simply no time to write all

the information down. That is why interviews were chosen, and used a lot as a research method.

The business plan of MZYMES was the main source of information about the company. Literature about the commercialization and productization of innovation and expanding to new markets was also used. The latest possible information available about the technical and financial situation in Spain was collected from the articles in newspapers, magazines and scientific publications. A PESTEL analysis was used as a tool to help to analyze and process the gathered information.

2 MZYMES

MZYMES is a Finnish industrial and environmental biotechnology company developing innovative technologies for industries. It was established in 2002 by Kimmo Räsänen, Kalevi Harinen and Mauri Lamminsalo. This group decided to gather together leading enzyme and fungi researchers for a panel. After the panel they noticed that there were many potential innovations available, but with no clear plan of how to commercialize them. MZYMES was then established to function as a link between the industry and research parties, and the main goal was, and still is, to develop enzyme and fungi based innovations for industrial needs.

At the moment MZYMES is concentrating on three main applications, which are the treatments for wood biomasses, industrial side streams and contaminated soils. (Räsänen 2009 p. 4.;Lamminsalo 2010)

The head office is located in Joensuu, in the eastern Finland. MZYMES also has its own research and development center, MLAB, which is placed in Oulu, in the northern Finland.

In 2009 MZYMES received a national INNOFINLAND PRIZE from the President of the Republic of Finland. The prize was awarded from developing a new,

enzymatic pre-treatment of wood chips in mechanical pulp production, resulting in considerable energy savings. (STT 2009)

2.1 Business

Energy and material efficiency in industrial processes is improved by enhancing from nature's own processes. Technologies are based on the utilization of microbes and enzymes in the process development. MZYMES is mostly concentrating on industrial processes, especially in the paper industry. MZYMES applications enable users such as forest industry companies, bio energy producers and companies specializing in treating contaminated soils to develop their own processes to be more cost-effective and environmentally-friendly. (Räsänen 2009, pp. 3-4.)

Business results of MZYMES are coming from:

- a) owning, developing and selling enzymatic innovations
- b) investigating and producing tailor-made enzyme receipts for customers
- c) selling the created products
- d) selling licenses for innovations
- e) selling know-how of enzymes affections in processes

MZYMES is also acting as an agent for various enzyme products and biotechnical supplies and systems. (Räsänen 2009, p. 12.)

The technologies MZYMES is creating are mostly totally new ones. Many of the technologies are easy to tailor for several needs. A good example of this is the FungiTube treatment; it can be used to clean soils contaminated by many different kinds of toxics, but in the future the technology can be used to treat industrial side streams or other waste materials. Transformability gives MZYMES an edge against competitors; there are many different roads to choose, not only one.

2.2 Value chain

MZYMES operates in international markets and offers for its cooperators opportunities to be pioneers in using innovative enzymatic technologies. The business can be described to be under the bio and environmental cluster. Research and development center MLAB, placed in Oulu, is mainly concentrating on scientific laboratory work, testing and analyzing. The head office in Joensuu is concentrating on commercializing the innovations. (Räsänen 2009, p. 14.)

Picture 2.1 below describes the steps of MZYMES in bioremediation. A sphere of activities of MZYMES starts from defining the level of contamination of the mass treated. The next step is to choose the best possible option from the mycelia bank of MZYMES. After the mycelium is chosen, it is time to start to plan the installation: how many tubes are needed, what kind of aeration is used, what kinds of piles are constructed and so on. These conditions are tested in a laboratory scale. After successful laboratory scale studies, it is time for pilot scale studies. When the pilot scale studies work as expected, treatment is done in an industrial scale, which is for example 10m³ of the contaminated mass. After a successful industrial approval, the product is ready to be sold. (Räsänen 2009, p. 15.)

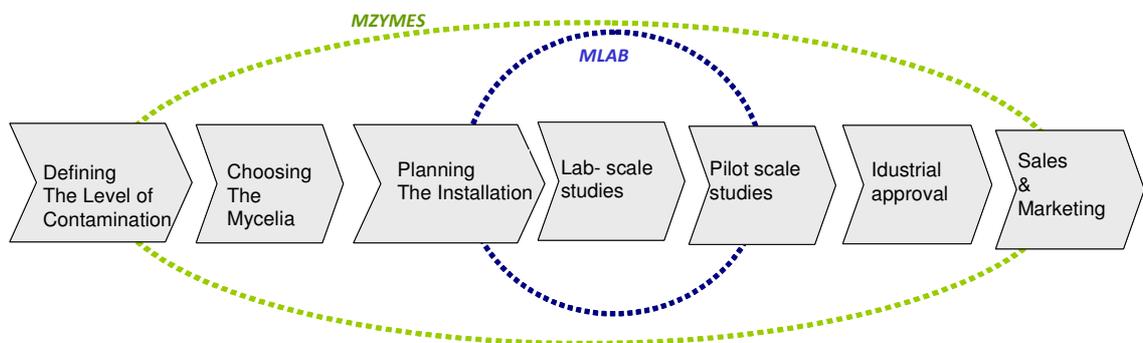


Figure 2.1 MZYMES steps in FungiTube treatment

All the steps need to be completed only when a totally new kind of soil is treated. If MZYMES gets soil which is similar to what has already been tested and analyzed in MLAB, the time needed for pre-analyzing is significantly shorter. That naturally cuts down the time needed to deliver the product to the customer.

The total delivery time depends inter alia on the size of the delivery, the structure of the mass treated and the utilization rate of the production line. There is no average delivery time; it varies from 1 to 6 months depending on the case.

