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FRONT PAGE FOR FINAL PROJECT DOCUMENT (BPJ 420) - 2014

Information with regards to the mini-dissertation

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Keywords [Provide keywords from your project (for searching purposes). The first word of two words must always have a capital first letter and the rest of the words following must be lower case. In the event of an abbreviation, use as it is known, e.g. Economic recession, ABSA, ERP, Simulation modelling)]	Business model, Strategy, Operating Model, Agribusiness, South Africa, Seedlings
Abstract [Provide an abstract of the mini-dissertation. An abstract is a short summary of the contents covered in the item.]	Business Design for 17SunsAgri, an agricultural business, includes the design of the business in its entirety, starting from the business's strategy down to its operating model at a high level
Category [Enter the category in which the project was done. E.g. Operations Research, Simulation, Logistics…]	Business Engineering

Declaration

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3. Where other people's work has been used (either from a printed source, internet or any other source) this has been carefully acknowledged and referenced in accordance with departmental requirements
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2014

Business Design for 17SunsAgri

BPJ 420 – Final Project Report

Tumelo Abbey Koko

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10/2/2014

Executive Summary

This report is written as part of the final year project requirement, which is submitted in partial fulfillment of the degree: Bachelors in Industrial Engineering. It focuses on the preliminary design for the project, "Business Design for 17SunsAgri". 17SunsAgri is an agricultural business that is proposed as a solution that will take advantage of the business climate and opportune conditions; such as threat of land reform, lack of investments, inefficient farming practices, unutilized available arable land, etc.; prevailing in the agricultural sector of South Africa. In order to boost South Africa's position as net exporter of agricultural products and the financial gains that will be reaped due to this sector's projected booming growth in the next 20 years.

In the first stage of the report, the aim was to provide a background on the environment of the problem or business opportunity and also to substantiate the need, importance and viability of the proposed solution. This was done by underlining the business climate of the agricultural sector and also explaining some of the problems occurring that are influencing the growth of the sector. Then it was further explained how the project was going to be approached and also the deliverables that were needed. Thereafter all the industrial engineering techniques that were used in the construction of the deliverables mentioned were then explained, focusing on issues such as market and industry attractiveness, organizational structure, business and operating model generation. In addition, it included an investigation on the viability of the business project as the business overview/value proposition.

In the second stage, the aim was to do an analysis on the business environment that the business will operate in looking at macroeconomic, market and company outlooks thereafter formulating the strategy the business will use to assign its scarce resources to gain a sustainable competitive advantage. This was done by formulating the business 17SunsAgri's strategy after a three part analysis was done, which was composed of the following:

An industry analysis where the industry in which the business will operate is discussed by looking at the macroeconomic, market and company views finished off with possible strategies based on the business's internal capabilities (strengths and weaknesses) and external factors (opportunities and threats); A customer analysis where the customers that the business might serve and also their preferences and behaviors are analyzed; and a competitor analysis where the

business's potential competitors are discussed looking at issues such as their strengths and weaknesses; who they are and their strategies.

The strategy was then formulated with an excerpt been that:

"17SunsAgri aims to be one of the leading grower and supplier of seedlings in South Africa supplying high quality horticulture and forestry seedlings at a competitive price in the shortest time. With the vision of the business been to revolutionize the agriculture industry in such a manner as to bring about economical welfare to South Africa and to bring about food security for the continent."

In the third stage, the aim was to describe the product offering of the business followed by the designing and development of alternative business models that the business can use and thereafter an evaluation in order to arrive to one solution of which is the best, viable business model. This was done starting with the business's product offering been concisely defined and described looking at what it is and the ideologies that support it followed by a description of the criteria that the alternative business models were evaluated with. Then three alternative business models were designed and developed in order to support the strategy for 17SunsAgri that was formulated previously. They were then evaluated against criteria and with also a SWOT evaluation with finally the best viable business model been chosen and motivated.

In the fourth stage, the operating model of 17SunsAgri was designed by looking at the possible business functions that the business might have in order to deliver value by considering an adaptation of Porter's Value Chain Analysis for an agribusiness.

In the last stage, the verification and validation of the business design for 17SunsAgri was done through the use of business requirement checking and expert opinion validation by the project sponsor.

The completion of this project has resulted in a very unique business design that if replicated could allow the agricultural sector of South Africa to take advantage of its agricultural potential and also reap the financial gains of this growing industry worldwide. It has also resulted in a business design that creates value or meaning by providing a high quality and convenient product that improves the quality and standard of people's lives with profit been the resultant

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Chapter 1: Introduction and Background

1.1 Introduction

The rise in global warming has exacerbated one of the biggest issues affecting the world in the 21st century, which is food insecurity. According to the Intergovernmental Panel on Climate Change (IPCC), 'unchecked global warming will exacerbate fresh-water scarcity as well as hurt food production, drive up prices and increasing food insecurity and malnutrition' (The Economic Times, 2014). Figure 1 indicates that food security was ranked as one of top five urgent global issues, according to sustainability professionals who took part in The Sustainability Survey 2011 (Guevarra, 2014), with 76 percent of the professionals ranking it as urgent while the remainder where split between neutral and not urgent. The situation mentioned above adversely affects the agricultural and fisheries sector (Climateemergencyinstitute.com, 2012) of any country as it plays an important role in a country's food security.

Figure 1: The Sustainability Survey Top Five Urgent Global Issues (Guevarra, 2011)

While looking at South Africa, issues such as land reform and land redistribution are some of the biggest concerns affecting the agricultural sector and have thus created a climate of uncertainty (Farmersweekly.co.za, 2013) from an investment perspective. This is further aggravated by the country's unstable labour climate and the "wages increase" crises. To top it all off, this leads to new land owners with little or no farming knowledge combined with existing farmers using outdated and archaic farming practices therefore reducing and damaging the available, arable land that is used in the agricultural sector.

By the end of 2012, the ratio of agricultural imports to export were 1:1.035 (Bureau for Food and Agricultural Policy (BFAP), 2013, pp. 18-20), making South Africa just, a net exporter of agricultural products. This combined with the problems in the sector, of which some are mentioned above, creates an opportunity for an agribusiness which can take advantage of the business climate and markets by employing sustainable and updated farming practices that efficiently use the arable land available in order to create a sustainable and profitable business which is 17SunsAgri.

1.2 Background

South Africa is truly a diverse country as can be seen from its wide range of climatic, social, political, economic and topographical characteristics. Looking specifically at topography and climate (Palmer and Ainslie, 2006), it consists of summer and winter rainfall areas, plateaus, mountain ranges, grasslands, savanna, sub-tropical areas, deserts, escarpments and coastal areas. This accounts for the country's biodiversity and also explains why it can support a wide range of agricultural products which are able to support the country's agricultural sector.

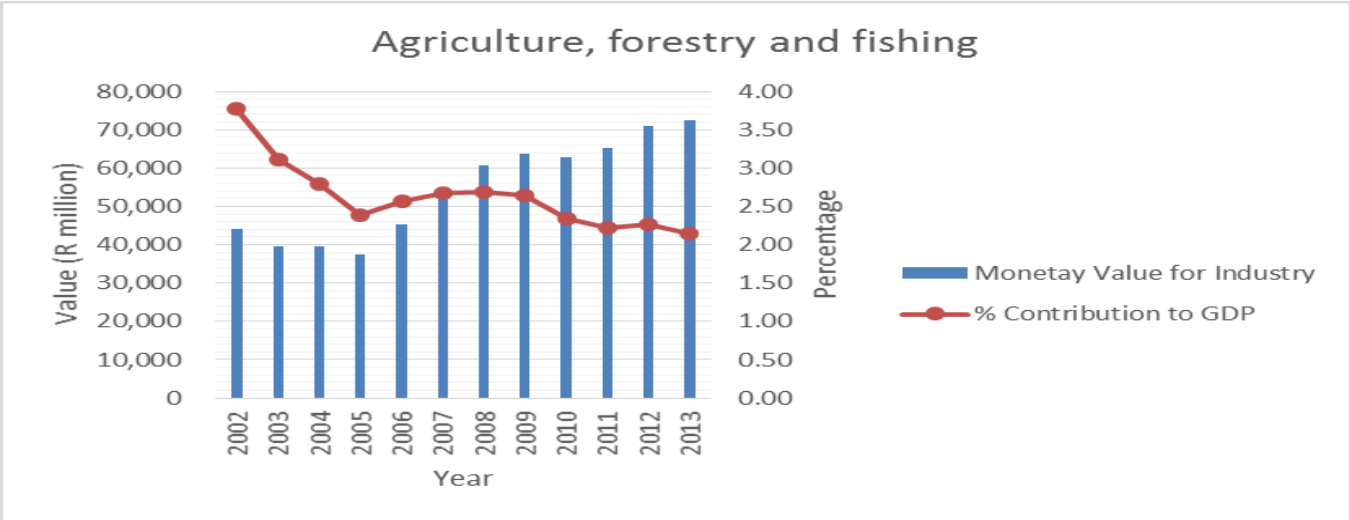


Figure 2: Monetary value and percent contribution to South Africa's GDP (Africa, 2014)

In South Africa, the agricultural sector is one of the two most important sectors (Strauss, 2005, p. 1) at the secondary level. The agricultural sector directly contributes to South Africa's gross domestic product (GDP) at above 2.0 percent (Bizconnect.standardbank.co.za, 2014) which seems fairly small. However when its importance is analyzed in terms of job creation and livelihood, it was found that an estimated 9.5 million people are dependent on agriculture

(Statistics South Africa,, 2013, pp. 3, 42-44) for their livelihoods. This makes the agricultural sector important for South Africa, in terms of the growth and survival of the country's economy. As seen in figure 2, the monetary value for the agricultural sector has been steadily increasing indicating that the sector is growing. But its percentage contribution to the country's GDP is steadily decreasing indicating that the sector is not growing quickly enough to support the country's growing economy. Some of the factors that influenced this situation were introduced in the introduction and will now be further substantiated.

One of the factors influencing the slow growth in the agricultural sector when 13 percent of South Africa's land (Alexander, 2013) is used for crop production is climate change. Climate change threatens food production as it reduces crop yields, increases the irrigation required, reduces arability, and changes planting and harvesting patterns (Climatehotmap.org, 2011). This pushes a lot of South African farmers out of business (Farmersweekly.co.za, 2011), as most farmers cannot adapt to the change and also government takes too long to assist them. This results in farmers abandoning their farming activities altogether.

Another factor influencing the slow growth in the sector is government's land reform projects. These projects are important as they correct social injustices of the past where black people were stripped of their land and excluded from land ownership under the Natives Land Act of 1913 (The Economist, 2013). The problem associated with these projects is that they are not helping those who they aimed at, according to TAU SA's Danie du Plessis (Farmersweekly.co.za, 2014). By the government's account, at least 50 percent of these projects have failed (The Economist, 2013). From an investments perspective, potential investors are not willing to invest in agricultural land as they are wary that these land reform programs might repossess that land resulting in them losing out on their investments. This is further aggravated by South Africa's unstable labour climate, as can be seen by government's minimum wage increase in the sector of about 50 percent (Farmersweekly.co.za, 2013).

Land reform projects often result in large commercial farms turning into small scale communal or subsistence farms, as the new owners of the agricultural land do not have the knowledge, expertise or resources to farm commercial. In addition, government's assistance in these matters is limited to nonexistent (Financial Times, 2013). This results in a lot of arable land been used inefficiently or even worse, not used at all (Farmersweekly.co.za, 2014). This combined with the

fact that existing farmers are using outdated and archaic farming practices, results in damages to the available, arable land therefore crushing the sector's potential prospects.

Chapter 2: Project Statement, Aim and Scope

2.1 Problem Statement/Need Requirement

The agricultural sector is one of the most important sectors in South Africa's economy, as it supports the livelihoods of almost one-fifth of the country's population. Through government subsidies and policy that make it favourable to enter and strive in the market, and also the emergence of new markets, locally and internationally; the agricultural sector should be enjoying rapid growth and contributing more to the country's gross domestic product.

In spite of all this, the reality is that the agricultural sector is experiencing very slow growth and even worse, its contribution to the gross domestic product is on the decline. This is caused by a range of factors that include but are not limited to; outdated farming practices, inefficient arable land utilization, lack of investments, no to limited government assistance, failed land reform projects and programs, etc.

As of the moment, South Africa is a net exporter of agricultural products. But if the above state of affairs is left to continue, South Africa could turn out to be a net importer which is unfavourable for the country and its population. As this would drive up the prices for food locally. In addition, it would result in job losses as agribusinesses might have to shut down because they would not be able to compete against cheap imports from other countries. Eventually, this would hurt the country's economy and thus decrease the gross domestic product.

Therefore an opportunity or need arises for the design of an agribusiness that will be able to take advantage of this emerging conditions. As Dr. John Purchase, CEO of Agricultural Business Chamber, states that agriculture and agribusinesses together are projected to be a one trillion US dollar industry in Sub-Saharan Africa by 2030 as compared to the 313 billion US dollar industry in 2010 (Bizconnect.standardbank.co.za, 2014). Therefore every effort should be made to ensure that South Africa does not miss out on this opportunity and that this sector in particular, should be at the top of the agenda concerning economic development and transformation.

2.2 Project Aim

The aim of this project was the business design of an agribusiness named 17SunsAgri that takes advantage of the business climate in the agricultural sector by employing up-to-date farming practices and business knowledge in order to create a sustainable and profitable business with possibly export and industrialization capabilities. The business 17SunsAgri aims to produce and sell seedlings. The business design will include the design of the business in its entirety, from the strategy development to its operating model at a high level. It will exclude the design of the supply chain, facility layout and lower level details. In addition, land should not be considered as an issue according to the project sponsor.

2.3 Project Approach/Scope

The overall approach of the project was divided into four phases, as seen in figure 3:

I. Strategy Development Phase
II. Business Model Development phase
III. Operating Model Development Phase
IV. Business Design Validation Phase

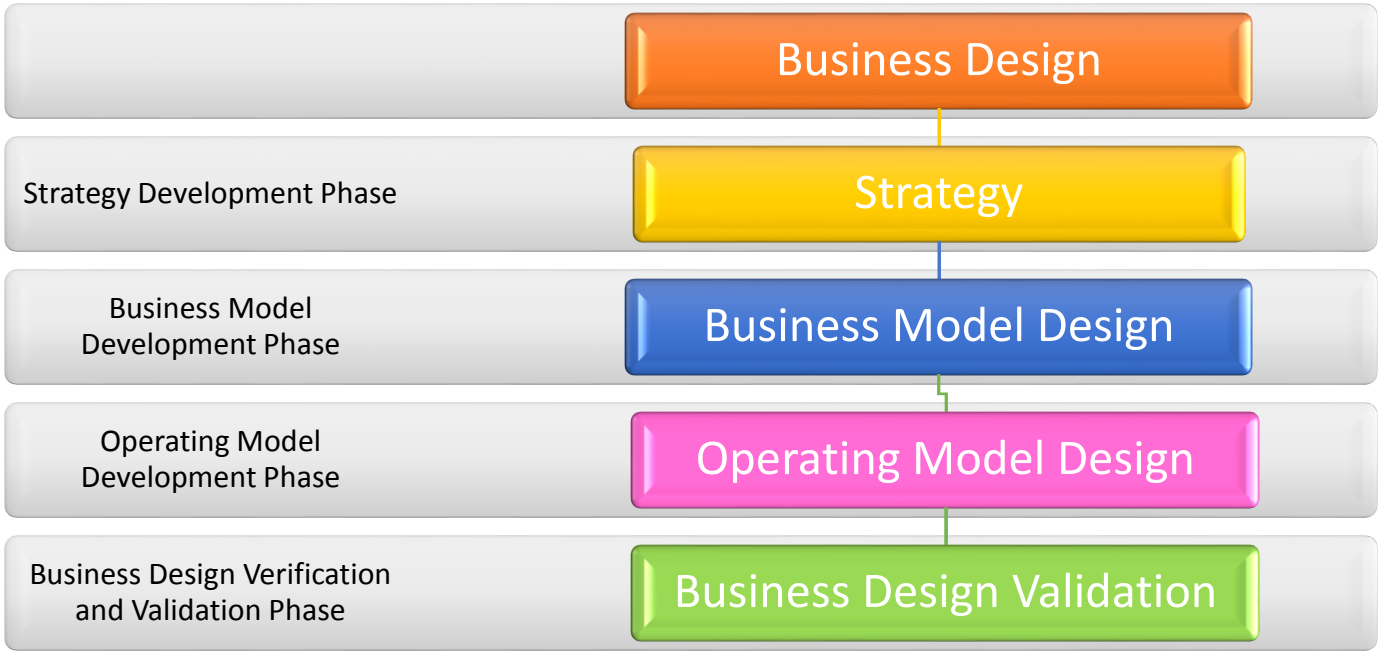


Figure 3: Project Approach

In the first phase, the overall strategy for the business 17SunsAgri was developed and discussed. This was done through the following three analyses which are:

- Industry Analysis, with the usage of tools such as PESTLE analysis and others as indicated in the work breakdown structure in appendix A.
- Customer Analysis
- Competitor Analysis

This set the basic framework of what the business aims to achieve and in what direction it would focus on.

In the second phase, the product offering and how the business would make the product offering a reality was discussed. Thereafter three alternative business models were developed using the Business Model Canvas. Finally the business models were evaluated using Analytical Hierarchy Process and Business Model Canvas SWOT Evaluation.

In the third phase, an operating model for the business was briefly designed and stated using Porter's value chain to show the possible functions and supports systems that could be used to deliver that value to the final customer.

With the final phase, been the verification and validation of the business design for 17SunsAgri through the use of business requirement checking and expert opinion validation. The literature review of the project also followed the same overall structure as mentioned above.

2.4 Project Deliverables

The key project activities and deliverables that were considered throughout the execution of this project are listed below in table 1.