3 EXPANSION TO NEW MARKET

This chapter is about to open the basic idea of what needs to be taken into consideration when bringing an innovative product to new markets. The reason why MZYMES starts exporting is to reach wider markets.

3.1 International trade/ internationalizing

When products or services are exchanged outside the national boundaries, there is an international trade happening. Export includes the goods or services sold to another country. Imports are the products or services coming outside the boundaries. This means that the total value of international business is more than \$7 trillion every year. (Nelson 2000, pp. 3-4.)

Countries want to protect their own economies, and that is why trade barriers are used. Trade barriers encourage the local production while making it more difficult for foreign enterprises to compete. The trade barriers also help local enterprises to make far reaching development plans, while the future is easier to predict. Protecting local jobs, helping start-up companies and encouraging to

direct investments are also reasons to set up trade barriers. (Rugman, Collinson & Hodgetts 2006, p. 167) For a long time countries have made different kind of collaborations to grow the market area, but at the same time to control it all together. A good example of this kind of collaboration is the European Union.

The European Union has been set to reach the free movement of goods, services, people and capital inside EU borders. The EU's target is the harmonization of the rules relating e.g. to corporate governance, company law, contract law, taxation, accounting and auditing. The goal is to reach a single set of rules which can be followed inside the EU. Single set of rules would help companies from EU member countries to expand their actions inside the EU. (European Commission 2010b.)

3.2 Exporting

It does not matter what the product or service of the company is, but if the company sells outside of its borders, it is an exporting company. (Curry 1999, p.17.)

Exporting is vital for a small country like Finland. While Finnish markets are small, globalization has made it possible for Finland to succeed in international markets. After the early 1990's recession the Finnish electronic industry made its break through in international markets. In 2008 the total value of Finnish exporting was 82 billion euros, which covers 44.2 % of the total GDP of the country. (Confederation of Finnish Industries EK 2009)

Exporting from Finland to Spain was in a stable level of around 1.3 billion euros until year 2005. The statistics of Finnish customs show that over 350 Finnish companies sell their products to Spain annually. (Finpro 2009, p.16.) From 2005 to 2008 the total value of export grew to 1.8 billion euros, which means that the growth was nearly 20 per cent in three years. The biggest part (49.9 %) of the total export was covered with the export of machines and equipment. At the same time Spain was yearly exporting to Finland worth of 900 million, so the

trade had more than one million surplus for Finland. (Finpro 2009, p.14.)

3.3 Keys to success in international markets

Most successful companies in internationalizing are those that develop networking strategies aimed at forming networks with external operators. Also spending time and resources on seeking, developing and maintaining these networks, approves the possibilities to succeed. (McDonald, Tuselmann & Wheeler 2002, p.9.)

Creating a good export strategy improves possibilities to succeed in a new market environment. The good export strategy means carefully choosing the information used when making decisions, using correct networks and using the resources available as well as possible. The careful screening of the new markets reduces the risk to fail. (Woznick 2000, p.2.)

Companies, the founders of which are themselves foreign nationals and fluent in foreign languages or have been studying or working overseas, are more eager to network overseas. Those companies are also more active in developing new ways to internationalize. Regardless of how a company is planning to penetrate foreign markets, there will be a point when they have to make the first actual contact in the foreign market. (McDonald et al 2002, p. 9.) That is the point when a company's human resources and the experience might be a crucial factor.

It has been studied that growth and expanding to new markets are necessary especially for innovative, small high-tech companies. This is not only to get a larger area to make business, but also for networking and developing the technologies. (Rothwell 1991, pp. 93– 112.)

The list below gives an idea on the factors what should be taken in to consideration when planning actions abroad:

- Use common sense when estimating a company's potential in new markets.
- Create an information database about your destination market.
- Create a distribution plan fitting for the company.
- Think carefully about the target group in overseas markets.
- Be ready to tailor the product.
- Besides the verbal communication, remember also the nonverbal one.
(White 2008, p.170.)

4 PESTEL TOOL TO ANALYZE AND COMBINE INFORMATION

The macro-environment managers of any organization have to handle several factors affecting decision making. New laws, trade barriers, changes in taxation, changes in demographics and changes in government policy are examples of macro change. A PESTEL tool is made for managers to categorize these macro changes and on that way to help managers to do the right decisions. In another words, PESTEL is concentrating on the external environment of the company. (Gillespie 2007)

The abbreviation PESTEL stands for political, economic, social, technological, environmental and legal factors. Here is a short explanation of the factors.

4.1 Political factors

Based on the Gillespie's (2007) theory, this area includes the impact of political decisions for doing business, and the factors that have to be taken into consideration when operating in a specific market area, the support companies can get from the government, and the priorities to support businesses. Also the infrastructure of the economy, health, nation and level of education are counted under these political factors.

A good practical example of the political factors affecting the profitability of doing business could be the governments' attitude towards healthy food. In the United Kingdom the government create initiatives to support and market operators concentrating on producing healthier food. Actions like this gives competition edge for companies producing healthier food against those producing less healthy one. (The Times 100 2010)

Another very important issue is the stability of the political situation in the destination country. Instability of the political situation makes it hard, or in some cases even impossible to operate. An impossible situation could be for example war or revolution going on in a destination country. Company needs to see what kind of effect some particular political events may have to their business; occurring demonstration in an unstable developing country can be much more dangerous than mass demonstration in a stable one. (Wagner 2000)

4.2 Economic factors

Interest rates, taxation changes, economic growth, inflation and exchange rates are indicated in economic factors. These factors have a major impact when choosing a new potential market area. (Gillespie 2007)

There are several organizations gathering and sharing information on economic factors around the world. Embassies, banks, national organizations and operators such as World Trade Organization (WTO) and World Bank are good sources of information when measuring economic factors of the target country.