Key Project Activities	*Key Deliverables*
Based on existing literature, a business strategy was developed using tools such as PESTEL analysis, SWOT analysis, Mckinsey 7S,etc	Business Strategy
Based on the literature review and analysis done previously, the product offering was stated and described.	Product Offering Description
From the business strategy and product offering, alternative business models by using Business Model Generation and Business Model Canvas were developed. Thereafter evaluated to choose the best suitable business model	Product Business Model in the form of Business Model Canvas
From the selected business model, a business operating model for the business that would	Business Operating Model

support the above stated strategy and business model using Porter's Value Chain was developed	

Table 1: Key Project Activities and Deliverables

The activities, tasks and industrial engineering techniques that accompany the key project activities and deliverables, which are shown in table 1, are indicated in the work breakdown structure of the project as seen in appendix A in the appendices.

Chapter 3: Literature Review

The literature review looked at the topics mentioned below in order to give a top-down view of the issues and views affecting food production in the world in conjunction with research on industrial engineering tools that will be used throughout the project. The following topics were covered:

1. Food Security and Climate Change
2. Agriculture Sector of South Africa
3. Industrial Engineering Techniques

3.1 Food Security and Climate Change

"One in eight of the people in the world or 870 million people"

This figure is the number of people in the world that did not consume enough food to cover their minimum dietary requirements according to the Food and Agriculture Organization of the United Nations (FAO) between 2010 and 2012 (Food And Agriculture Organization, 2013). Of these

people mentioned, 97.9 percent are from developing countries indicating how much food security is an issue for these countries and the world as a whole. But what is food security? The most widely accepted definition was defined at the 2009 Declaration of the World Summit on Food Security and is stated as:

"Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food, which meets their dietary needs and food preference for an active and healthy life" (FAO, IFAD & WFP, 2013).

It has four dimensions, which are food availability (having adequate quantities of food available on a regular basis), food access (having adequate resources, both economic and physical, to obtain proper foods for a nutritious diet), food use (suitable use, based on knowledge of basic diet and care, as well as adequate water and hygiene) and food stability (the stability of the first three dimensions of food security over time) (Food And Agriculture Organization Africa, 2013). These dimensions are used to measure and monitor the complex condition known as food security.

According to FAO, it estimates that 33 countries in the world are suffering from food insecurity and thus are in need of external assistance for food (Trade and Markets Division of FAO, 2014). Out of the 33, 26 of those countries are from Africa as can be seen in figure 4 below. In addition 16 countries' undernourishment estimates for 2011-2013 either point to a lack of progress or deterioration of food security conditions since 1990-1992 of which nine of these countries are in sub-Saharan Africa. This region boasts the highest prevalence of undernourishment in the world with only modest progress been made in the recent years (The Statistics Division of FAO, 2013).

Figure 4: World map showing countries requiring external assistance for food (Trade and Markets Division of FAO, 2014)

Though South Africa is part of sub-Saharan Africa, it has one of the very lowest undernourishment rates in the region and also has a less than five percent prevalence of hunger in its population. This indicates that the country still has a lot of work to do in order to eliminate hunger in its population, but it also indicates that it is in an opportune moment in time where it can service the rest of the countries in sub-Saharan Africa and the world that are facing food insecurity. That is only, if it can increase its agricultural products production and exports.

Food insecurity is caused by a number of different types of processes such as population growth, droughts, loss of soil fertility and soil degradation, industrialization, fluctuating market situations domestic and foreign government policies, urbanization, and climate change (Graef et al., 2014). According to Krishnamurthy et al (2014), climate change has the potential to increase the number of people in the world at risk of hunger by 10 to 20 percent, with the majority of them been located in sub-Saharan Africa.

Climate change will worsen existing risks to food and livelihood security by increasing the frequency and intensity of some of the extreme weather events. Thus decreasing agricultural yields in the most food insecure areas, and worsen water and land scarcity (Krishnamurthy, Lewis and Choularton, 2014). These weather conditions are occurring all the over world and affecting every country, even South Africa. This is even evident in South Africa as according to the country's Climate Change and Disaster Management, a lot of regions and areas are been continually affected (Department of Agriculture, Forestry and Fisheries, 2014). For example in January 2014 it was reported (Department of Agriculture, Forestry and Fisheries, 2014) that:

- Regions in Eastern Cape have experienced flooding and hail with cattle mortality due to lightning
- Free State has experienced low rainfalls resulting in droughts in the summer affecting soil preparation for winter crops
- Gauteng experienced hailstorms damaging crop
- Kwazulu-Natal has being experiencing high evaporation rates resulting in protracted dry periods that could reduce harvests and also cattle mortality due to lightning.
- Western Cape has experienced flooding resulting in damages to the deciduous fruit production

The above events are just some of the events occurring throughout the country. This shows that food security and climate change are interlinked with climate change exacerbating food insecurity.

3.2 Agriculture Sector of South Africa

As mentioned before, agriculture is a vital sector in the South African economy despite its rather minor share of the total gross domestic product (GDP), as a significant provider of employment to most people especially in the rural areas. It is also a major recipient of foreign currency with exports valuing R72 493 million in 2013 (DAFF, 2014).

The sector has been growing by 9.9 percent per annum (p.a.) since 1970, while the country's economy has grown by 12.9 percent p.a. over the same period, resulting in a drop in the agriculture sector's share of the GDP from 7.1 percent in 1970 to 2.6 percent in 2013 (DAFF,

2014). This indicates that the sector is growing each year but not fast enough to keep up and accommodate the growing economy, therefore it is not able to fully take advantage of the current business climate.

Considering that only 12 percent of South Africa's land can be used for agricultural production, of which 22 percent is classified as high potential arable land (GCIS, 2012), South Africa is the largest contributor of growth in agricultural product exports from Southern African Development Community (SADC) countries (Southern Africa Trade Hub, 2011).In addition, as a country, South Africa is food secure and a net exporter of agricultural products with good infrastructure to support the industry where it is heading.

As according to Frans Weilbach (Agribusinesses Insights Survey 2013/2014, 2014), the national agribusiness industry leader for PricewaterhouseCoopers Inc. (PwC Inc.), the agro-food industry in sub-Saharan Africa is projected to be worth US $1 trillion by the year 2030 and is destined to play a critical role in economic development in years to come. Due to this, agribusinesses will be influential in introducing economic development through the construction of agro-based industries and providing new markets. Thus South Africa is in prime position to benefit from this development if it can improve its agricultural infrastructure and processes.

In the midst of these exciting developments, there are still various reasons that will positively or negatively affect the agricultural sector resulting in the country getting a lesser or larger share of the pie compared to how much it could potentially acquire. This includes things such as climate change, which was just discussed in the above section, the government's land reform and distribution policies, and also the country's unstable labour market which will be further discussed below.

According to the Agribusiness Insights Survey conducted by PwC Inc., where leading role players in the industry were surveyed, the biggest challenges that they experienced in 2013 that deterred or affected agribusiness growth are indicated in figure 5 below. Land reform is ranked the second biggest challenge by 43 percent of the participants while 42 percent stated that labour unrest was a challenge and ranked it fifth as seen below.

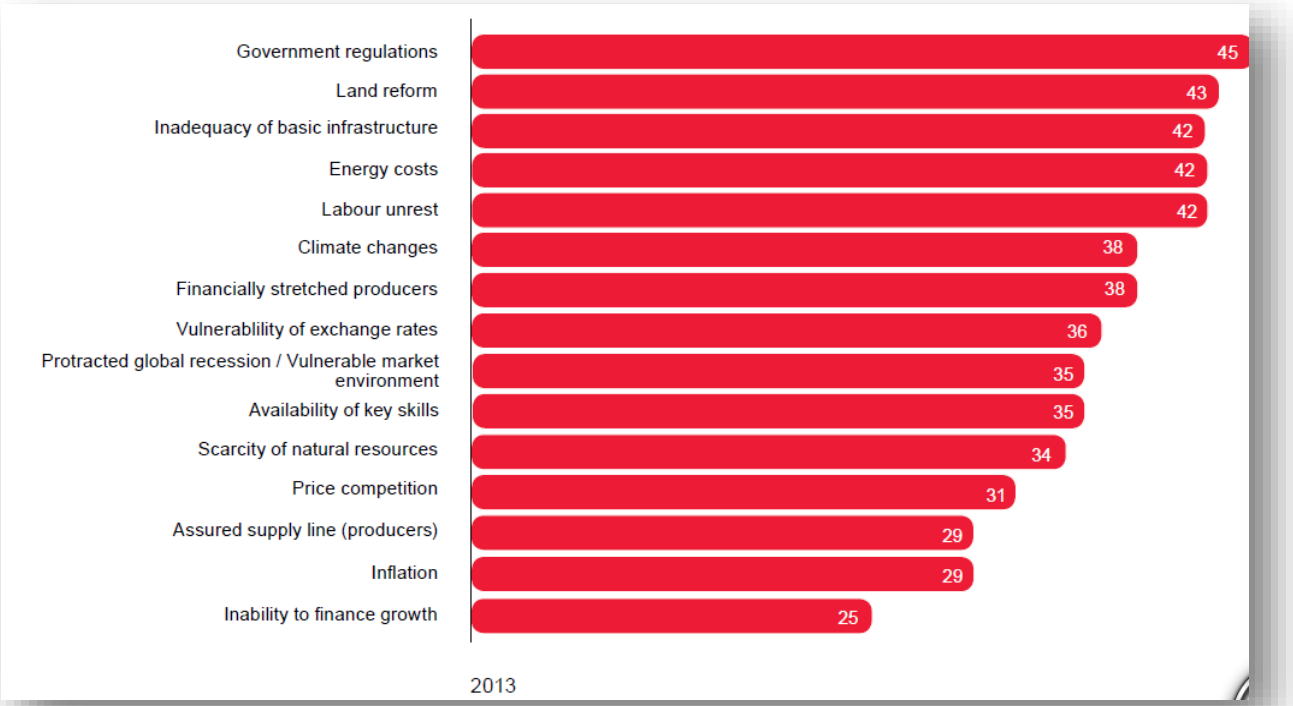


Figure 5: Challenges for Agribusiness Growth for 2013 (Agribusinesses Insights Survey 2013/2014, 2014)

South Africa's labour market has been unstable for the past couple of years with labour unrest moving from the different sectors of the economy, such as the services, mining and even the agriculture sector. This labour unrest has resulted in mass protests, strikes and even ensuing violence during these industrial action. According to the Department of Labour (DoL), 99 strikes were documented in 2012 with more than 17 million working days lost resulting in loss of about R6.6 billion in wages which is more than 5 times the value recorded in 2011 (Department of Labour, 2014). The agriculture sector of South Africa is still one of the most labour intensive sectors in the economy and one of the more labour intensive sectors in the globe. For instance, it uses on average 43 tractors for every 100 km^2 of arable land compared to 270 in the United States and 4500 in Japan.

The agriculture sector had the fourth largest number of working days lost; after mining, manufacturing and community in that order; of 123 369 days (Department of Labour, 2013). The biggest contributor to working days lost in the agriculture sector, was due to the farm workers strike in the Western Cape that ended in December 2012 as seen in figure 6 below.

Figure 6: Striking Farm Workers in Western Cape 2012 (Harrison, 2013)

On August 27, 2012 farm workers in the town of De Doorns in the Western Cape started protesting demanding the increase in minimum wages from the R69 to R150 per day and better living conditions (SAPA, 2013). The protests soon spread to 15 other towns (SAPA, 2012). They were called off in December and resumed again in January. They resulted in the death of three workers, R160 million claimed in insurance and saw a 52 percent increase in the minimum wages for the sector (Davis, 2013).

According to "*Farm Sectorial Determination: An Analysis of Agricultural Wages in South Africa*", a report by BFAP, the strike resulted in what they termed as "*farmers' vs workers' dilemma*". On one hand, many typical farms and farmers will not be able to cover operating expenses and therefore will not be able to pay back their debts or to afford entrepreneurial remuneration (Meyer et al., 2012). Also many larger farms will look to the mechanization of their processes which will result in fewer, better paid skilled workers and could result in job shedding and losses.

On the other hand, a first glance at what looks like an affordable minimum wage increase of R150 per day seems good. But most households that depend on agriculture will not be able to provide the necessary nutrition required to make them food secure. Thus "*Farmers' vs Workers' Dilemma*" is what the potential conflict has been termed, as on one side there is the dilemma of the farmer and on the other, the dilemma of the worker.

Another development that is affecting the agriculture sector is the government's land reform policy. It was a three tiered policy aimed at redistributing about 30 percent of the country's agricultural land from white landowners to black people by 1999, which has been postponed to 2015, in an attempt to readdress the injustices of the past. As during the Apartheid era, black people were forcibly removed from their land and confined into specific regions representing less than 10 percent of the country's land (Valente, 2009).

This policy comprises of land restitution, land tenure reform and land redistribution. The land restitution component was to take care of all the legal claims by of people or communities dispossessed of their lands after the first Natives Land Act of 1993 (Valente, 2009). The land tenure reform programme was aimed at fortifying people's land rights to the land they already occupied in order to make the transferal of precisely defined and more equal rights to landowners and their land inhabitants (Anseeuw and Mathebula, 2008). Lastly, land redistribution was aimed at helping previously disadvantaged people to buy land from white willing sellers through the usage of government subsidies and land grants.

These programmes are using the right frame of mind, in terms of readdressing the injustices of the past, however they have failed to meet crucial objectives contained in the Constitution (Kepe and Tessaro, 2014). By the end of 2004, only about 3.1 percent of 87 million hectares of land had been transferred through these three programmes resulting in academics stating that at this pace, it is improbable that the South African government will be able to redistribute 10 percent of the land by 2015 (ANSEEUW and ALDEN, 2011).

Therefore it appears that benefiting from these programmes does not seem to be contributing to the livelihoods of a considerable share of households involved (Valente, 2009). For instance, a study on these programmes was done at the Mole-mole Municipality in the Limpopo province where 39 projects were assessed.

The results were as follows:

- The beneficiaries presently benefiting from the restitution programme accounted for 0.4 percent of the total offical beneficiaries; 11.2 percent for Settlement/Land Acqusition Grants (SLAG), the first phase of land reform; and lastly 22.5 percent for Land Redistribution for Agricultural Development (LRAD), the second phase of land reform ; as seen in figure 7 below (Anseeuw and Mathebula, 2008).

	Official beneficiaries of projects	Beneficiaries effectively engaged in projects	Beneficiaries presently benefiting from projects
Restitution			
Total number	3477	1633	15
Average per project	108	422	3
% of official beneficiaries	100.0	46.9	0.4
SLAG			
Total number	1094	357	122
Average per project	68	24	8
% of official beneficiaries	100.0	32.6	11.2
LRAD			
Total number	120	120	27
Average per project	7	7	2
% of official beneficiaries	100.0	100.0	22.5

Figure 7: Beneficiaries of land reform in Mole-mole by type of project (Anseeuw and Mathebula, 2008)

- Of the 39 projects assessed, only three were sustainable as they were able to maintain their production and produce revenue for a certain number of beneficiaries (Anseeuw and Mathebula, 2008).
- 96.5 percent of the household beneficiaries did not benefit at all from the land reform projects (Anseeuw and Mathebula, 2008).
- Moreover, production dropped by an average of 89.5 percent on the land reform farms and jobs were lost (Anseeuw and Mathebula, 2008).

From the study above that was done, one can see that it is true that people benefiting from these projects are not really benefiting in terms of their livelihoods and also that these projects are actually devastating the agriculture sector and the economy as whole. This is further exacerbated by government's new call to reopen land reform claims which call for farmers to give 50 percent of the farm to their farm workers (South African Press Association (SAPA), 2014).

On top of all the problems that are associated with climate change, the unstable labour market and the government's land reform policies as mentioned above that are affecting the sector and making it less attractive, the result is that investors are becoming reluctant to invest in the sector as they are afraid of losing their investments despite where the sector is potentially heading. Therefore diminishing the sectors growth potential and overall, reducing the size of the piece of the pie that the country can acquire from the US $1 trillion industry that sub-Saharan Africa is heading to.

3.3 Industrial Engineering Techniques

The business design of 17SunsAgri focused on the design of the business in its entirety, through the use of a top-down framework made up of the overall business strategy followed by the business model and lastly finished off by the operating model as seen in figure 8. In this framework, these three concepts are interlinked. The strategy is the high-level plan of action as to what business model to use, whereas the business model is a reflection of the realized strategy (Casadesus-Masanell and Ricart, 2010). Similarly, the operating model or tactics (as seen in figure 8) is also a plan of action, in a lower more detailed scale, which takes place within the boundaries drawn by the entity's business model (Casadesus-Masanell and Ricart, 2010).

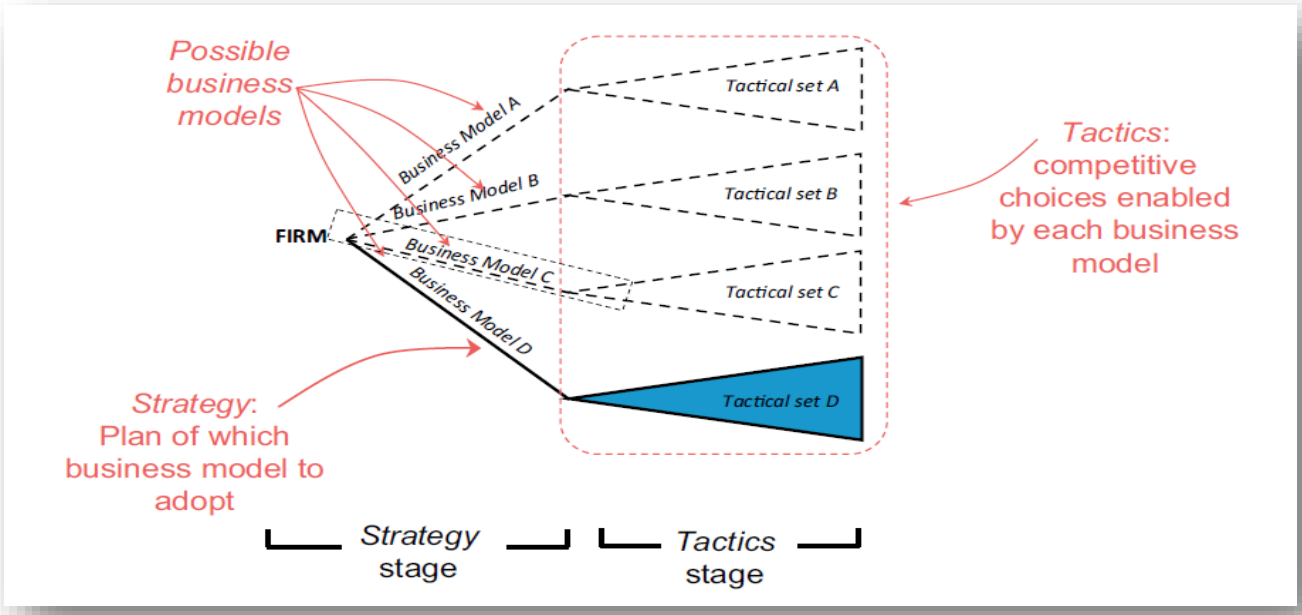


Figure 8: Strategy, Business Model and Operating Model (Casadesus-Masanell and Ricart, 2010)

In this section, the Industrial Engineering (IE) techniques that were used in the business design were discussed in the same structure as below in figure 9.