Finnish companies have established a union called Finpro. Finpro is an organization, which targets to speed up the internationalization of Finnish companies. They have offices in more than 40 countries in America, Asia and Europe. The union is actively monitoring economic factors in the countries they are operating in, and making the step from Finnish markets to market abroad easier for Finnish companies. (Finpro 2010)

4.3 Social factors

The age structure and unemployment situation of the population has a huge impact on the markets. For example, at the moment, in Finland the population is aging fast and it has an impact on both the buying habits and the availability of the labor. This might be a challenge for a company wanting to sell toys in Finland. (Gillespie 2007)

Examples of cultural differences can pop up anytime: it is hard to get service in Spain while siesta is going on, or if people cannot read, it is hard to sell books to them. Cultural differences between nations have a big role in business actions. By knowing the local manners and habits, the possibilities to succeed raise exponentially. Cultural differences need to be taken in to consideration carefully, but at the same time too much stereotyping can be dangerous. The golden mean needs to be found. (Billikopf 2009)

4.4 Technological factors

What kind of technologies are available in the markets? Is the technological infrastructure in a high enough level for a company to operate in new markets? Does the company have enough technological know-how to operate in new markets? (Gillespie 2007)

Technology is changing very fast, and the destination country needs to be ready for that change. It is important that the country's government supports and repairs for the future. (Chartered Institute of Personnel and Development 2008)

4.5 Environmental factors

As a part of environmental issues, weather and climate change are very important factors when planning to do business in a new territory. Changes in these conditions may change the nature, and in some cases, totally prevent possibilities to do business. On the other hand, it is possible that changes in

environmental factors open totally new doors for new innovations. Environmental sustainability is a big issue for consumers and companies in these days, and has to be taken into consideration when planning businesses. In different market areas there can be different opinions about what is sustainable and what is not. (Gillespie 2007)

It is also good to have an idea what the public and governmental attitudes for green innovations in the target market are; is greenness advantage or liability?

4.6 Legal factors

These factors cover the legal environment where a company is operating. As an example of legal factors could be the labor law, including minimum wages and number of allowed working hours. Legal changes can affect a firms costs or demand. (Gillespie 2007)

There can be big differences between legal regimes of countries. These variations can appear when making contracts, protecting intellectual property or measuring the attitude towards corruption. Also the role and the trustworthiness of police forces affects straight the safety of employees. In some case the safety issues can make it impossible to do business in otherwise promising market area. (Johnson, Scholes & Whittington 2008, p. 307.)

5 SOIL CONTAMINATION

Soil contamination is, and has been a big environmental problem in very many countries. The European Environment Agency (EEA) estimated that in 2006 there were 250 000 contaminated sites in Europe requiring treatment. The report also points out that this number will increase by 50% in 2025 if the course keeps advancing. (EEA 2007)

In EEA member countries industrial and commercial activities and the treatment and disposal of waste are the most important sources of contamination. Typical

contaminants found from soils are heavy metals and mineral oil. (EEA 2007)

In Spain industrial production and commercial services (46.8%) and municipal waste treatment and disposal (46.8%) cover more than 90% of all contaminated sites. (EEA 2007)

Methods used to treat contaminated soils

Here is a short introduction about the most used methods, which are used to clean contaminated soils.

5.1 Thermal treatments

Thermal treatments are physical separating treatments where contaminants are removed from the soil by vaporizing them in high enough temperature. (Mroueh, Vahanne, Eskola, Pasanen, Wahlström, Mäkelä & Laaksonen 2004, p.129-162.) First the soil is heated in a heating drum to the temperature of ca. 450–800 °C. From the heating drum the contaminants are volatilized to be combusted in oxidation chamber in ca. 850–1100°C. In incineration the temperature can even rise up to 1300°C. (Ekokem 2010) Thermal treatments can be used for soils contaminated by mineral oils, solvents, VOC compounds, chloral phenols, PAH compounds, pesticides dioxins, PCB and furans. (Savaterra 2010)

5.2 Stabilization

Stabilization is a method the goal of which is to transform contaminants to a less harmless form. It is done by mixing additive, such as bitumen or cement, with soil. As a result of mixing, the solubility and the movement of contaminants decrease. As a result, the soil can be used as structural material or shipped to landfills, depending on the level of contamination, solubility and geotechnical suitability. Stabilization can be done both on and off site. (Mroueh et al 2004, pp. 93 – 128.; Ekokem 2010)

5.3 Dig & Dump

If possible, contaminated soils should always be treated so that they are used in soil construction. If that is not possible, or it would be too expensive, contaminated soils are dig and dumped to the landfill. This method does not actually solve the problem, it just moves it to another place. Encapsulating is used for the hazardous waste, which cannot be cleaned by existing methods. It means isolating the contaminated soil material so that it cannot get in contact with rain, surface, or groundwater. (Mroueh et al 2004, pp. 265 – 289.)

5.4 Composting

Composting is one of the only biological treatments wider used when treating contaminated soils. It is based on microbe populations' ability to break soils organic harmful substances. Often the composting process is boosted by adding oxygen and nutrients. Composting is normally carried out by piling contaminated soils and then optimizing the circumstances as explained above. (Mroueh et al 2004, pp.196 – 216.)