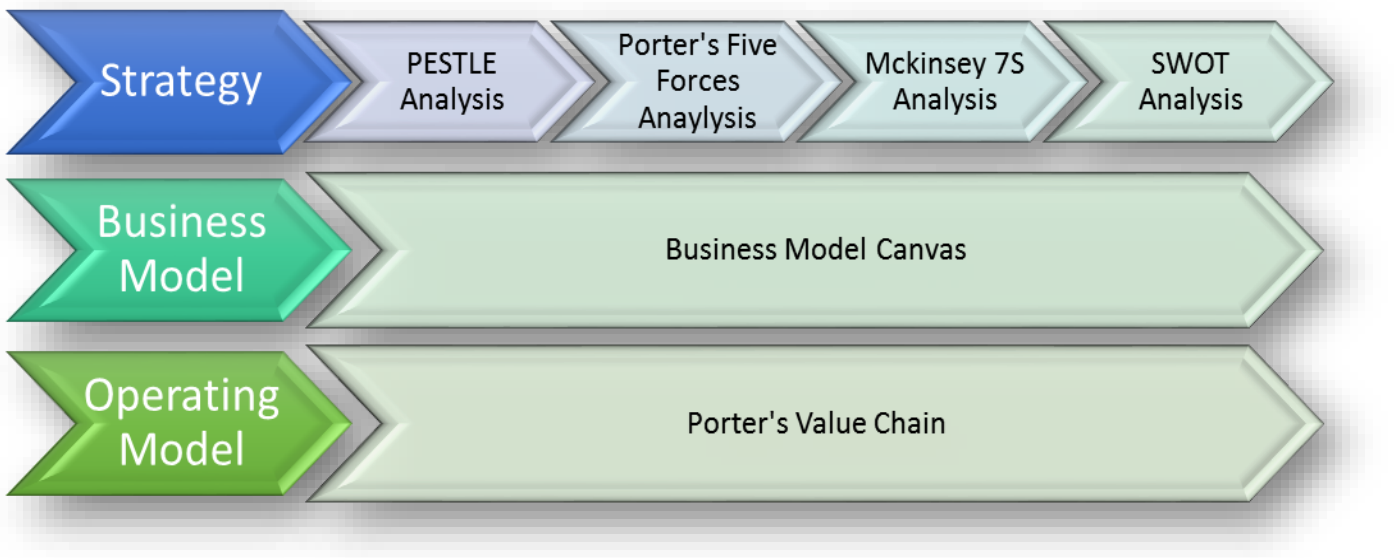


Figure 9: Techniques associated with each main section

3.3 1 Strategy

According to Michael Porter, strategy is how a company realizes its objectives by assigning its scarce resources to gain a sustainable competitive advantage (Evans, 2013). In simple terms, it is the business's game plan for achieving success in its chosen market. 17SunsAgri's strategy will

include some if not all of the components in the Strategy Pyramid (Evans, 2013) as defined by Evan as seen in figure 10 and discussed in more detail in table 2.

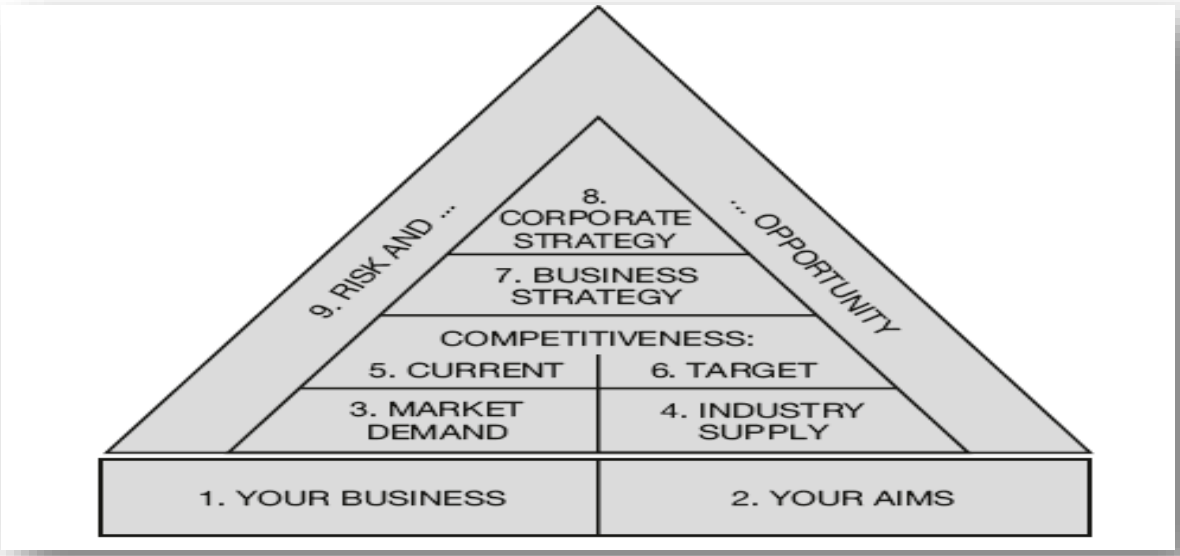


Figure 10: The Strategy Pyramid (Evans, 2013)

Section	Explanation
1.Your Business	Knowing the business. Product/Market segments served and contribute greatest to operating profit.
2. Your Aims	Goals and objectives of business. Sustainability? Maximizing profit growth? Employee satisfaction?
3. Market Demand	Sizing of the market, forecasting market demand, etc.
4. Industry Supply	Assessing competition intensity, deriving critical success factors, etc.
5. Competitiveness: Current	How business stacks up against its competitors in today's marketplace

6. Competitiveness: Target	How business envisage itself to stack up against its competitors in the future marketplace
7. Business Strategy	How to optimize the competitiveness of one strategic business unit
8. Corporate Strategy	How to optimize overall portfolio of business. How value is added through exploitation of business' overall resources and capabilities.
9. Risk and Opportunity	Analysis of market demand, industry supply and business competitiveness will result in risks or opportunities

Table 2: Explanation of Strategy Pyramid elements (Evans, 2013)

The following techniques were used to define 17SunsAgri's business strategy:

3.3.1.1 PESTEL Analysis

PESTEL analysis is a framework, used in situational analysis, to examine the business's external macro environment and identify the forces that might have long-term implications on our market, the business and its strategies with the outcome of understanding the overall bigger picture surrounding the business (Bensoussan and Fleisher, 2008; Cheverton, 2005; Oxford Learning Lab, 2013; Strategic Management Insight, 2013; Williams, 2011). These forces create opportunities and threats for the business. PESTLE is an acronym for the sectors that were looked at which are:

- **P**olitical – All the factors relating to the government such as the public's attitude towards certain industries, predisposition of politicians, political parties, etc. (Fleisher and Bensoussan, 2007)
- **E**conomic – All the factors relating to the distribution and use of resources with an entire society and the impact of the global economy on markets such as interest rates, GDP growth rates, etc. (Fleisher and Bensoussan, 2007)

- **S**ocio-cultural – All the factors relating to the characteristic of societal context such as income gaps among social gaps, population growths, age distribution, cultural attitudes etc. (Fleisher and Bensoussan, 2007)
- **T**echnological – All the factors relating to the impact of science and technology on competitive strategy and, the invention and innovation of products like new patents, R&D budgets, energy projects, etc. (Fleisher and Bensoussan, 2007)
- **L**egal – All the factors relating to the laws enacted that society has to follow such as public policies, bans, regulations and deregulations of sectors, etc. (Fleisher and Bensoussan, 2007)
- **E**cological/**E**nvironmental – All the factors relating to both the physical and biological environments in which businesses operate such as changes in attitude, environmental laws, pollution, sustainable development, "greening", etc. (Fleisher and Bensoussan, 2007)

This framework was used, in this context, to assess the potential of accessing the new market, to identify the current external factors that might and will affect the business now and in the future, and lastly to exploit the opportunities or defend against the threats better than the other competitors can (Strategic Management Insight, 2013).

3.3.1.2 Porter's Five Forces Analysis

Porter's Five Forces Analysis is a framework used to understand the industry and its participants with the purpose of analyzing the economic and market factors that will eventually influence an industry's profit potential and "attractiveness" in order to provide the basis for gap closure between the business's external environment and its internal resources (Bensoussan and Fleisher, 2008). It was designed by Michael E. Porter, a leading authority on strategy management and competitiveness, and helps in the development of a business's competitive strategy (Kaul, 2012). The five forces are:

- Threat of new entrants - This force determines the easiness of entering a particular industry, looking at factors such as entry barriers, retaliation by existing competitors, product differentiation, etc. (Strategic Management Insight, 2013)

- Bargaining power of suppliers – This force determines the ability of suppliers to influence the cost, availability and quality of input materials to businesses in the industry, looking at factors such as supplier concentration, size, switching costs, etc. (Kaul, 2012)
- Bargaining power of buyers – This force determines the ability of buyers to influence the industry structure force prices down by actions such as shopping comparisons, looking at factors such as differentiation, quality, buyer concentration, etc. (Kaul, 2012)
- Threat of substitute products and/or services – This force determines the easiness of customers to switch from one product/service to another and risk of market displacement, looking at factors such as cost of change, performance of substitutes, number of substitutes, etc. (Strategic Management Insight, 2013)
- Rivalry amongst existing competitors – This force determines the intensity of competition in the industry, looking at factors like number of competitors, market growth, barriers to exit, etc. (Kaul, 2012)

This framework was used, in this context, to identify the profit potential of the industry, to protect and extend the business's competitive advantage, anticipate the changes that might happen in the industry and identify the forces that might disrupt the business's profit potential.

3.3.1.3 Mckinsey 7S analysis

Mckinsey 7S analysis is a diagnostic management framework used to address the critical role of coordination, rather than structure in organizational effectiveness by testing the strength of strategic degree of fit between a business's current and proposed strategies in order to facilitate the process of strategic implementation within the context of organization change (Kaul, 2012; Mckinsey Quarterly, 2008). This framework maps the interrelated factor that influence a business's ability to change. These seven factors are identified as either hard (easy to identify as management can directly influence them) or soft (hard to identify as they are less tangible and are more influenced by culture) elements (Mind Tools, 2014). These seven elements are the following:

- **S**tructure – This hard element looks at the way the organization is structured and the reporting of relationships in the business. It focuses on the notion of coordination of all the

aspects of structure in support of the strategy and also the need to isolate those aspects that are important to successfully managing and negotiate change in industry advancement (Kaul, 2012).

- **S**trategy – This hard element looks at the plan created to maintain and shape competitive advantage over other competitors. It is the core theme of the model.
- **S**ystems – This hard element looks at the flow of the daily activities and procedures that are important in the functioning of the business. It is one of the important elements as it is less troublesome to and more effective to manipulate it to augment organizational effectiveness rather than the other hard elements (Kaul, 2012).
- **S**tyle – This soft element looks at the style of leadership adopted in the business by senior executives. It's a valuable component as it conveys and reinforces strong messages to stakeholders and employees throughout the business instilling a positive culture consistent with the business's strategic intent (Kaul, 2012).
- **S**taff – This soft element looks at the employees and their capabilities including also remuneration and motivational considerations. Development of employees, management attraction and recruitment are important for organizational effectiveness (Kaul, 2012).
- **S**kills – This soft element looks at the actual competencies and skills of its employees as often it is the raw material of competitive advantage. It focuses on skills as environmental change induces not only a change in strategy but also an associated change in the skill sets business's human resources (Kaul, 2012).
- **S**hared values – This soft element, also known as superordinate goals, looks at the core values that are demonstrated in corporate culture and general work ethics. They are the most fundamental building blocks of a business therefore providing the foundation for the other six elements and driving force for the company (Kaul, 2012).

This framework was used, in this context, to determine the current internal workings and environment of the business in order to find the best way to implement the proposed strategy and also improve the future performance of the business (Mind Tools, 2014).

3.3.1.4 SWOT analysis

SWOT analysis is a framework that allows mangers to evaluate the fit between the business's internal resources and competences (through current or projected strengths and weaknesses) and the external possibilities (through opportunities and threats) (Bensoussan and Fleisher, 2008). A business has greater control of its internal environment (Mckinsey 7S framework) than it has of its external environment (Porter's Five Forces and PESTLE). Therefore the input materials for this framework, in the business context, are the results from the Mckinsey 7S, PESTLE and Porter's Five Forces frameworks as can be seen in figure 11 below. This analysis provides an overview and understanding of the trends, forces, and characteristics of a specific market allowing mangers to make informed decisions about what actions to take to secure the business's comparative advantage and increase its ability to realize its goals and objectives (Bensoussan and Fleisher, 2008).

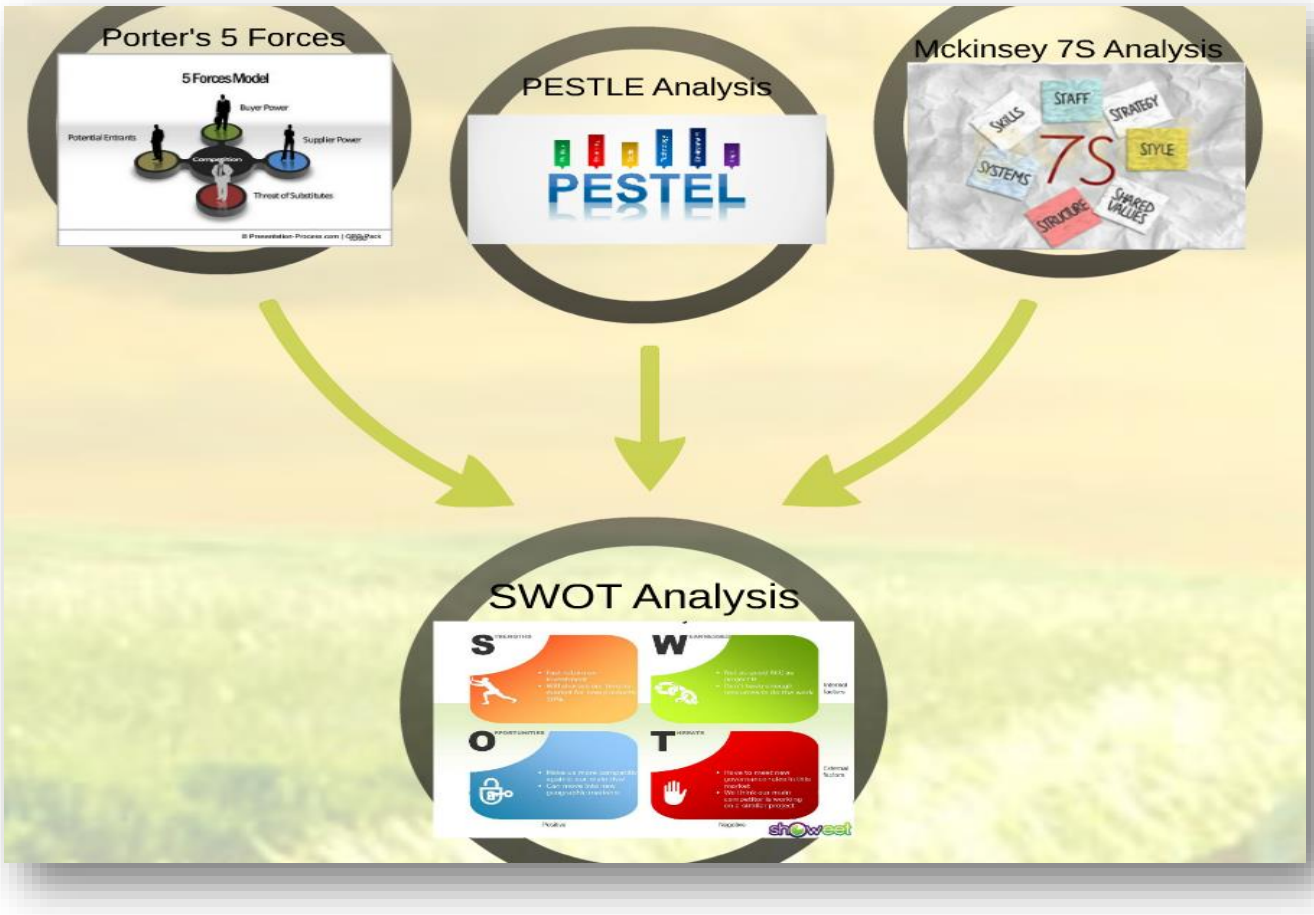


Figure 11: Components into SWOT analysis

SWOT is an acronym which stands for:

- **Strengths –** This component is one of the factor of the business's internal environment that asks what does the business do better or has that is more valuable (currently or projected) than what its competitors has (Strategic Management Insight, 2014).
- **W**eaknesses – This component is the other factor of the business's internal environment that asks what the business can improve at (currently or projected) to at least catch up with its competitors (Strategic Management Insight, 2014).
- **O**pportunities – This component is one of the factors of the business's external environment that represents the business's external situation that could bring it competitive advantage if snatched (Strategic Management Insight, 2014).
- **T**hreats – This component is the other factor of the business's external environment that may damage the business and therefore should be better avoided or defended against (Strategic Management Insight, 2014).

3.3 2 Business Model

Osterwalder, Pigneur and Clark (2010) provide the following definition:

"*A business model describes the rationale of how an organization creates, delivers, and captures value*"

While Alan Afuah (Afuah, 2004) provides a fuller definition of a business model as follows:

"*A business model is the set of which activities a firm performs, how it performs them, and when it performs them, as it uses its resources to perform activities, given its industry to create superior customer value and put itself in a position to appropriate that value*"

In the design of the business model of 17SunsAgri, Business Model Generation through Business Model Canvas (as seen in figure 12) was used as designed by Osterwalder, Pigneur and Clark. This technique described the business model in nine building blocks which are explained in table 4 and seen in figure 12.

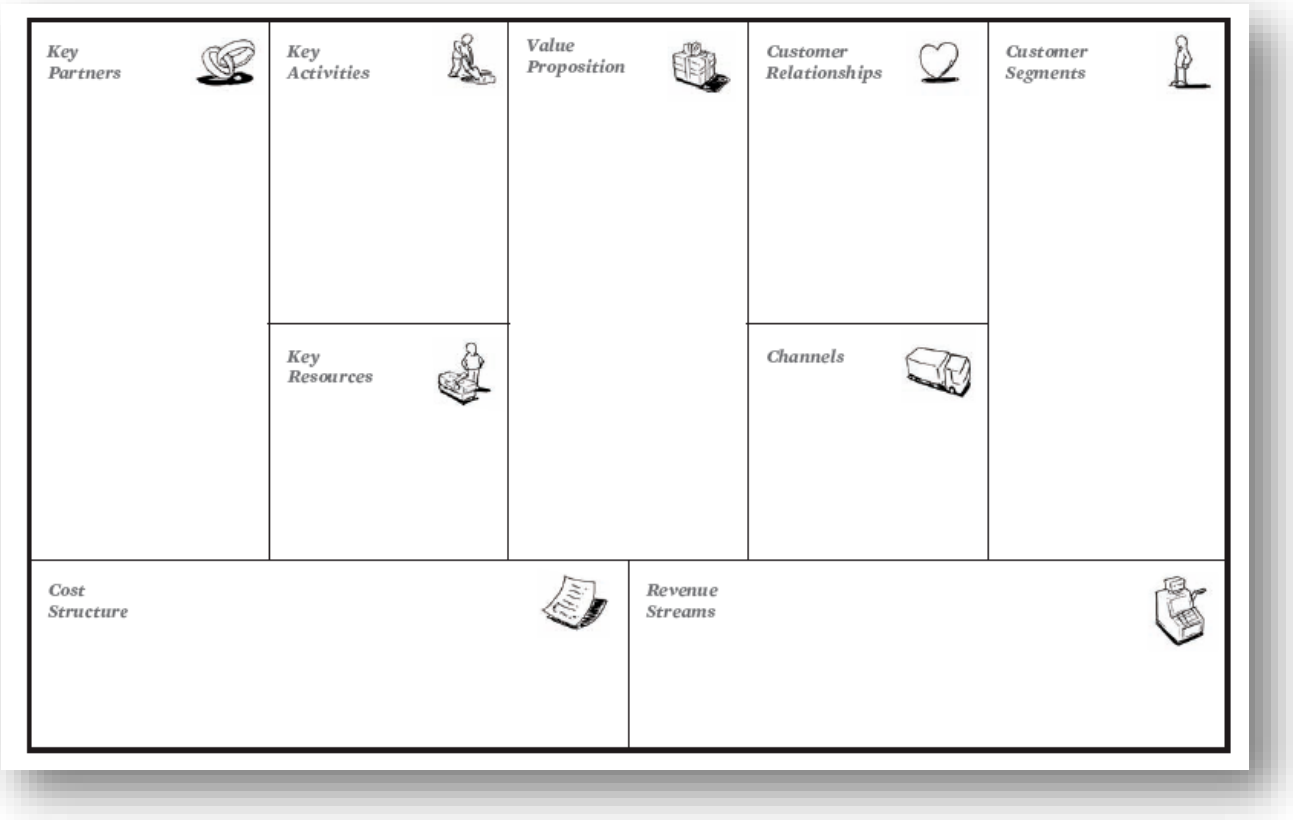


Figure 12: Business Model Canvas (Osterwalder, Pigneur and Clark, 2010)

Building Block	Explanation
1. Customer Segment (CS)	This block defines the different groups of people or organizations a business aims to reach and serve. The different segments include mass, niche, multi-sided, diversified and segmented markets.
2. Value Proposition (VP)	This block describes the bundle of products and services that create value for a particular Customer Segment. This value proposition creates value through a distinct mix of elements that include performance, newness, customization, design, brand/status, price, etc.

3. Channel (CH)	This block describes how a company connects with and reaches its Customer Segment to deliver a Value Proposition. This block includes direct Channels such as sales force, web sales, and indirect channels like own stores, partner stores and wholesalers.
4. Customer Relationships (CR)	This block describes the types of relationships a business forms with particular Customer Segments. These relationships can include categories such as personal assistance, self-service, automated services, co-creation, etc.
5. Revenue Streams (RS)	This block represents the money a business makes from each of its Customer Segments. The several ways to generate Revenue Streams include asset sale, lending, leasing, renting, licensing, subscription fees, etc.
6. Key Resources (KR)	This block defines the most significant assets that are required to make the business model work and are categorized as physical, intellectual, human and financial.
7. Key Activities (KA)	This block describes the most significant things that a business must do to make the business model work and can be categorized as production, platform/network, etc.
8. Key Partnerships (KP)	This block defines the network of suppliers and partners that make the business model work. The different types include buyer-supplier relationships, joint ventures, strategic alliance between non-competitors and cooperation between competitors.
9. Cost Structure (CS)	This block defines all costs that are incurred to operate the business model. These structures can be either cost-driven or value-driven.

Table 3: Building blocks and their explanation (Osterwalder, Pigneur and Clark, 2010)

The business model for 17SunsAgri was designed by following this technique and packaged through the use of the Business Model Canvas.

The alternative business models that were generated for 17SunsAgri were evaluated using the Analytical Hierarchy Process (AHP) and Business Model Canvas SWOT Evaluation

The Analytical Hierarchy Process is a multi-criteria decision making tool for organizing and analyzing complex decisions based on mathematics. This process assessed the three alternative business models by focusing on the business model's overall integrity. The AHP used 14 criteria found from a Master's Thesis done by David Weiss, where it looked at the evaluation criteria that venture capitalists and investment managers looked at when they evaluated business models to see if they are viable and will produce worthwhile returns

Business Model Canvas SWOT Evaluation used a SWOT analysis at the building block level to evaluate alternative business models. This evaluation measured the external and internal positive and negative areas of the business model by following a checklist that assessed each of the business model's nine building blocks in detail (Engdahl and Rensfelt, n.d.).

3.3 3 Operating Model

A business operating model is a representation of how the business will be operating across people, process, technology and information domains in order to realize its goals, objectives and function. It describes the key capabilities that are needed to execute the business strategy and model, and also how each capability is linked and further designed in terms of the components mentioned to drive efficiency and effectiveness (Patel Miller, 2014). In this case, it was modeled through the use of Porter's Value Chain.

Porter's Value Chain

Porter's value chain is a powerful framework that models the business as a series or chain of value-creating activities that is used to analyze those certain activities in order to understand how the business can create a competitive advantage (Quick MBA, n.d.). The result of this framework is a value chain, which is the chain of activities performed in order to create and deliver a valuable product for a market by a business operating in a specific industry. Porter grouped these activities into two generic groups: primary and support activities, and their constituents as seen in figure 13 below. This framework is used for a multitude of industries and sectors.

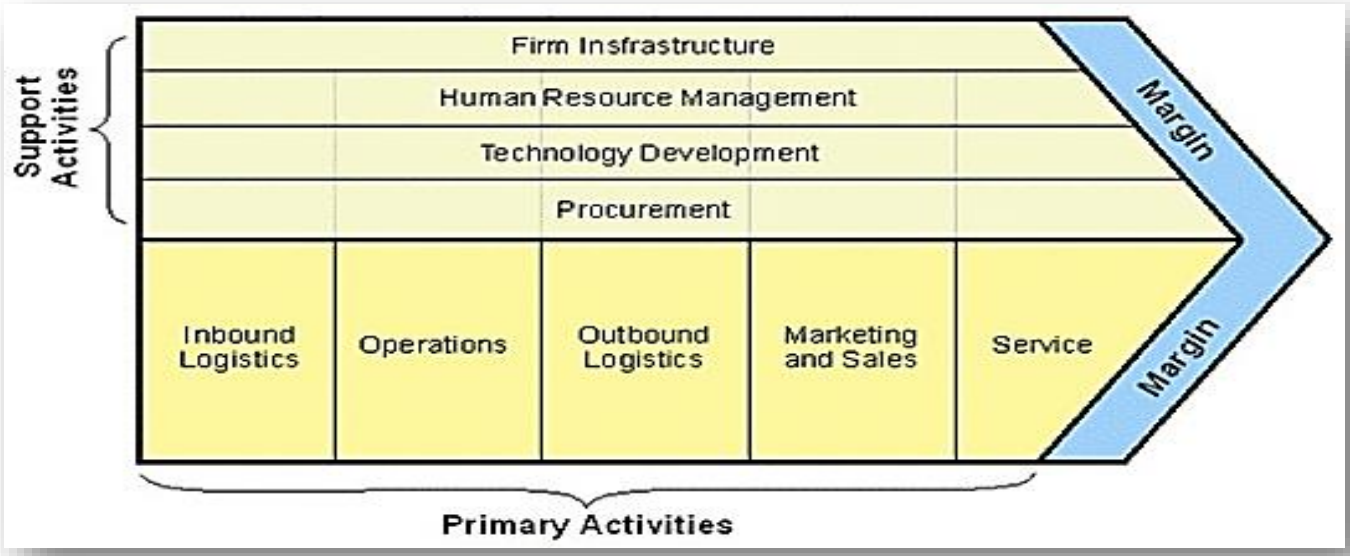


Figure 13: Porter's Value Chain (Partners Creating Wealth, n.d.)

But currently, there is no proven Porter's Value Chain for the agricultural sector with businesses design their own value chains using porter as their basis. In that sense, a value chain for 17SunsAgri was developed using Porter's as basis, with the value chain being specific and relevant to that part of the agricultural sector that the business aims to service. The different functions or activities were mentioned and discussed as follows.

3.3.3.1 Porter's Value Chain for 17SunsAgri: Primary Activities

The primary activities for 17SunsAgri relate to all the activities that are required to create and deliver value, in terms of speedlings, to the customer and includes the activities that are required in the product's physical making, its sale and distribution to customers and its service after sale. It includes the five components as seen in figure 14 and discussed in appendix B.

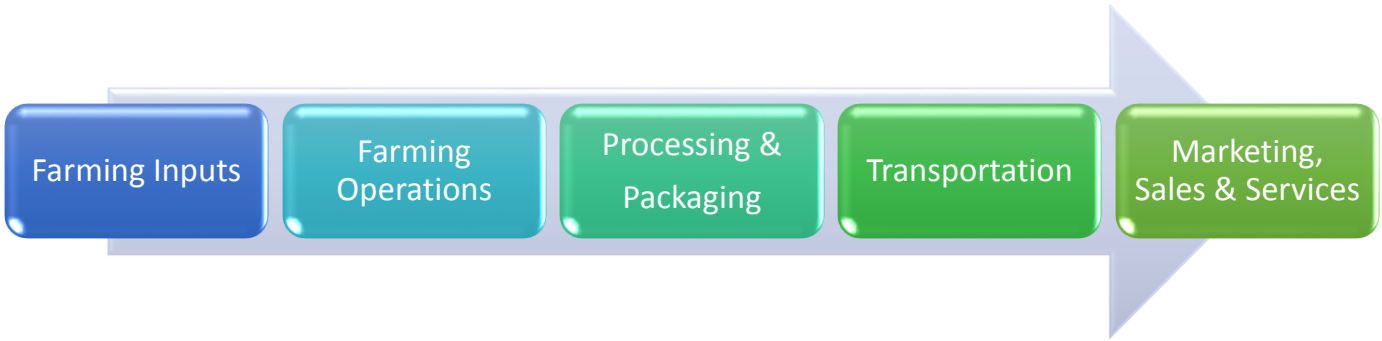


Figure 14: Primary Activities for 17SunsAgri's Value Chain

3.3.3.2 Porter's Value Chain for 17SunsAgri: Support Activities

The support activities for 17SunsAgri relate to all the activities that are required in order to support the primary activities mentioned above and to ensure that those primary activities do happen. These activities include the four components as seen in figure 15 and discussed in appendix C.

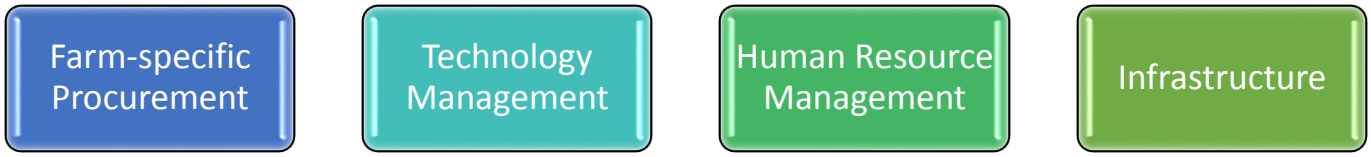


Figure 15: Support Activities for 17SunsAgri's Value Chain

Chapter 4: Problem Investigation/Value Proposition

In this chapter, the opportunity that 17SunsAgri wants to take advantage of was further investigated. What is this opportunity? 17SunsAgri wants to grow or manufacture seedlings. These seedlings will be grown in specialized equipment or machinery and sold off to farmers. Thus reducing those farmers' crop lead time and also at the same time, increasing their germination rate. A seedling is a young plant that has sprouted from a seed while germination is the process where a seed changes or grows into a seedling. On average, it takes about 35 days for a plant to grow from seed to seedling. But with specialized equipment, the business aims to reduce that lead time to 17 days hence the name 17SunsAgri. These specialized form of seedlings that the business plans to grow will be termed "speedlings" henceforth.

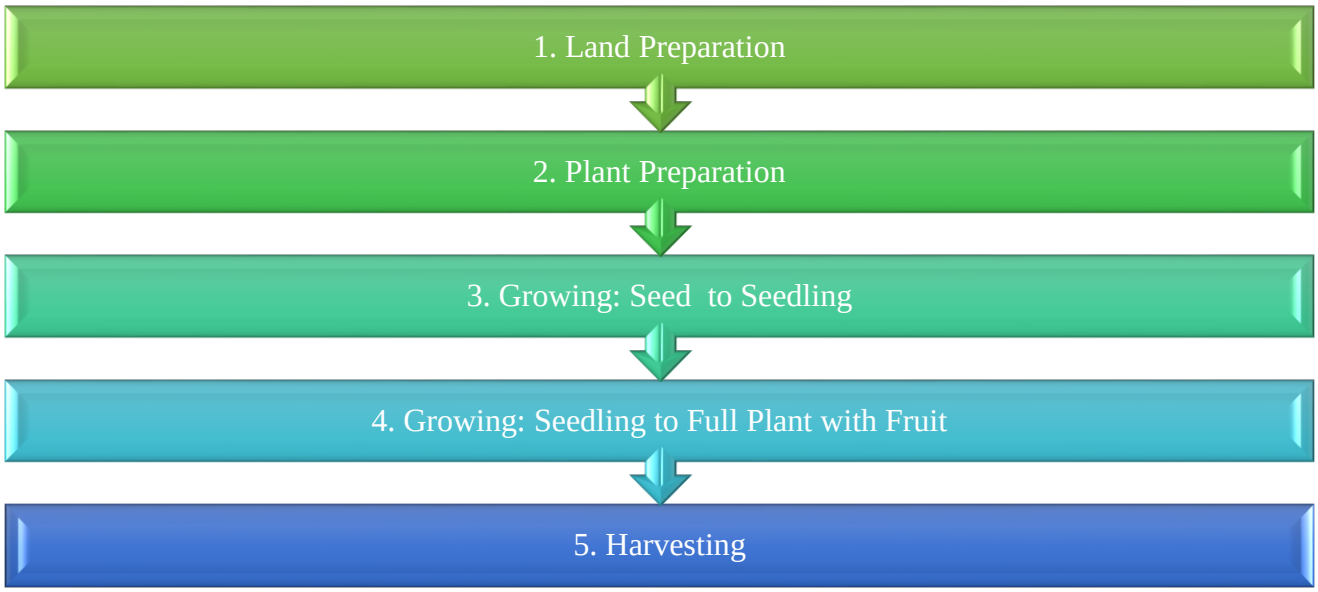


Figure 16: Basic Farming Process

The basic process that occurs during the farming of vegetables can be seen in figure 16 above. The business aims to remove the third phase, growing from seed to seedling, from the farmers' farming process by performing this step in its facility. Therefore reducing the farmers lead time by the number of weeks, as seen in table 4, for the specific plant been grown.

SEEDLING TYPE	SUMMER	WINTER
Cabbage; Broccoli	6	7
Cauliflower	6	7
Tomato	7	8
Lettuce	5	6
Spinach	6	8
Butternut; Squash	6	7
Peppers	7	7

Table 4: Seedling Growing Periods (in weeks) for Different Seedling Types (Sutherland Seedlings, 2013)

To prove that this opportunity exists and is viable, two cases were discussed below. Case 1, argues the use of farming with seedlings compared to farming with seeds in order to show the benefits of using seedlings and its financial implications on the farmers' side. Case 2, argues the use of farming with speedlings compared to farming with seedlings in order to show the benefits of speedlings and its financial implication on the business's side.

4.1 Case 1: Farming with Seeds versus Farming with Seedlings

Farming with seeds. Farmer 1 buys the seeds from the seed supplier, plants them, and grows the seeds into a seedling and thereafter into full-grown plants before finally harvesting them. While farming with seedlings, farmer 2 buys the seedling from a seedlings supplier, transplants them, grows them from seedling into full-grown plant then finally harvests them.