5.5 Fungal bioremediation, FungiTube treatment

Fungal bioremediation means biological treatment applying fungi. For the first time, MZYMES has developed an innovative bioremediation technique to treat contaminated soils applying fungi in the form of tubes, called FungiTubes. (Harinen 2010, p. 4.)

In the treatment fungi is added to breeding ground and moved in a form of tube to the contaminated soil. The enzymes of the fungi cut long toxic chains, and make it possible for the soils own microbes to activate in remediation. In another words, the treatment speeds up and increases the effectiveness of

natures own capability to break contaminants. It is also possible to use the method as a pre-treating method to reduce the contamination level before thermal treatment or composting.

(Soini 2010)

Principle

FungiTube- treatment can be used On- Site, In-Situ or Ex-situ. This means that it is a very convertible method. In the figures below you can see FungiTubes installed In-Situ (5.1) and On-Site (5.2).

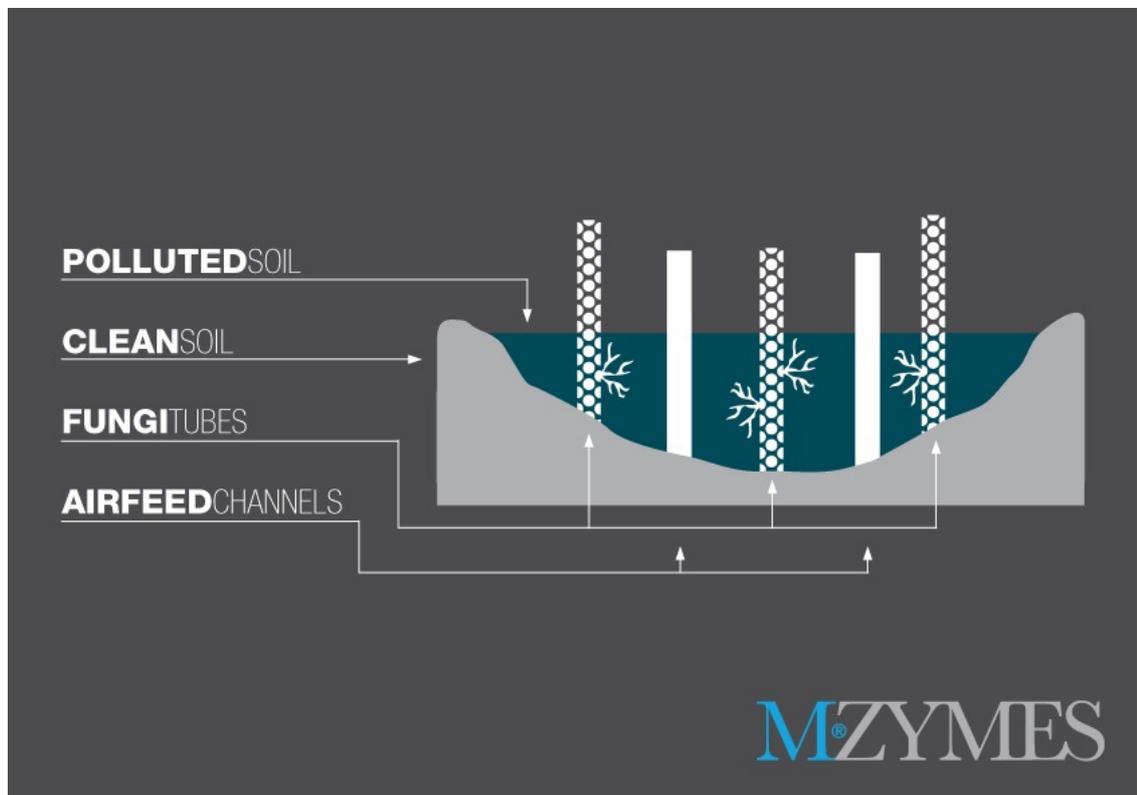


Figure 5.1 FungiTubes installed In-Situ (MZYMES 2010, p. 9.)