- In farmer 2's case, the initial costs are higher than those of farmer 1 because seedlings cost more to acquire than seeds. But since farmer 2 is planting seedlings instead of seeds, they save on costs of irrigation, fertilization and plant maintenance that they would have incurred if they were planting seeds as these costs were incurred by the seedlings supplier.
- If farmer 1 plants a 100 seeds with a germination rate of 90 percent, they are likely to produce 90 plants while if farmer 2 plants a 100 seedlings, they are likely to produce a 100 plants since seedlings have 100 percent germination rate. Therefore seedlings boost crop yields as they have a higher germination rate than seeds.

- If the total lead time of growing a plant from seedling to full-grown plant is 14 weeks, with the first 7 weeks been used to grow the plant from seed to seedling. It will take farmer 1, 14 weeks to produce that plant while farmer 2 will grow two plants in the same period as they eliminate the first 7 weeks from both plants' life cycle.

This can be summarized, in terms of benefits, as can be seen in figure 17.

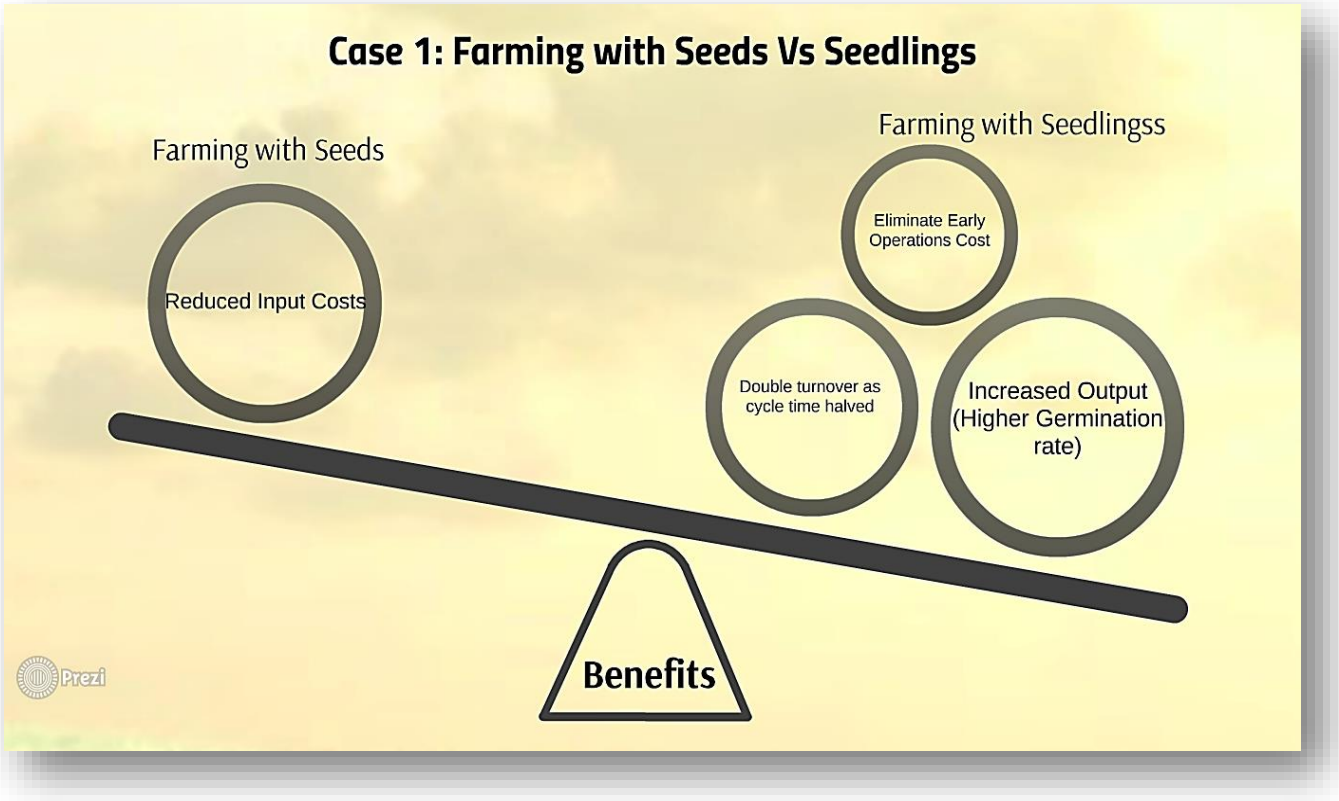


Figure 17: Case 1 Illustration

4.2 Case 2: Farming with Seedlings versus Farming with Speedlings

Farming with speedlings will have the same benefits as farming with seedlings on the farmers' side as nothing changes.

- But on the business's side, the costs of growing the plant are more expensive for the speedlings business compared to the seedlings company since it will require specialized equipment, input products and knowledge thus increasing costs

- But since the speedlings are grown at half the seedlings growth period, the speedlings business grows twice the number of plants that the seedlings business grows in the same period. Therefore the speedlings business has more plants to sell and supplies its customers quicker than the seedlings company.

This can be summarized, in terms of benefits, as can be seen in figure 18.

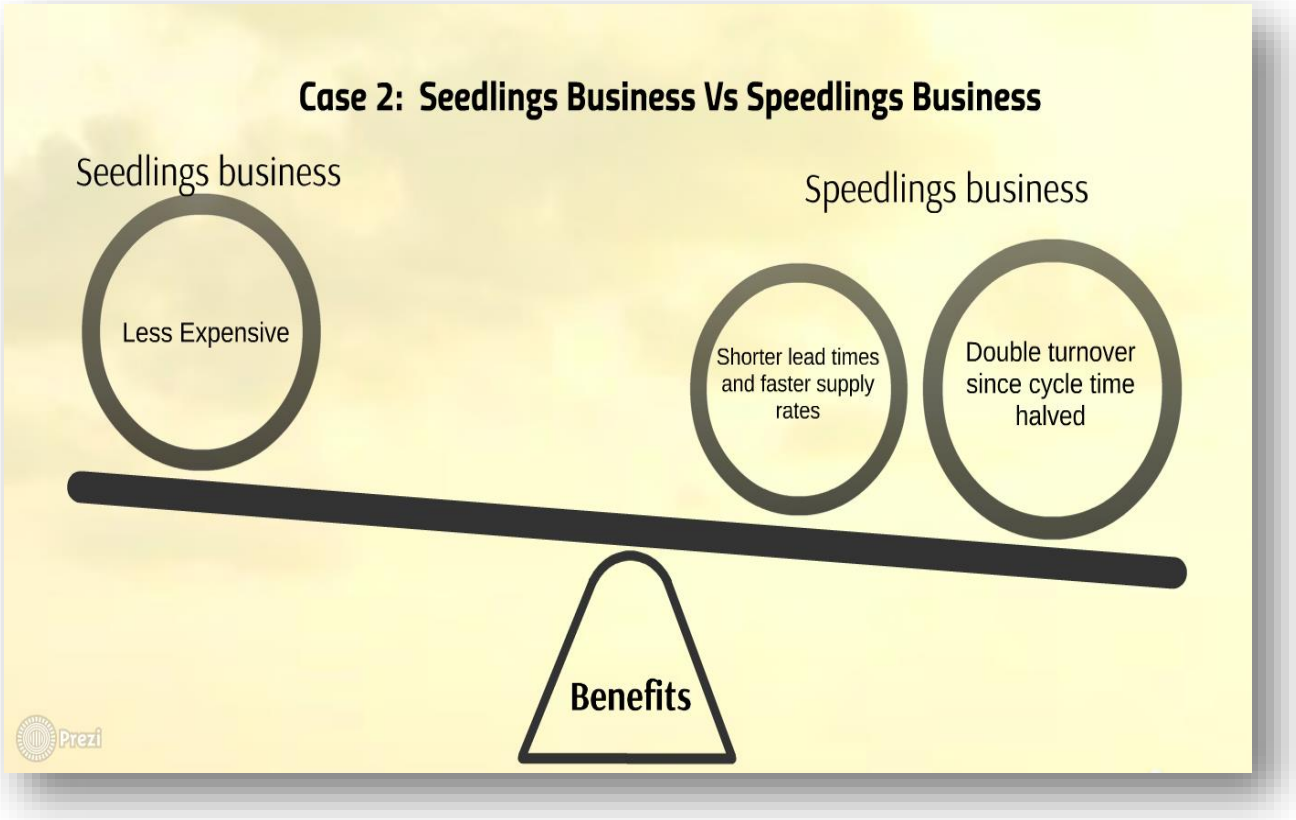


Figure 18: Case 2 Illustration

Chapter 5: Strategy Analysis and Design

In this chapter, an analysis was done on the industry in which 17SunsAgri plans to operate in. This was done in order to understand how the industry operates and also to investigate the trends and factors that are currently and in the near future, will affect it. This analysis was done in three parts consisting of:

1. Industry Analysis
2. Customer Analysis
3. Competitor Analysis
4. Strategy Formulation

5.1. Industry Analysis

In this industry analysis, the horticulture segment of South Africa's agriculture industry was analyzed using the techniques discussed in the strategy section of the literature review. The horticulture industry focuses on the cultivation of fruits, vegetables, herbs, nuts, flowers, sprouts, mushrooms, etc.

5.1.1 PESTLE Analysis

5.1.1.1 Political Factors Analysis

Government Election 2014

The conclusion of 2014 national elections took place on the 9th May 2014. According to the Electoral Commission of SA (Elections.org.za, 2014), the top three parties, with their percentage in brackets, are the African National Congress (ANC, 62.15%), Democratic Alliance (DA, 22.23%) and Economic Freedom Fighters (EFF, 6.35%). These three parties will dictate how the government will be ran and also the political climate of the country, with the ANC being the major dictator of policy. Therefore their views will affect the agriculture industry, in which 17SunsAgri plans to operate, and must be considered.

Land Reform Policy

In terms of land reform policies, the ruling party (ANC) and EFF both agree on the ANC's proposed policy (Anc.org.za, 2014) of giving 50 percent ownership of the farms to the farm workers who work on those farms. The disagreement is that the ANC aims to compensate the original farm owners for that 50 percent ownership, while the EFF wants it to be done without compensation (Effighters.org.za, 2014). On the other hand, the DA (Da.org.za, 2014) raises objections to both policies stating that these policies will exacerbate insecurity, destroy jobs, increase the already catastrophic lack of farming expertise and have terrible implications for food security (SAPA, 2014).These land reform policies result in a sector change since initial, large commercial farms were dominant in the sector and constituted the majority of farms. But since its inception, the majority of farms are small scale communal and mostly used for subsistence farming.

Government Policy in Agricultural Sector

Government understands the serious implication of food security on the country and the world as it aim to increase the country's food generation and output in order to feeds its citizen and also the citizens of the world. It aims to do this by initiating policies that will make agriculture sector an attractive industry to invest and work in. The Department of Agriculture is offering subsides and aids to business that wish to enter the market. The Department of Basic and Higher Education are offering bursaries, workshops, etc. in order to impart expertise to people in the agriculture industry and those who might want to join it in the future. The Department of Water is investing more money into water schemes and projects in order to be able to provide water to the agriculture sector.

Industry Specific Rules and Regulations

Since the business will be trading within the confines of the country, it needs to adhere and comply with all the laws imposed on businesses which include the labour law, Occupational Health and Safety Law, etc. it needs to also comply with the rules and regulations imposed on the agriculture sector of the country in order to conduct business.

5.1.1.2 Economic Factors Analysis

Economy and Economic Growth

South Africa has the second largest economy in Sub-Saharan Africa and forms part of the BRICS group; the five fastest-growing and emerging economies that account for 25 percent of global GDP and 40 percent of global population (Kumo, Rielander and Omilola, 2014); with Brazil, Russia, India and China. South Africa has a GDP growth of just above 2 percent which indicates that the country has sluggish economic growth (Kumo, Rielander and Omilola, 2014). But this could increase to about 2.7 – 3 percent with the completion of government projects that include the Medupi Power Station.

Unemployment rate

South Africa is currently facing a high unemployment rate with about 24.1 percent of its population being unemployed (Spring, Rolfe and Odera, 2013). Of this, 64.8 percent is composed of young people who are at the ages between 15 and 24 (Kumo, Rielander and Omilola, 2014). This is further compounded by the fact that the country is facing a dramatic decline in labour productivity being at a 47 year low (Spring, Rolfe and Odera, 2013).

Inflation and Exchange rate

The economy has been within the Reserve Bank's target inflation rate of between 3 – 6 percent, with it been estimated at 5.7 percent as of 2013. It is estimated that it will hold for 2014 and thereafter decrease slowly with a 5.3 percent projection for 2015 (Kumo, Rielander and Omilola, 2014). The South African Rand (ZAR) has remained under pressure and continued on its downward trend reaching R11.10 to the US dollar at the end of January 2014, 20 percent lower than at the end of 2012 and 66 percent below the 2011 peak (Kumo, Rielander and Omilola, 2014). This dramatic fall's effect has been hushed by importers and retailers taking most of the brunt with fuel and food prices increasing leisurely than predicted. In order to contain inflation, the Reserve Bank increased the repo rate for 5 percent to 5.5 percent in late January 2014.

Ease of Doing Business

According to the 2014 'Ease of Doing Business' ranking list conducted by the World Bank's International Finance Corporation (Doingbusiness.org (a), 2014), South Africa is ranked 41 out

of 189 economies in the world and also third in Sub-Saharan Africa (Doingbusiness.org (b), 2014). The 'Ease of Doing Business' ranking list looks at how the regulatory environment of a country makes it favorable to start and operate a business in that country by ranking countries on ten topics, each made up of different indices. A higher rank means the environment is favourable while a lower rank, not.

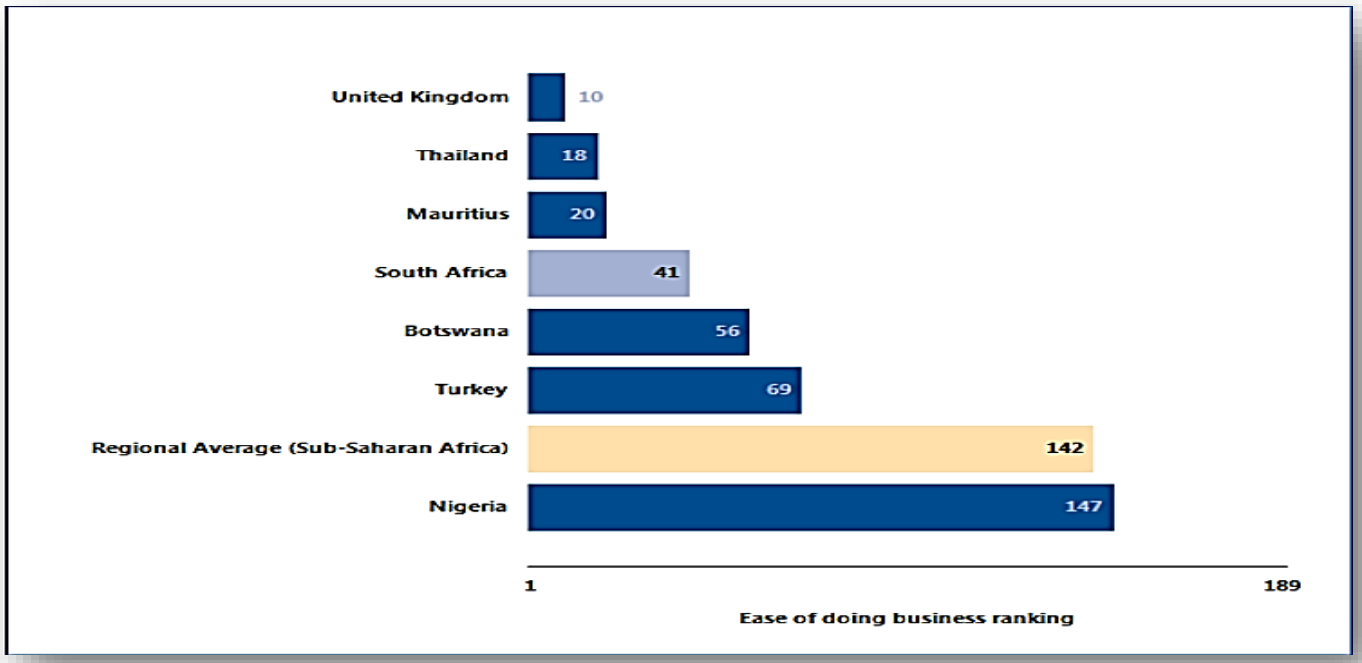


Figure 19: South Africa's rank compared to other countries (Doing Business 2014 Economy Profile: South Africa, 2014)

Tax Policy

In South Africa, all businesses and companies are obligated to pay tax to the government. This tax may be in different forms depending on the business. The different taxes are as follows:

- Small businesses with a turnover of less than one million are obligated to pay one consolidated form of tax referred to as Turnover tax (Sars.gov.za (c), 2014)
- Businesses with income earned of more than one million are obligated to pay Value-Added Tax also known as VAT (Sars.gov.za (d), 2014).

- Small Businesses that are not legal entities (Sole proprietorship and partnerships) are obligated to pay tax on profits earned in an individual capacity (Sars.gov.za (e), 2014)
- Small Businesses that are legal entities (Public and private companies, etc.) are obligated to pay tax depending on the their taxable income with the applicable tax rates as seen in figure 20

Applicable Tax rates

SBC tax rates for financial years ending on any date between 1 April 2014 and 31 March 2015:

Taxable income (R)	Rates of Tax (R)
0 - 70 700	0% of taxable income
70 701 - 365 000	7% of taxable income above 70 700
365 001 - 550 000	20 601 + 21% of taxable income above 365 000
550 001 and above	59 451 + 28% of the amount above 550 000

SBC tax rates for financial years ending on any date between 1 April 2013 and 31 March 2014:

Taxable income (R)	Rates of Tax (R)
0 - 67 111	0% of taxable income
67 112 - 365 000	7% of taxable income above 67 111
365 001 - 550 000	20 852 + 21% of taxable income above 365 000
550 001 and above	59 702 + 28% of the amount above 550 000

Figure 20: Applicable Tax rates for Small business Corporations (SBC) (SARS, 2014)

5.1.1.3 Socio-cultural Factors Analysis

Population Demographics

According to the World Bank (Data.worldbank.org, 2014), South Africa has the 28th largest population in the world and the fifth on the African continent, with it been estimated to be just over 54 million (Africa, 2014). It has a 1.3 percent annual population growth rate with about 44 percent of the total population living in Gauteng and KwaZulu-Natal. The life expectancy at birth is 61 years. About 62 percent of the population stays in urban areas with an annual urbanization rate of 1.21 percent according to the World Fact Book (Cia.gov, 2014).

Age Distribution

South Africa has a fairly young population with almost 50 percent of the population being 24 years old and younger. Its median age is at about 25.7 years as can be seen in figure 21 below.

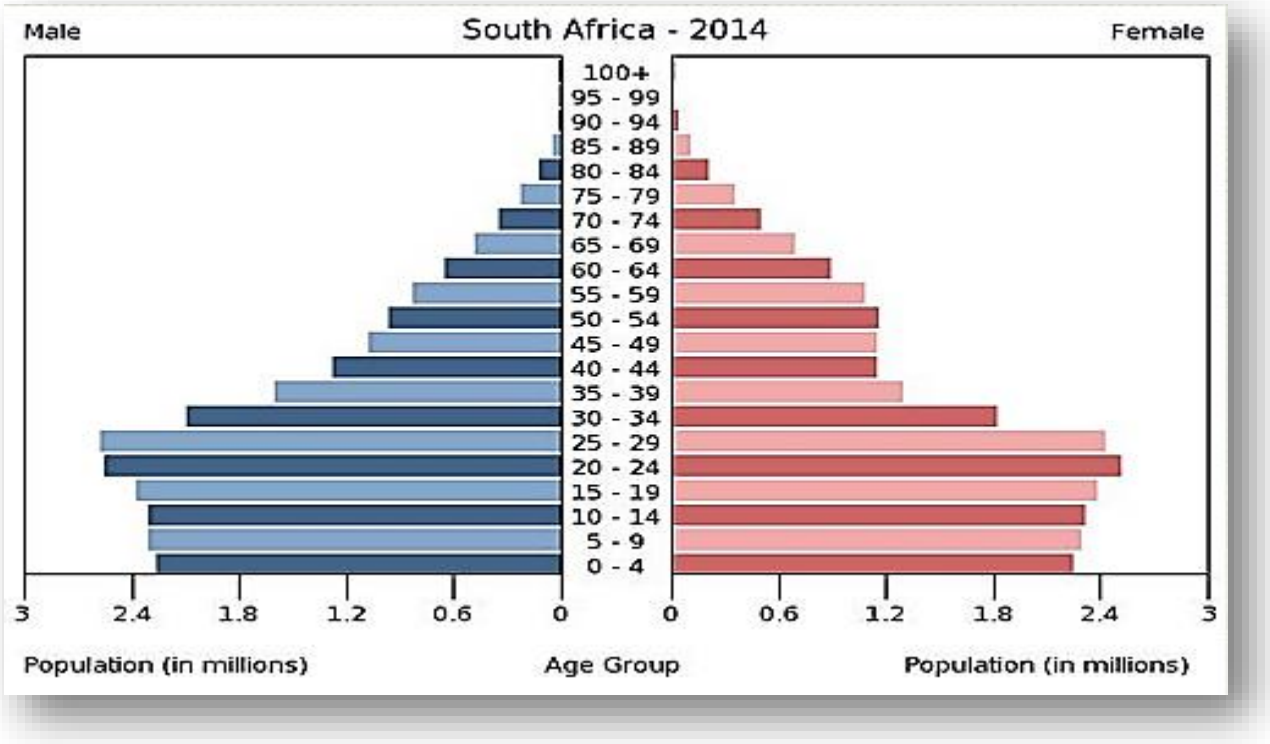


Figure 21: Population pyramid for South Africa 2014 (World Factbook, 2014)

Unemployment Distribution

The unemployment rate is high in the country for the following groups (Statistics South Africa, 2014):

- Women (3.75 percent higher than men)
- Youth, aged between 15 – 34 years (20 percent higher than adults, aged 34 upwards)
- Black Africans (21.7 percent higher than white Africans)
- Those with educational attainment less than matric (28.9 percent higher those with tertiary education)

Level of Education

According to the General Household Survey published by Statistics SA, the way the country's level of education is split into is shown in figure 22.

As it can be seen, about 13 percent of the population has had some form of tertiary education, 80 percent some form of primary to secondary education, 1 percent unspecified while 6 percent has had no education at all out of 32.22 million people surveyed.

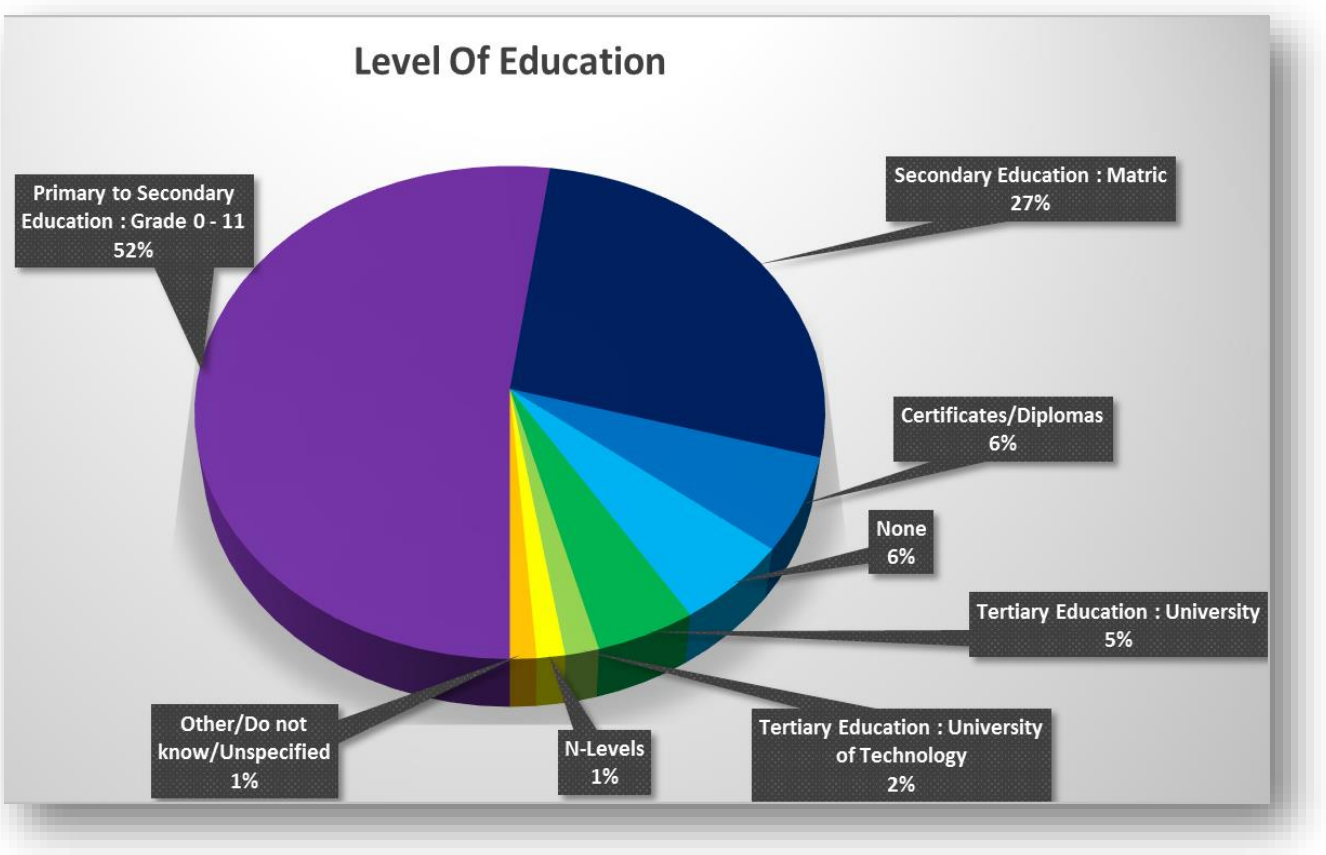


Figure 22: Level of education of the South African Population (Statistics SA, 2014)

5.1.1.4 Technological Factors Analysis

Energy – Electricity

Currently, South Africa is facing huge issues with electricity since it cannot generate enough electricity to meet the demand of its citizens and also businesses. Especially considering that the Eskom was supposedly to be finished building the fourth largest power station in the Southern hemisphere, the Medupi Power Station in Limpopo by 2012 (Mantshantsha, 2014). The completion of Medupi Power Station will benefit the country as it will grow the GDP by 0.35 percent annual as it will have a capacity of 4 800 megawatts (Eskom.co.za, 2014). This project will provide citizens and businesses with a stable supply of electricity.

Automation

With labour being the biggest expense that farms have and the fact that labour is becoming more and more expensive, most farms are moving away from been dependent on labour to the use of automated systems that can do the job of manpower more efficient and cheaper in the long run. This includes sensor networks that detect changes in the environment, actuators that digitally control infrastructure such as gates, irrigation, greenhouse ventilation systems and aerial monitoring tools like fixed wing drones (Agroinnovations.com, 2014). This automation includes also large machinery like 20 meter fertilizer applicators, 26 – 36 meter self-propelled sprayers, etc. (Farmindustrynews.com, 2012).

E-commerce

In this world where technology plays an important role with almost all business processes been automated, E-commerce is gaining popularity in South Africa. E-commerce refers to the trading of goods or services over the internet allowing businesses to conduct their business online (Fontinelle, 2013). New generation of customers in South Africa are pressuring businesses to have some form of e-commerce setup in their business processes so that they can conduct business in their comfort of their homes. Therefore businesses with e-commerce are gaining competitive advantage over their competitors in their respective industries.

5.1.1.5 Legal Factors Analysis

Labour Law: Agricultural Sector

Since the De Doorns farm workers' strike of 2012, the labour law in relation to the agriculture sector was amended as originally there was no minimum wage stipulated for the workers in the agriculture sector (R69 per day, was the assumed rate). The amendment states that the minimum wage that an employer can expect to pay an employee in this sector per day is R150. Therefore the business will have to comply with this.

Occupational Health and Safety Act

Since the business will employ people in its operation, it therefore has to comply with the Occupation Health and Safety Act (OHSA) on top of complying with labour law. The aim of OHSA is to provide for the safety and health of people at work and in connection with the use of equipment (Labourguide.co.za, 2014). It requires employers to produce and maintain, as far as reasonably practical, a work environment that is not risky in connection with the health of works and is safe (Department of Labour, 2010).

Trade and Customs Regulations

In the case that the business wishes to import or export products, it will need to comply with all trade and custom regulations as stated by the Department of Trade and Industry (DTI). Let's say the business wants to import seeds from another country. Food, plants, animals and biological goods are considered to be restricted goods by the DTI, therefore they are allowed to enter or exit the country under certain circumstances and consequently businesses need to have acquired an import permit to import them to the country (Deloitte, 2014).

5.1.1.6 Environmental Factors Analysis

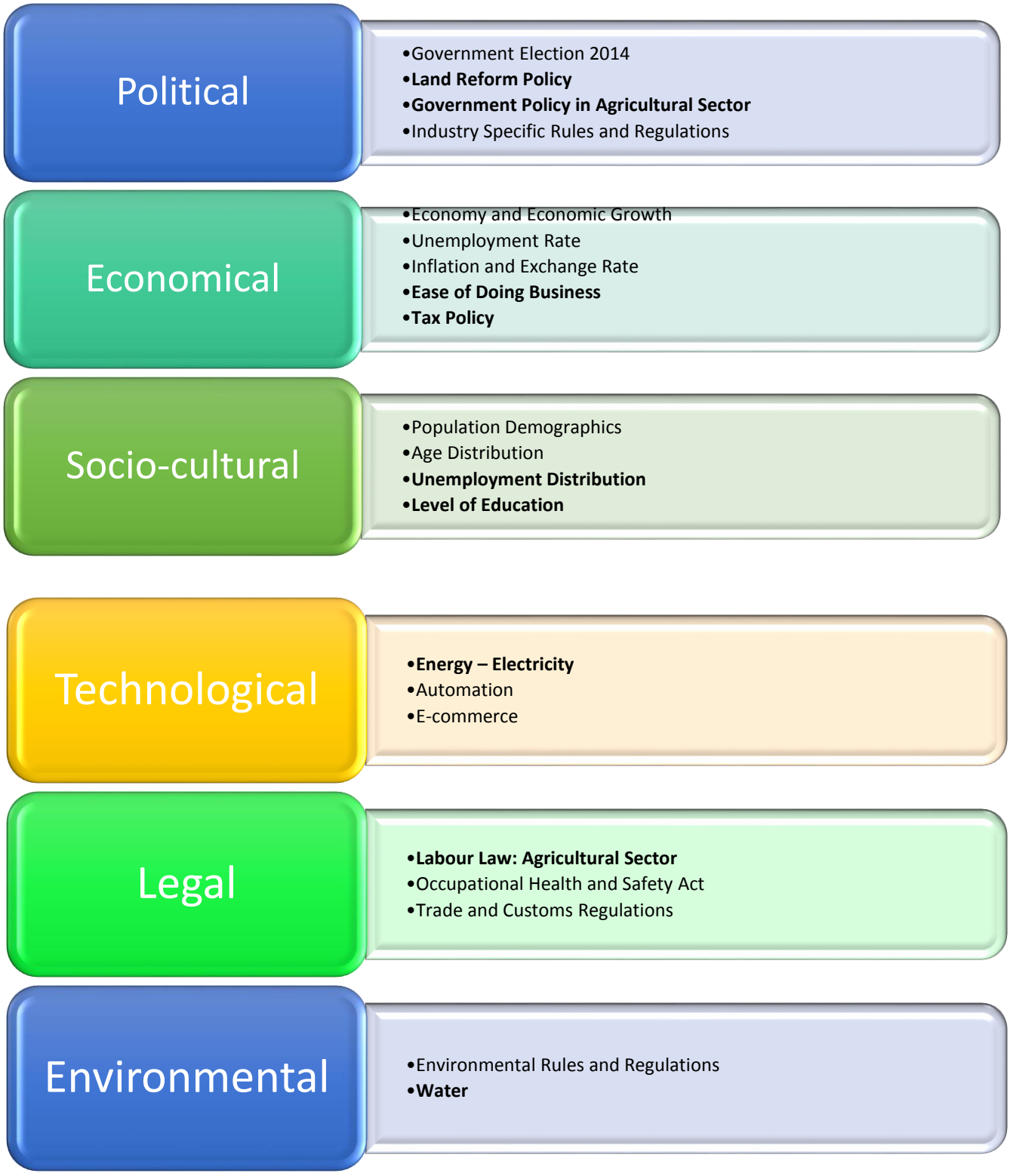
Environmental Rules and Regulations

The business will need to comply with all the environmental rules and regulations as stated by the Department of Environmental Affairs. This includes to complying with laws and acts such as National Water Act, National Environmental Management: Waste Act, Hazardous Substances Act, etc. (Deloitte, 2014).

Water

Water is scarce resource in South Africa with a lot of areas having no access to drinkable water therefore it is protected by law as it is a basic human right. Government is busy trying to source more water for it citizens by building new dams and initiating major projects such as Groot Letaba Water Development Project and Lusikisiki Regional Water Supply Scheme (Dwaf.gov.za, 2014).

Summary of PESTLE Analysis



5.1.2 Porter's 5 Forces Analysis

Note that the five forces were compared against each other using a rank system of either low, medium or high. This analysis is applicable to the two cases mentioned in chapter 4.

5.1.2.1 Threat of New Entrants Analysis

The Threat of New Entrants is **Medium** considering the following elements:

Supply-Side Economies of Scale

New entrants to the market will face major pressure due to capital issues; resulting from capital needed to acquire the necessary equipment and labour; as they will have to compete against competitors who have being in the industry longer and therefore have better competitive advantages in terms of production, marketing, raw materials, etc. This will cause the entrant to either come into the market on a large scale (which requires large capital) or accept that they at a disadvantage in terms of costs. Since the existing competitors are producing large volumes of seedlings, they are able to spread their costs for the advanced technology used, labour over more units thus they can use their resources more efficiently and command better terms and conditions from their different suppliers.

Demand-Side Economies of Scale

The agricultural sector is a sector in which most of the players having been in the same industry for a couple of generations and therefore prefer to do things in the same manner as their predecessors hence it is difficult to convince them to do or use something different. This is true in the sense that the willingness of buyers in the industry to purchase a certain product increases with the number of buyers who support that company and can be seen with most farmers preferring to purchase tractors from John Deere. This is because they want products that are tried, tested and true and nothing says that more than a large number of people in the same industry as you using the same product. Thus buyers in the industry prefer to buy certain important products from large companies and are therefore show brand loyalty to those companies/businesses creating a barrier to entry for new entrants. But the sector is still in transition, therefore new producers might opt to try out new products rather than relying on old products.

Product Differentiation

Product differentiation in the sector is low with most to all of the producers producing the same product therefore there will not be such a large difference between the existing competitors' and the new entrants' product. Potato seedlings produced by the new entrant compared with the potato seedlings produced by existing producers will be similar since they will all result in potatoes been produced. But there is one element that can be used as a differentiator in this regard which is quality. This comes into effect when the buyer compares which seedlings are easier to plant and maintain. And also which produce the final customer buys more, the one produced with seedlings bought from the existing producers or the new entrant.

Capital Requirement

In order to acquire the required machinery, labour, land in order to be able to produce a large enough quantity of seedlings so that the business can breakeven requires a medium to large capital injection making the capital requirement a deterrent for new entrants to the market. This is because been in the sector does not guarantee that the business will make a profit, since it might happen that a new disease can appear and ravage your production resulting that the business needs more capital injection to stay afloat. This is one of the reasons why investors do not want to invest in the sector.