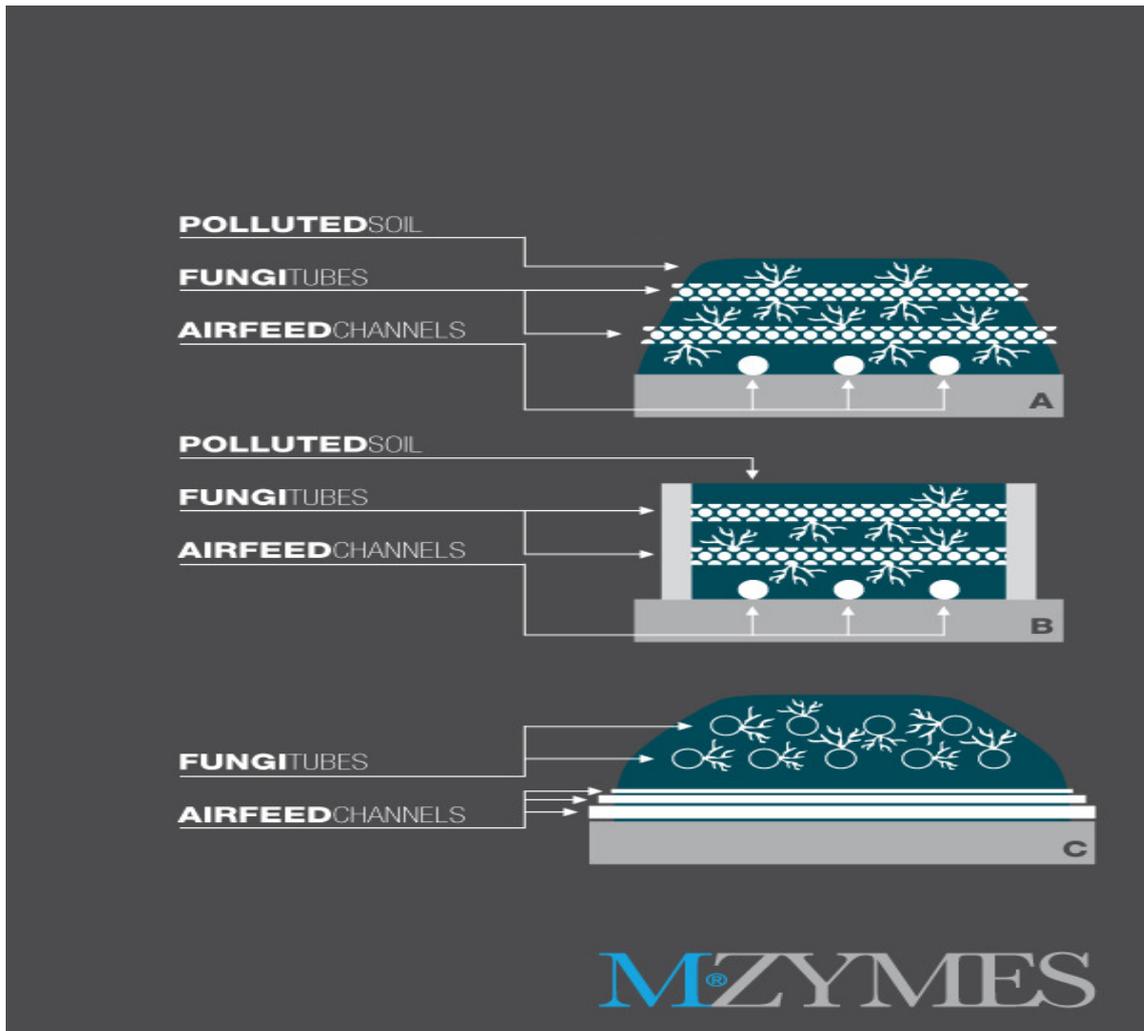


Figure 5.2 FungiTubes installed On-Site (MZYMES 2010, p. 11.)

By the method, it is at the moment possible to treat soils contaminated by creosote (PAH compounds) or oil. Under investigations are the possibilities to clean soils contaminated by TNT, Dioxins and Furans (PCDD, PCDF and PCB). MZYMES is actively looking for possibilities to exploit the method to be used to treat a wider range of contaminations. (Soini 2010)

5.6 MZYMES business and operating model

MZYMES offers, as a subcontractor for the companies operating in the soil treatment industry, a new, biological, cost-efficient and capable treatment to clean contaminated soils.

Adaptability is the key to success also for MZYMES, and the edge about FungiTube treatment is that it can be tailored for many uses. MZYMES is looking for new targets for treatment, and a very attractive and potential one is the treatment for biomasses including lignin. Examples of this kind of masses are wastes coming from forestry, industrial waste streams and water-based wastes. These kinds of options give MZYMES an advantage against competing companies, and increase the potential customer base. Also copying a multi-sided company is much harder than copying a company, which is only concentrating on a very narrow field. (Mäentausta 2008)

Figure 5.3 shows the business and operating model of MZYMES from the first contact to a deal with a new customer.

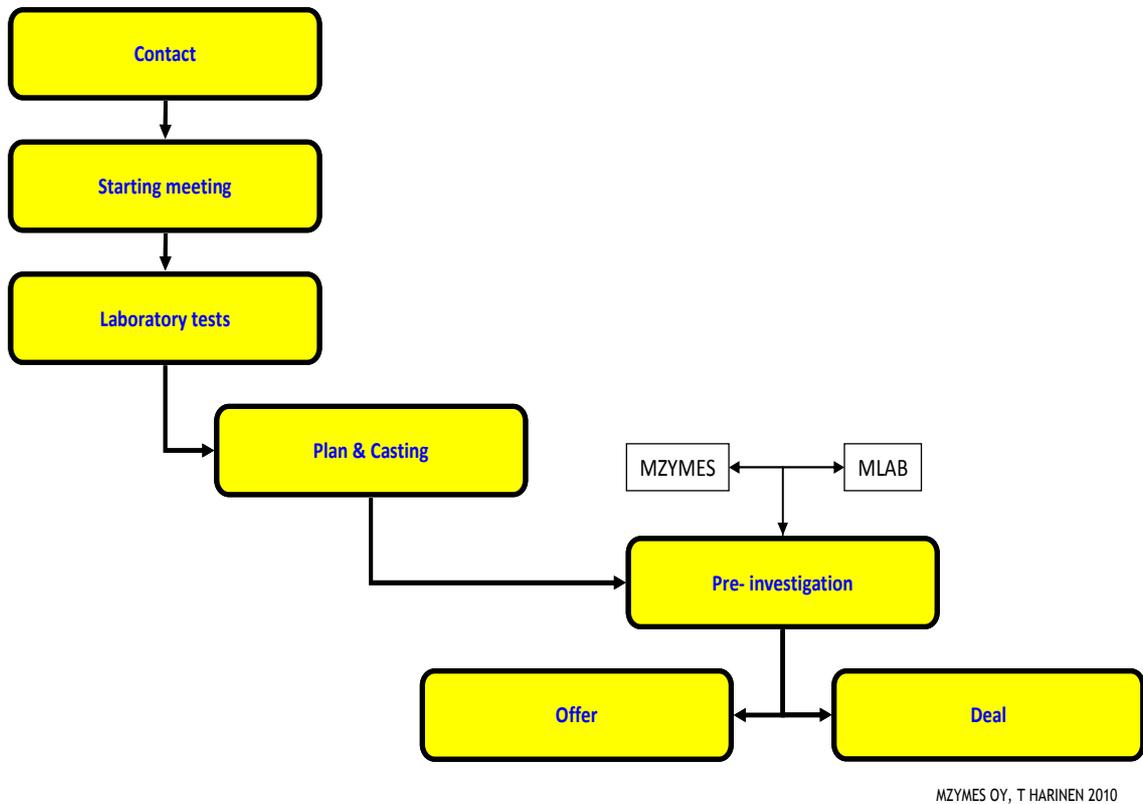


Figure 5.3 From the first contact to a deal (Harinen 2010, p.31.)

Everything starts from a contact. A customer contacts MZYMES when having a problem that they want the company to solve. A start up meeting is set up to examine what can be done, and to open the conversation. The tentative budget is also made at this step; an offer will be given to the customer about pre investigations.

After knowing what to do and who pays to whom and how much, it is time for laboratory tests. All the laboratory analyzes needed are done in MLAB or the third party's facilities, and a further plan and casting will be done based on the results. If needed, the next step is the pre-investigation, even laboratory work (MLAB) or administrative work (MZYMES head office). When everything is clear, it is time to place an offer, and at this point the parties know each others needs, wants and prices so well that an offer normally becomes a deal. (Harinen 2010, p.32.)

6 SOIL TREATMENT IN SPAIN

6.1 Situation in Spain

Spain started to make an inventory of contaminated sites in 2005 when the The Royal Decree 9/2005 on soil protection and contamination came into force. Royal Decree 9/2005 establishes the list of activities that can cause harm for the soil. It also lists standards and criteria of the methods contaminated soil can be treated with. (ICCL 2009)

The majority of contaminated areas in Spain are in Catalonia (25%), Madrid (11.4%), Valencia (10.8%), Basque Country (9.4%) and Andalucía (9.4%). Since 2005, many companies have introduced their existing portfolio techniques to treat contaminated soil. Also new companies focusing on soil decontamination have been set up. Nevertheless, the Spanish market still demands new companies that invest in innovative technologies to replace the most traditionally used methods, such as incineration or land filling. Consequently, "Invest in Spain" - a state company offering full support to foreign companies to introduce their business into the Spanish market – has considered the treatment of contaminated soils a business opportunity among the environmental sector. (Invest in Spain 2009)

6.2 Contacts

MZYMES has got some contacts via the University of Helsinki to Spain, and these contacts were and are still used when expanding to the Spanish markets. The ideology of MZYMES is to cooperate with different research institutes and schools, and to find right persons from them. Ms. Lara Valentin Carrera was doing her training during her doctoral thesis studies in the University of Helsinki. After the training period she has helped to contact right persons from Spain. At the moment MZYMES has a pending project application with one Spanish soil

treatment company.

MZYMES is getting support for internationalizing its actions from TEKES (the Finnish Funding Agency for Technology and Innovation) and also from Spanish Investment Agency of the Regional Government of Castilla-La Mancha, the main task of which is to bring foreign companies to their region in Spain.

7 PESTEL ANALYSIS OF SPAIN

7.1 Political factors

Spanish government is supporting new technologies by giving tax deductions for environment protection and by giving a 12% deduction for the purchase of industrial or commercial vehicles that generate reduced emissions. (División de Marketing y Comunicación Secretaría General 2009)

The Spanish Government offers grants and subsidies to develop new technologies and offers many opportunities for new technologies, especially in the sectors of waste management, air pollution, water and soil protection. Spain supports strategic sectors through diverse plans: Research, Development and Innovation Plan (€ 500 Mill, in 2009), the Environmental Plan (€ 600 Mill, in 2009) and local investments funds (€ 8,000 Mill, in 2009). In the sector of soil protection Spain is looking for new technologies that are more efficient and less expensive than those currently in use and alternatives that could replace land filling. In-situ treatments are number one priorities. (Valentin 2010)

Spain also has different areas with their own ideas of their independence, and that is important to notice while operating in the Spanish market. The instability of political situation and disagreements inside the borders of the country are issues that need to be paid attention to. (Valentin 2010)

7.2 Economic factors

Spain is the 5th largest economy in Europe. Its economy grew every year from 1994 to 2007. In the third quarter of 2008 the economy started to shrink. In 2009 the GDP of Spain followed the global recession, and dropped by 3.6%. In 2010 it is estimated that the growth of the GDP will be -0.8%, but in 2011 it is forecasted to grow again by 1% (Eurostat 2010). In 2009 Spain had the highest unemployment rate among the European Union member countries, over 19% (CIA 2010). That is the biggest individual economic risk for Spanish economy.

The value of the environmental sector in Spain is 10,820 million Euros per year. With that Spain has a 3.2% share of the world market, and 8.9% of European Union's market. Some 2000 enterprises, with the estimation of 250,000 persons working for them, operate in the environmental sector in Spain. (División de Marketing y Comunicación Secretaría General 2009)

Spain offers the most favorable fiscal incentives for R&D among the OECD countries. The rate of tax subsidies for R&D in 2007 was 0.4.