Switching Costs to Buyers

The switching costs to buyers will be low since there is not much difference between the products of the existing producers and the new entrant in terms of characteristics and quality. Therefore the buyer will not acquire additional costs if they do decide to purchase seedlings from the new entrant and in some case, they might actually acquire additional savings. Thus the new entrant who produces the same product with the same quality might not need to invest large amount of funds in a marketing plan so that they can attract buyers.

Government Policies

Government is offering information, trading channels and subsides in the industry in order to attract new entrants into the sector. These benefits are industry wide therefore even existing producers can and are benefitting from them. But since the existing producers are already

established and have everything, from their supply chains to markets established, they do not benefit that much compared to new entrant who is still trying to get a foothold. Therefore this benefit the new entrants more rather than existing producers

Cost Disadvantages

New entrants usually will have a limitation on operating capital and might/will require loans from monetary establishments. They will probably get charged higher interest rates because of the risk the establishments will have to take on when financing a new business. Also the new entrants will be required to purchase expensive equipment from overseas, if they will prefer to rely more on machinery than labour, resulting in them being unskillful in operating those machines. This in its entirety benefits the existing producers

Industry Profitably

Currently, the sector is perceived as not really being profitable as such therefore entrants are deterred from entering the market as they do not want to enter a market which has no prospects of profit. Going forward, this will change as the industry is projected to be worth one trillion US dollars by the year 2030 and this will attract a lot of entrants to the market.

5.1.2.2 Bargaining Power of Suppliers Analysis

The inputs that were considered in this analysis are seeds, fertilizers, electricity and water. The Bargaining Power of Suppliers is **Low** considering the following elements:

Supplier Concentration

The concentration of seed suppliers is low with about 32 seed producers in the country, according to the South African National Seed Organization (Sansor.org, 2014). These seed producers not only supply farmers and seedling producers with seeds but also the general public through retail and hardware shops therefore they have a large number of buyers and are price makers.

The concentration of fertilizer suppliers is high with four companies (Sasol, Omnia, Yara/Kynoch and Profert) out of 21 occupying a 94 percent market share (Grain SA, 2011). But

since fertilizer is considered a commodity, these companies do not set the price and are therefore price takers in this situation.

The market for the supply of water and electricity is a monopoly with only one company or entity supplying it, being the Department of Water Affairs and Eskom respectively. Therefore these entities are price makers even though they are regulated by the state.

Supplier Size

The seed supplier industry consists mainly of small to medium sized companies, like Starke Aryes and Hygrotech with a couple of big international companies such as Pannar, Sakato and Monsanto Seeds.

The fertilizer supplier industry also consists mainly of small to medium sized companies such as Kimleigh and Zinchem with a couple of big companies such as Sasol, Omnia, Kynoch and Profert who are the major players in the sector.

Access to Information about Suppliers

Information relating to suppliers, prices and products, for both seed and fertilizer suppliers, is readily available on the web therefore prospective buyers can easily check and compare the different suppliers from the comfort of their businesses. Therefore buyers certainly have a bit more power since they can negotiate with the different by pitting them against each other.

Availability of Substitute Input

In relation to seeds, there is literally no input substitute for it so it is either the business purchases it from those different seed suppliers or considers another industry to operate in. Thus the seed producers know that buyers do not have any other alternatives then them and therefore they have power as a group for farming inputs.

In relation to fertilizer, there are a couple of alternatives that businesses could use as substitutes to the normal used nitrogen/phosphorus/potassium (NPK) fertilizers. These alternatives include products such as manure, compost (decomposed yard waste and food waste), bio-solids (treated sludge from human waste) and organic matter (plant cuttings).

Switching Costs to the Buyer

The switching costs that the buyer will acquire when switching fertilizers or seeds is low to non-existent as the products are similar therefore they can switch between different suppliers without acquiring additional costs or changing anything in their operations. Therefore buyers can easily change suppliers.

Supplier's Product Differentiation

In terms of product differentiation for seeds, the differentiation is very low as the products are similar with a few differences imbued by the different processes that the different suppliers use. Some seeds might be genetically modified as based on the supplier's processes and technology while others might be organic. But they are all seeds that will provide the same type of output such as potato seeds will produce potatoes irrespective whether the seeds were genetically modified or grown organically. This is also true for fertilizers.

Supplier's Threat to Forward Integration

Supplier threat to forward integrate is low to nonexistent as the suppliers do not have the capabilities or economies of scale to forward integrate. In terms of seed suppliers, the research, technology and equipment required to manufacture those seeds takes a lot if not all of their resources so it is not really feasible to forward integrate. Unless the forward integrate by gathering the capability by an acquisition or merger. In terms of fertilizer suppliers, this would require them to change industries as they are located in the chemical industry and in order for them to forward integrate would require them to jump into the agriculture industry.

Buyer's Threat of Backward Integration

Buyer threat to backward integrate is low to nonexistent as buyers do not have the capabilities and resources to support this backward integration. It takes a lot of time and resources to acquire the required capabilities to be able to produce your own seeds and even more time to start your own research and developments to keep up to date with the other seed producers in the market. All in all, it would not be feasible or advisable for backward integration. Also, backward integration of fertilizers would require the buyer to move from the agriculture industry into the chemical industry thus it still is or even more unfeasible to backward integrate.

5.1.2.3 Bargaining Power of Buyers Analysis

The two types of buyers are farmers and the recreational gardener who tend to buy seedlings. The Bargaining Power of Buyers is **High** considering the following elements:

Buyer Concentration

The concentration of farmers is low with a large number of farmers spread out through the nine different provinces depending on which province's climate and weather supports and encourages which specific agricultural product. The concentration of recreational gardeners is even lower than that of farmers since for this market, the buyers do not care whether the climate allows for it or not as they are not doing it for profit.

Buyer Size

Farmers' enterprises come in different sizes from small communal holdings of 20 hectares to large commercial farms with turnovers of more than two million. While recreational gardeners are individual buyers. The recreational gardeners might exceed the number of gardeners but they would only account for less than 5 percent of the total number of seedlings buyers. Thus they can be considered to be price takers. While farmers, with about 95 percent market share, have leveraging power and can therefore force seedling suppliers to take down their prices.

Access to Information

Information regarding seedling suppliers and their products is readily available on the web and easily accessible therefore the buyers can check and compare supplier products from their comfort of their businesses. As knowledge and information can be considered as a form of power, buyers do have leveraging power and can thus pit supplier against supplier.

Availability of Substitute Input

A substitute input to seedlings is seeds and considering that there are at least 31 seed suppliers in the country, the availability of a substitute input is high. Buyers know this, therefore they can threaten seedlings suppliers with the notion that they might switch to the use of seeds rather than seedlings. Therefore buyers in this sense have leveraging power.

Switching Costs to the Buyer

The switching costs that buyers will acquire when switching from one seedling supplier to another is low as seedlings are generally the same. Thus buyers can switch suppliers without worrying about how this will affect their operations.

Product Differentiation

Product differentiation in terms of seedlings from different suppliers is low as seedling products have no distinct differences. The only noticeable visible difference might the packaging that each individual supplier chooses to use in order to differentiate themselves from other suppliers. But the biggest differentiator will be the price that each supplier chooses to charge the buyer.

Buyer's Price Sensitivity

Buyers in this market are general price sensitivity because the product is critical to their operations and accounts for about 10 to 25 percent of their operational costs. Thus buyers will generally go for a seedlings supplier they trust but also a supplier who can offer them a comparable or superior product at a low cost. Therefore buyers will not be afraid of switching between suppliers if a supplier can offer them a lower price for the product since product differentiation in the market is low

Supplier's Threat to Forward Integration

Supplier threat to forward integrate is medium since the suppliers do generally have the initial capability to grow the final product with only more land, equipment and labour been the only requirements needed. Therefore suppliers can choose to forward integrate if they can acquire those extra resources and then cut out the buyer out of the process by providing the product to the buyer's final customer. The reason this does not occur frequently is that it is not easy or advisable to acquire the first component which is land, due to the debates and issues that are occurring due to land possession.

Buyer's Threat of Backward Integration

Buyer threat of backward integration is very high. Since the majority of farms are already and have been doing it since the beginning of the industry. Therefore buyers can threaten backward integration as they already have those capabilities to begin with and were not using them since

they wanted to cut out some time from their production cycle. This is the biggest threat or leveraging power that buyers have over seedling suppliers since if all the buyers did this, they would stifle out the seedling suppliers and therefore spell the end of the seedlings grower industry. This would force seedlings supplier to forward integrate or exist the industry

5.1.2.4 Threat of Substitutes Analysis

The substitute of seedlings in this context is seeds. The Threat of Substitutes is **High** considering the following elements:

Switching Cost to Substitute

The switching costs for switching from a seedlings supplier to a seeds supplier might be medium or high. This is because even though the initial buying cost of seeds might be much lower than that of seedlings, the business will acquire additional costs, for seven weeks, in terms of operational costs such as labour, power, water, fertilizer, etc. Therefore as discussed in chapter 5, seedlings can afford the buyer the chance to reduce their cycle time and initial operational costs for the first seven weeks of their production cycle for an additional cost to the seeds/seedling input cost.

Practicality of Substitute Product

Practicality of the substitute product is high as seeds have been used since the creation the industry and also that a large majority of buyers are still using them. The fact is that seedling suppliers are creating a new section in the sector by just moving the first part of the agricultural production cycle from the farmers towards themselves. It can be considered as outsourcing the first part of the agricultural production cycle. So reversing to the use of seeds is still highly practical.

Perceived Level of Product Differentiation

The perceived level of product differentiation between farmers using seeds and growing the seedlings themselves compared to buying seedlings might be high with farmers perceiving that they will produce better produce if they have full control over their entire production cycle. Even though the reality might not be so as seedlings suppliers are focusing on one core competency

which is to grow seedlings, while farmers are concerned with growing the produce, the logistics, the marketing and other competencies.

Ease of Substitution

The ease of substitution is high since as it has been explained above that the buyer already has the capability to do what the supplier is doing and can therefore do it themselves.

5.1.2.5 Rivalry amongst Existing Competitors Analysis

The Rivalry amongst Existing Competitors is **Low** considering the following elements:

Number of Competitors

According to the Seedling Growers Association of South Africa, there are 24 certified seedlings growers in the country spread out the nine provinces (Seedlinggrowers.co.za, 2013). The seedling growers produce different types of seedlings from vegetable seedlings like potato, onion seedlings to forestry and flower seedlings. It might seem like a large number of competitors but considering the fact that not all seedling growers produce all types of seedlings thus not all seedling growers might be in the vegetable seedlings market.

Relative Size of Competitors

These seedling growers generally have small to medium-sized businesses servicing the farmers close to their place of business. Therefore these businesses tend to be in areas close to farmlands that buy that specific seedlings that they produce. Some might provide seedlings of a specific type nationally but this is done at one base of operations

Product Differentiation

As mentioned before, product differentiation of seedlings is low with there been no distinct characteristics. Differentiation occurs in terms of product price and packaging that each seedling grower decides to employ.

Exit Barriers

The exit barriers that seedling growers might face include high investment in specialized equipment such as seeders (equipment used for seeding), trans-planters and tray fillers and loaders. In addition, closure costs might be acquired such as penalty costs for short contract agreements. Apart from this, there is not a lot of barriers to exit since most resources could be sold to other players in the seedling market and agricultural sector.

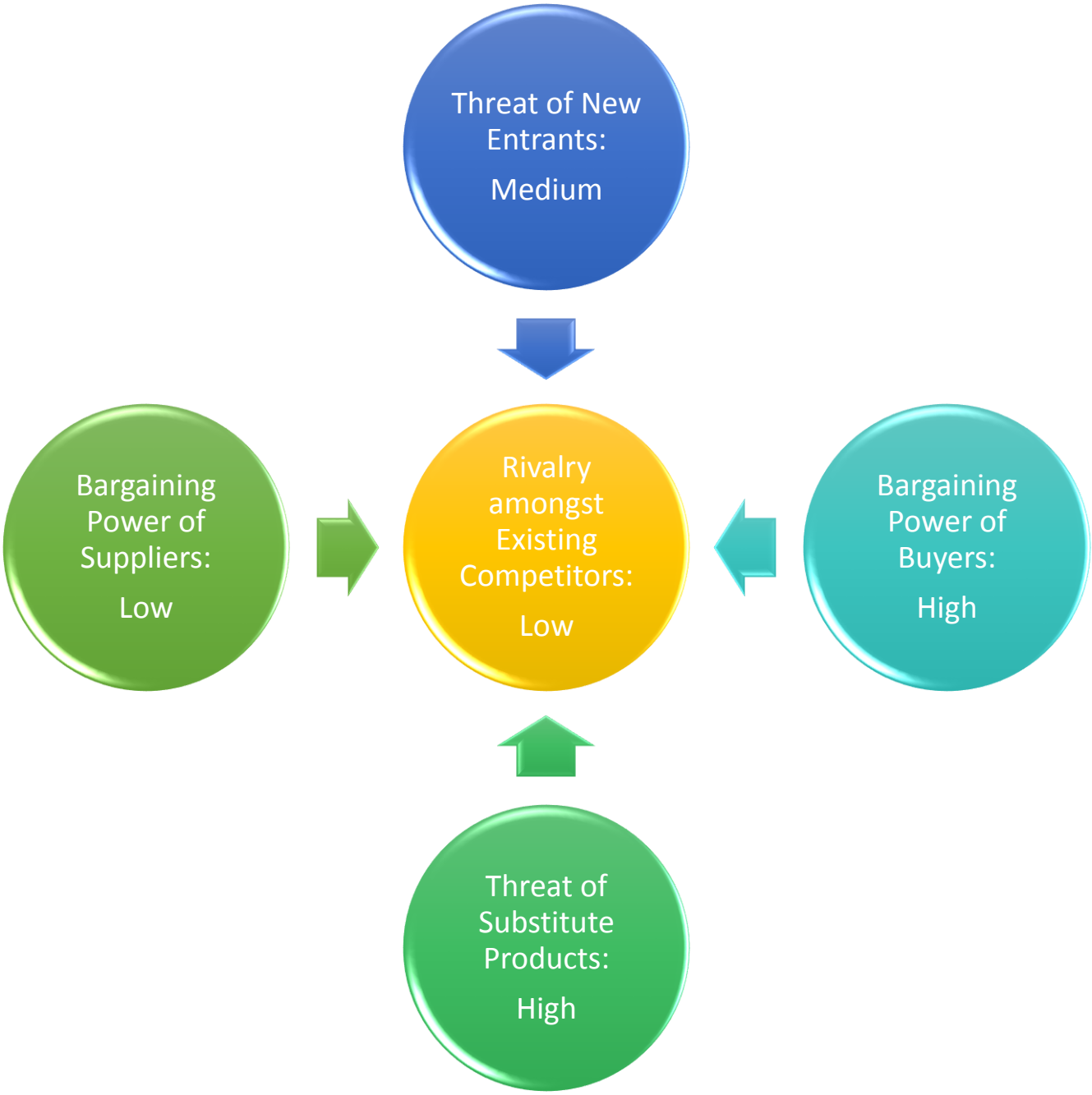
Buyer Loyalty

Farmers generally tend to be loyal to brands if they have experience using it or when the majority of other farmers have used it therefore they may tend to stick to seedling growers that they have been using for years or those the majority of farms endorse. Then again, farmers are price sensitive and therefore might have an inclination for seedling growers that offer a competitive advantage in terms of pricing. On top of this, there are new farmers in the market who are willing to try and use new seedling growers in order to develop mutualistic relationships with those growers.

Industry Growth

With the high probability that the agricultural sector of Sub-Saharan Africa will be worth one trillion US dollars by 2030 and South Africa forms part of this region, there is very high likelihood that the industry will grow even larger in order to gain share a this projected lucrative industry. This means that more farmers will enter the industry with also existing farmers increasing their operations thus increasing the seedling market which is beneficial for all seedling growers.

Summary of Porter's Five Forces Analysis



5.1.3 7S Analysis

The seven elements for the business 17SunsAgri are discussed as follow as they describe the current or projected internal workings of the business according to the project sponsor:

5.1.3.1 Strategy Analysis

Since 17SunsAgri is a start-up business and is fairly in its development stage, the strategy for the business has not been formalized and thus is only loosely defined. The business's key objectives, in relation to its strategy, are to establish farming practices that will allow superior yields not only per surface area but also when considering volume. Thus the business considers height and multilayered farming, such as vertical farming, very much part of the vision of the business going forward.

The distinguishing factor about the business is that it considers the element of time as the most important factor, as improved efficiency in the business's processes could lead to shorter cycle times, which could bring about an even greater improvement in yield. And this is how the business aims to compete.

5.1.3.2 Structure Analysis

The business will be organized to follow a simple functional structure with the staff and owners been placed in the business according to the function they will perform. The difference in this functional structure is that it will incorporate a team element into it, in order to ensure effective and effective communication and decision-making processes.

The management team will consist of three individuals, who are also the co-owners, comprising of an Industrial Engineer, Agronomist and Food Technician. The business will be headed up by an Industrial Engineer who will be providing the technical expertise on operations, scheduling, and optimization to the business. The agronomist and food technician will also bring their expertise concerning superior plant growth and nutrition development.

The business will likely have a centralized decision-making process with the management team making the overall decisions for the business. But since each individual is an expert in their own right, the decision-making process will be decentralized on a lower level with each individual making decisions in their respective function as long it does not interfere with the decision made by the management team as a whole or interferes with the strategy of the business.

5.1.3.3 Systems Analysis

There have not been any systems that have been formalized as of yet, as mentioned above the business is still in its development phase.

There is no formal information technology system that has been adopted yet. Thus the business has been using Microsoft Office tools such as Excel and PowerPoint as planning tools. Communication throughout the business has been done through email with the use of Gmail on the phones of those involved. In addition, WhatsApp has been used by the business employees as a communication platform. Concerning the operating systems that might be used by the business, Lean manufacturing is the only one that has been considered as viable and a starting point.