Without a permanent establishment, which is the case with MZYMES, taxpayers are taxed separately on each full or partial accrual income and/or gains obtained in Spain. The tax rates for non-residents in Spain are separated in Table 7.1 below. (Garrigues 2009)

Table 7.1 Tax rates for non-residents in Spain (European Commission 2010a)

Type of income	Rate (%)
General (including royalties)	24
Dividends	18
Gains from transfer or redemption of units/shares in the capital or equity of collective	18
Interest	18
Income from reinsurance transactions	1.5
Income from air or maritime shipping entities	4
Capital gains	18
Seasonal foreign workers	2

Standard rate of VAT (Value Added Tax) in Spain is 16%. (European Commission, 2010a)

7.3 Social factors

Spain has an enormous human capital with skilled population. An increase in environmental protection has given rise to a number of academic courses promoting environmental degrees. Better environmental awareness among the Spanish population has given an increase of demand for sustainable green technologies. (Valentin 2010)

Interest in the environmental sector has risen and in Spain the number of academic courses about environmental issues is rising. (División de Marketing y Comunicación Secretaría General 2009) The biggest risk from the social point of view is the unemployment rate of Spain. In 2009 it was the highest in the European Union, over 19%. (CIA 2010)

7.4 Technological factors

Spain has all the technology needed for MZYMES to operate now and in a future. The level of technical infrastructure is on a high level. Even though the Spanish government strongly supports new, innovative technologies, which helps MZYMES to get to the markets, Spain has been under the average level of the European Union in the quality of technologies and the level of Research and Development. (Finpro 2009, p.6.)

Finpro report (2009) predicts also that the environmental sector has great potential in the Spanish markets, while Spain has to put lots of effort in that field in the next few years. The Spanish climate is optimal for FungiTube treatment, because the natural growing season is nearly double as long as in Finland.

7.5 Legal factors

The European Union's guidelines for doing business in any EU member country makes it a little bit easier for MZYMES to operate in Spain, but there are also many factors differing between the member countries of the EU. An important point to MZYMES is to find a cooperator with good legal knowledge about the Spanish markets. Linguistic issues are in the key role, because not all legal issues that need to be taken into consideration are available in English. Laws about customer rights, labor, contracts etc. are also important, but not taken in closer look in this thesis.

Below there are three laws listed, which can affect MZYMES actions in Spain. These laws were pointed out by Spanish Doctoral student Lara Valentin during phone a conversation in 4. March 2010, and they concentrate mostly on environmental issues.

Law 16/2002: Integrated Pollution, Prevention, and Control (IPPC). This Law aims to control any business activity in terms of environmental protection. For

MZYMES's point of view this is very good news; owners of the land really have to face the consequences and clean their dirt.

Law 26/2007: Environmental responsibility. The law basically says that the polluter pays the remediation. The consequences of this law for MZYMES are similar to law 16/2002 mentioned above; it opens new possibilities in the Spanish markets.

Royal Decree 9/2005 includes the main criteria for deciding whether a soil is contaminated or not. It also lists activities, which may contaminate soils and guide experts to choose the right method to treat soil. This Decree has led to the increase of the enterprises specialized in remediation technologies. However, Spain still has few enterprises with remediation technologies, especially biological ones in their portfolio. Thus the need of foreign investment is a must. (Valentin 2010)

As a conclusion from all these three laws mentioned above, it can be said that all these laws give MZYMES better possibilities to succeed in the Spanish markets. From the legal point of view it is a perfect time to penetrate to the Spanish markets.

8 WORK DESCRIPTION

An internationalization project for FungiTube treatment started in December 2009. In 2008 MZYMES was applying for one European Union project, but after the project application did not pass, not much has been done for internationalizing. This work description is about to picture the whole process step by step from the beginning to the situation of today.

8.1 Creating a complete business plan for FungiTube treatment

In the very beginning it felt like there were tons of materials about different issues related to soil treatment, fungal bioremediation, the company itself and all of its business sectors. The first real task was to start drafting the business plan for FungiTube treatment. That was a good way to learn about the treatment from both, financial and technical point of view. It was also a good way to examine the potential leaks of the business.

The business model created about the company in its entirety gave good tips when drafting a model about FungiTube treatment.

The whole personnel of MZYMES helped in their best possible ways. Especially Mr. Kimmo Räsänen, the Sales Manager of MZYMES, helped a lot in issues concerning business and marketing. Mr. Jaakko Soini, Development Manager, was the one to be asked about technical things.

8.2 Setting up the internationalization group

After getting a clear business plan ready, it was time to set up a group that started to investigate the possibilities of doing business abroad. The group consisted of persons as follows:

Teemu Harinen, as a coordinator of the internationalization process, concentrating on sales & marketing issues

Kimmo Räsänen, to coordinate the financial issues of the project, and to support sales and marketing

Jaakko Soini, to give all needed technical know-how for the project

Basically everyone from the company is needed in this kind of a project in one way or another. Technical support was also given by Olli Mäentausta and Mauri Lamminsalo.

When there was a need, the internationalization group got together, talked, and decided on the work packages for the next step. Everyone in the group supported each other as well as possible, and the information was shared openly inside the group.

8.3 Deciding on the target market

After analyzing and measuring the most potential markets for FungiTube with the help of the results of PESTEL analyses, Spain has been chosen as the first target market abroad. Especially after the Royal Decree 9/2005 on soil protection and contamination came in the force, Spain was a tempting target for MZYMES with a lot of potential in the field of the soil treatment industry.

At this point, it was time to enlarge the internationalization group with an external consultant. Ms. Lara Valentin, a native Spaniard, doing her doctoral thesis in Helsinki University. She has been in close cooperation with MZYMES before, and with the contacts to Spain, she was the missing link. Her part in the MZYMES puzzle was to help to lead the group to the right persons in Spain, and to help to reach them by their native language.

8.4 Listing companies and contacting the most potential ones

The next step was to start to collect all information available from the operators of the soil treatment industry in Spain. The group was looking for a company operating in Spain with large enough resources, good reputation, interested in biological soil treatments and enough experience from the Spanish markets. One Finnish company was used as an ideal example of what the group was looking for. A concrete list of 15 different actors in the Spanish soil treatment

industry was made, and from that list five most potential cooperators were picked up for a closer look.

The group managed to reach three out of these five companies. It was much easier to reach companies when a native speaker was making the first contact. The first contact was made by emailing the basic information to the companies and then calling to introduce actions more in detail. Language issues can, in the worst case scenario, be a roadblock when trying to reach new markets.

Finding companies from Spain treating contaminated soils was not as hard as expected. The biggest challenge at this point was the language. Very few of the Spanish companies had any kind of web pages in English, and at this point Lara Valentina Carrera was a great help. Without her this step would have been much harder.

8.5 Deciding on the form of cooperation

The next step was to plan what kind of cooperation would be best for both parties, and what would be the roles of the parties. The company had a well working formula in the Finnish markets, which it decided to tailor also to the Spanish markets. The work assignments were divided as follows:

MZYMES:

- Preliminary testing and choosing the right mycelia
- Producing & transporting FungiTubes to the treatment place
- Planning the installation & number of tubes needed
- Following up the treatment regularly
- Monitoring the fungal growth (monthly)

Partner:

- Monitoring the fungal growth (daily/weekly)
- Treatment area & preparation needed (e.g. Stacking)
- Purchasing and treating dopants and base layer
- Machines and equipment for treatment (base layer, installing tubes, aeration, plastics covering stacks, equipment for analyzing the process) (Räsänen 2009, p. 17.)

The basic idea was that MZYMES will deliver the FungiTubes and the partner will take care of the equipment, space and daily monitoring of the process.

8.6 Current situation

MZYMES has managed to reach a very potential company from Spain to cooperate with. MZYMES has got some soil samples to analyze and test in R&D center MLAB, and the tests have been started. There is a big pending project application, communication is working well and the cooperation with the Spanish company is weekly. For bigger scale business actions parties wait for the decision of the project application, but even if that particular project will not be set up, there will be another one. MZYMES has rather small resources, and at the moment the resources are quite strictly tied to that particular project in Spain, and also markets in Finland foster the workload. During this internationalization project MZYMES has built a network to the Spanish markets, and for sure sooner or later the company will operate in Spain.

MZYMES is all the time concentrating on Research and Development, and finding new potential uses for FungiTubes and its variations. Summer 2010 is going to be very interesting with very many different projects of FungiTube.

9 CONCLUSION AND DISCUSSION

Analyses based on theory and other materials

Even though the world has not yet recovered from the international recession started in 2007, the green issues are rising all the time. Companies need to take environmental issues more seriously, while customers' knowledge and legal concerns to take care of the nature are strengthening. Such issues increase the potential of exporting products like FungiTube. However, Spain has still many unsolved problems, and one of the biggest is unemployment. That can also be seen as a possibility: the goal for MZYMES is to create more jobs in Spain.

The European Union has set environmental practice guidelines for its members, and it seems that Spain cannot fill them fast enough with their own resources. This opens doors for offshore companies to operate in Spain. The government of Spain has budgeted lots of money for soil remediation, and that gives MZYMES better opportunities to succeed in Spain, especially when many of the biggest operators in the soil treatment industry are owned or strongly supported by the government.

The culture of Spain differs quite a lot from the Finnish one. Adaptation is the way for the company to gain success in new markets; if the company is not ready to tailor its products, manners and ways of doing things to the needs of the target markets, its possibilities to succeed are nearly zero. Working in a new environment means always unexpected episodes, and the company needs to be flexible enough to react to these episodes fast enough.

Fungal bioremediation, especially FungiTube, is an innovative, efficient and inexpensive treatment technology for contaminated soils that can be applied in situ minimizing transportation costs and gas emissions. The infrastructure in Spain is on a high enough level for MZYMES to bring the technology there. When deciding on the cooperator in Spain MZYMES has to be sure that the partner has all equipment needed for installing, monitoring and if needed,

storing the FungiTubes.

Producing FungiTubes in Finland first makes it easier to adapt the technology to Spain. Later, when business is running in full scale MZYMES has to find out the possibilities to start a production line for FungiTubes in Spain. Here the Spanish cooperator has the key role to make sure that there is all technology available to set up the production line.

An enterprise that adopts this technology into its portfolio increases the options to treat soil in a more environmental friendly way, and reaches competition edge in the Spanish market. (Harinen 2010, p. 29.)

MZYMES is already using and will in the future use the model created in this bachelor's thesis when monitoring and planning to expand to the new markets. The first time is always the hardest, and this thesis can be described as a pioneer work in the internationalization plan of MZYMES. Next time we know where to start from, and even though expanding is never easy, next time the risk to fail is smaller because of the ready-made model created in this thesis. (Räsänen 2010)

FIGURES

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