Other main and technical systems; such as distribution, human resources, procurement and financial systems; are still been developed.

5.1.3.4 Staff Analysis

As of yet, there is currently no full time employees that have been employed by the business. Thus the business has been using seasonal labour only. The business intends to hire a junior industrial engineer on a full time basis, as well as one full time labourer to work in the business both effective as of January 2015. Looking forward if the expansion targets planned by the business are met, a second labourer will be required to start working by July with two more in January 2016.

Currently, the business is composed of an Industrial Engineer, Agronomist and Food Technician. The industrial engineer, due to his education and experience, will be acting as a production manager, accountant, and other positions due to the size of the business and thus no gaps in the required competences/positions for the business have been identified as of yet.

The business's approach on how it will go about recruitment, selection, training, employment development, etc. still needs to be addressed and developed.

5.1.3.5 Style Analysis

The management style that the business is using currently works in a sense of informal engagements between the relevant parties involved. Since each member of the management team has unique expertise, there are differences in philosophy between the engineer and the two

scientists. But they actively seek ways to resolve the issues by incorporating each other's concerns and thinking in to their own contributions.

The business uses a Democratic management style which draws on the entire management team's knowledge and skills thus creating a group commitment to business goals. Therefore the head of the business, in this case the industrial engineer, taps into the collective wisdom of the management team. For example, the industrial engineer had to adjust his machine design in order to accommodate the suggestions of the agronomist that more space will be needed for the substrate as it enables the plants/seedlings to absorb more nutrients.

5.1.3.6 Skills Analysis

The industrial engineer will provide the following skills to the business: supply chain management and logistics, productivity improvement, operations management, quality engineering, optimization, manufacturing systems design, management sciences, production planning and control, and corporate planning.

The agronomist and food technician will provide the following skills to the business: plant technology, growing science, plant diseases, food technology, farming techniques and practices, ecologically responsible farming, crop yield improvement, pests and weeds control, plant and food testing.

As of yet, there are no skills gaps that have been identified thus the skills available to the business are sufficient.

5.1.3.7 Shared Values Analysis

The vision of the business is to revolutionize the industry in such a manner as to bring about economical welfare to SA and to bring about food security for the continent.

The business's core values are as follows:

- Innovative.
- Passion for development.
- A heart for the people of the continent.
- Environmental concerns.

The matrix checks for alignment or misalignment between the 7S elements for 17SunsAgri.

7S Matrix Analysis

	Shared Values	Strategy	Structure	Systems	Staff	Style	Skills
Shared Values		Aligned	Aligned	Aligned	Aligned	Aligned	Aligned
Strategy	Aligned		Aligned	Misaligned: Need more systems	Misaligned: Need More Staff	Aligned	Misaligned: Need more skills
Structure	Aligned	Aligned		Aligned	Misaligned: Need more staff	Aligned	Aligned
Systems	Aligned	Misaligned: Need more systems	Aligned		Aligned	Aligned	Aligned
Staff	Aligned	Misaligned: Need more staff	Aligned	Aligned		Aligned	Misaligned: Need more skills
Style	Aligned	Aligned	Aligned	Aligned	Aligned		Aligned

Skills	Aligned	Misaligned: Need more skills	Aligned	Aligned	Misaligned: Need more skills	Aligned

Table 5: 7S Matrix

5.1.4 SWOT Analysis

5.1.4.1 SWOT Elements

The four elements of SWOT for the business 17SunsAgri is discussed below:

5.1.4.1.1 Strengths Analysis

S1: Management Team

The management team is one of the biggest assets that the business has due to the fact that the team has a strong combination of business development and agriculture experience. The team is an asset because of their diverse expertise and the qualifications that three co-owners have as mentioned in 7S analysis. Their skill sets ensures that almost if not all of the sides of the business are being considered and taken care of.

S2: Innovative Technology

The business will be either designing and developing or retrofitting the machine that will give them a competitive advantage themselves in order to ensure a high level of efficiency and effectiveness in terms of space usage and productivity. This machine will ensure that the business will be able to meet its own objectives as it will allow them to exploit the space they have but still allow them to produce a high volume of seedlings.

S3: Unique Product offering

Even though the product the business will be selling does not differ that much when compared to other supplier's products, the biggest factor that gives the business a competitive advantage will be time. The business will be reducing the time it takes to grow the seedlings on the business's side in order to ensure that the buyer is able to get the product a lot quicker compared to other suppliers. This will ensure that the buyer can increase or double their yearly production thus acquire more revenue and increase their production efficiency.

The business will be producing a high quality product to its buyers due to the fact that good quality processes and procedures will be employed as the head of the business is proficient in

quality management. In addition, the food technician's skillset is quite useful as it focuses on quality but specifically food which could be extended to plant nutrition as well.

5.1.4.1.2 Weaknesses Analysis

W1: Staff Numbers and Skills

Since the business has still not started production, the staff number and also the skillsets the staff has is sufficient. But going forward, more staff will be required in order to operate the business efficiently and also at a scale which is economically feasible. This type of business makes profit based on how much it can produce and sell, and the price thus it will need to produce large volumes to stay profitable. Since the majority of the work relating to planning and operation is done by one individual, the head of the business, who also works as full time employee for another business, when operations starts they will need to hire more people with the similar skillset to do some of the work so that they can reduce that individual's workload.

W2: No Formalized Systems and Organizational Structure

Since it is in the development stage, no systems or organizational structure has been formalized and thus everything is done informally. This is not an issue at this stage but going forward this needs to be formalized in order to give the business a visible structure and thus making it a reality. This will ensure that the business functions properly and also that the business can start making sustainable partnerships and alliances with its prospect input suppliers and customer base.

W3: No Formalized Strategy

There is currently no formal strategy on how the business will operate and also what its realistic objectives are. This results in a lot freedom to bounce ideas, which is a good thing, but then again results in nothing being put down on paper and being formalized. This results in bit of lack direction for the business as a whole as every individual has their own ideas on what the business should aim to achieve and thus does their part according to that notion resulting is disarray.

5.1.4.1.3 Opportunities Analysis

O1: US$ 1 Trillion Industry by 2030

As mentioned before, Sub-Saharan Africa's agriculture sector is valued to be a projected one trillion US dollar industry by 2030. This is due to the factor that the world's population is projected to double by 2030 and thus the world's food production needs to double by then also in order to support the population growth. Thus the agriculture sector, especially for South Africa, is in a prime position to benefit from this. Thus agribusinesses, like 17SunsAgri, are needed in the country in order to be able to help meet this expected food production.

O2: Customer Market Change

Due to the Government's polices especially the Land Reform Policy, the customer market in the agriculture sector is changing. It used to be dominated by large, privately owned commercial farms or farmers who produced the largest quantity of produce due to the scale and therefore dictated how the market runs and are loyal to their suppliers. With the Land Reform Policy been in effect, these large commercial farms are being broken down into smaller farms usually owned by community of individuals. The result is that the number of large commercial farms are slowly decreasing and in turn the number of emergent commercial or communal farms are on the increase. Thus they are more customers that the business can sell their product to.

O3: Ease of Doing Business

As mentioned before, South Africa is ranked as 41 out of 189 economies in the world in relation to how the country's regulatory environment is conducive to start up and run a business. Thus it is relatively ease to start up and run a business in South Africa making it ideal to have a business.

O4: Government Subsidies and Incentives

The South African Government understands the importance of businesses in the economy as an employer of workers and contribute to tax thus furthering the government and its objectives. Even more so, if it is an agribusiness which helps increase the country's food production. Thus many different government departments are offering subsides and incentives in order to attract more people to start up agribusinesses and make them more sustainable.

O5: Customer Loyalty

Generally, customers in this sector are loyal to brands and suppliers that they are used to or are an industry standard. Especially if that supplier is producing a high quality product and has high quality customer service. Thus it is quite hard to convince them to change suppliers. This is an issue for new entrants. But if the business can acquire customers in the sector while producing a comparable product compared to its competitors, it is likely to be guaranteed a steady and constant revenue due to the loyalty of the customers.

O6: Partnerships and Alliances

There is a lot of opportunities for the business to create sustainable, strategic partnerships and alliances with other businesses in order to ensure that the business is able to meets its demand and thus buy more inputs with both businesses benefitting. These partnerships and alliances can even extend to the business's customers ensuring that the business is the premium supplier of seedlings to those customers thus the customer gets what they want, when they want it and in what quantity.

5.1.4.1.4 Threats Analysis

T1: Switching to Different Supplier

Due to low product differentiation between the different seedling suppliers and also with a low to non-existent switching cost, the chance that a customer can switch between different seedling suppliers is quite high. As mentioned before, this is because the customer does not need to change their processes or anything at all in order to accommodate the seedlings from a different supplier. In addition, the final customer will be none the wiser if the business's customer changes suppliers as they will not be able to tell the difference if there is a difference to begin with.

T2: Buyer's Threat to Backward Integrate

The biggest threat the business faces is the threat of buyers cutting them totally out of the supply chain. The buyer does this when they decide that they rather purchase seeds from seed suppliers and grow them themselves from seed to plant instead of purchasing seedlings from seedling suppliers and just growing them themselves from seedling to plant. The might acquire more cost

but they have full control of their supply chain and also can dictate how the plants are growing. If the buyer does decide to backward integrate they would cut out the business from its supply chain without that much of large cost.

T3: Climate Change and Weather

Due to issues such as climate change and the weather, this will make it harder for the business to grow the seedlings as the seedlings, which are plants, are weather and climate sensitive. Thus it plays a major role in their development. Therefore a poor growing season due to unexpected changes in weather can really affect seedling production adversely.

T4: Labour Market

If the business, like many other agribusiness, is going to be labour intensive in its operations then the country's labour market might be a threat to the business. This is because it will account as the first or second largest cost that the business will incur. Due to labour legislation, the minimum daily wage has been increased and will therefore cause the business to spend more person it employs. And should the employees of the business decide to strike, as according to their right, then the business will be forced to stop its operations and be idle until the strike is resolved. Therefore the business will lose a lot of revenue and might even lose some of its customers due to been unable to supply their product which is off critical importance to its customers.

T5: Electricity Supply

If the business should decide that it is going to be machine or equipment intensive in its operations then the country's electricity supply might be a threat to the business. This is because the supply of electricity is a big issue at the moment as it is not stable and this hurts a lot of businesses. Should the electricity supply stop then business would be forced to stop its operation if it does not have an alternative energy supply. Therefore the business will lose a lot of revenue and might even lose some of its customers due to been unable to supply their product which is off critical importance to its customers.

T6: Established Competitors

The competitors that currently exist in the industry have been in existent for a minimum about 20 years and therefore have a lot of advantages that is afforded to them since they have been in the industry for a long period of time. These suppliers have superior access to distribution channels. They have partnerships and alliances with most if not all of the major input suppliers to the market. Thus they have established supply chains. This affords them the power to reduce their prices in order to block out new entrants if they wish and they can even retaliate against a new competitor b making it difficult to acquire input suppliers and customers.

5.1.4.2 SWOT Confrontation Matrix

The SWOT confrontation matrix for the elements mentioned above can be seen in table 6 on the next page. This matrix helps to identify urgent and strategic issues by giving points, based on relative importance, to each combination of:

- Strengths and Opportunities
- Strengths and Threats
- Weaknesses and Opportunities
- Weaknesses and Threats

Points are giving based on the combination of elements with the following meaning of values:

- 3: Strongest strategic fit between combinations
- 2: Strong strategic fit between combinations
- 1: Weak strategic fit between combinations
- 0: Weakest to no strategic fit between combinations

Based on the confrontation matrix, the following are the biggest and important elements to consider:

- Strengths and Opportunities : S1/O1, S2/O5 and S3/O6
- Strengths and Threats : S1/T1, S2/T2 and S3/T2
- Weaknesses and Opportunities : W1/O4, W2/O3 and W3/O1
- Weaknesses and Threats : W1/T4, W2/T2 and W3/T1

SWOT Confrontation Matrix

17SunsAgri	O1	O2	O3	O4	O5	O6	T1	T2	T3	T4	T5	T6	Total
S1	3	1	0	0	0	2	3	0	0	2	2	0	13
S2	1	0	0	0	3	2	3	3	0	0	0	0	12
S3	0	2	0	0	3	3	1	3	0	0	0	1	13
W1	0	3	0	3	0	1	0	0	0	3	2	1	13
W2	0	0	3	2	0	0	0	3	0	1	0	2	11
W3	3	0	2	0	2	0	3	3	0	0	0	1	14

Total	**7**	**6**	**5**	**5**	**8**	**8**	**10**	**12**	**0**	**6**	**4**	**5**	

Table 6: SWOT Confrontation Matrix

5.1.4.3 SWOT Strategies

From the results generated form the SWOT confrontation matrix, SWOT strategies were stated and discussed which were offering the business possible alternative routes to follow that lead to strategic choices for the organization and business opportunities. The strategies were discussed under four headings:

1. SO Strategies : Using existing or projected **S**trengths to take advantage of **O**pportunities
2. ST Strategies : Using existing or projected **S**trengths to reduce likelihood and impact of **T**hreats
3. WO Strategies : Working on current or projected **W**eakness to prevent on missing out on **O**pportunities
4. WT Strategies : Working on current or projected **W**eakness to prevent **T**hreats from becoming reality

5.1.4.3.1 SO Strategies

S1/O1: Increase Business Focus

As stated, Sub-Saharan Africa's agriculture sector is valued to be a projected one trillion US dollar industry by 2030. Firstly; this one trillion US dollar will likely be spilt amongst the 48 countries in the region, including South Africa. Secondly; from the cut of the pie that the country gets, it will be split again between all the industries in the sector including the horticulture industry where the business plans to operate in. Thirdly; from the cut of the pie that the horticulture industry gets, it will be split again between all the players in the industry including 17SunsAgri.

This strategy states that since the business has a wealth of expertise and qualifications imparted to it due to the management team and thus can afford to use this wealth in order to extend their business focus from not only looking at supplying the horticulture industry with seedlings but also the forestry industry. With this, the business is then able to acquire a bigger piece of pie that will be coming to South African agriculture sector as it will be getting revenues from two sub-industries in the sector instead of one.

S2/O5: Patent technology designed

Since the machine or technology that will be used by the business is designed in-house and will be one of the biggest reasons for the business's competitive advantage. This technology will transform the business's competitive advantage into customer loyalty thus allowing for the acquiring and retention of customers.

This strategy states that the business should protect its competitive advantage from competitors by protecting its technology or machine design through the use of patents.

S3/O6: Saturate market with name recognition

Since the business will be offering a very unique value proposition that most of its competitors will be unable to offer or replicate, the business should make strategic partnerships and with its suppliers and buyers. This will be relative easier since those business will be inclined to form partnership as they will also largely benefit.

This strategy states the business should form many relevant and strategic partnerships with businesses in order to saturate the market with 17SunsAgri's name thus using them as one of the business's marketing channel. This will result in more customers for the business therefore giving it name recognition in the market.

5.1.4.3.2 ST Strategies

S1/T1: Set up product guarantees and penalties

Since the two of the biggest reasons that the business's customers will likely switch to new suppliers is that the business did not deliver the correct quality products and also that they did not deliver them at the right time that the customer expected them. But due to the management team's wealth of expertise, they can ensure that a good to high quality product is always delivered to their customer and also delivered at the right time due to expertise in planning.

This strategy states the business should set up product guarantees with their customers to ensure them that the business will always produce and deliver a high quality product to them and that should it happen that there was a mistake, the business will remedy it thus ensuring a high level of customer service and retention.

S2/T2: Leverage used technology to discourage backward integration

Since the innovate technology used by the business to produce the necessary quality and volume of products has been designed in-house, it can be used to discourage potential customers who want to produce the product themselves with the same quality and volume as the business.

This strategy states that the business should discourage backward integration by buyers by showing them how much work, time, energy and financial resources the business has expended in order to get that specific technology used operational and thus if the buyer wants to cut the business out would have to expend to produce the same quality and volume.

S3/T2: Create dependence on the product

Since the business will be offering a very unique value proposition that most of its competitors will be unable to offer or replicate, the business needs to make buyers dependent on their product as this would create an environment where backward integration is not advisable.

This strategy states the business should make the buyer dependent on the business's product by making them see that there is no other alternative in the market to what the business is offering or by offering them a value proposition that makes it not viable to switch suppliers such as a cost advantage. This will discourage buyers from backward integration.

5.1.4.3.3 WO Strategies

W1/O4: Hire more labour to qualify for subsidies

Since the business does not have a lot of staff employed thus it cannot qualify for certain subsides and incentives that government departments offer to business of a certain size and employing a certain number of individuals.

This strategy states the business should hire more staff that satisfies its needs for skills in order to be able to qualify for subsides and incentives that government departments offer businesses that meet certain requirements such as size of business and; number and race category of employees.

W2/O3: Formalize systems and organizational structure

Since the business is in its development phase with minimum formalized systems and simple organizational structure, the benefits or ease of starting a business that South Africa is known for are not visible as the business may still be considered as idea rather than an actual business.

This strategy states the business should hurry up and formalize most to all of its business systems in order to final take the structure of an actual visible business so that it can take advantage of all the benefits or the easiness that comes from starting and operating a business in South Africa.

W3/O1: Formalize business strategy to show business direction

Since the business is in its development phase with no formalized strategy to show how the business aims to achieve success in its chosen market, it seems like the business does not have direction on how it is going to take advantage of the US$ 1 trillion industry that is projected for the Sub-Saharan region.

This strategy states the business should state and formalize its business strategy in order to show the direction the business will take in order to exploit the fact the Sub-Saharan Africa's agriculture sector will be worth US$ 1 trillion.

5.1.4.3.4 WT Strategies

W1/T4: Develop internal labour policies

Since the business does not have a lot of staff employed but knows it will still hire more labour and thus be affected by the country's unstable and strike-prone labour market.

This strategy states that the business should start developing its internal labour policies so that when employees start working in the business can know what to expect in relation to the business's labour policies. This will reduce the number of potential conflicts that may arise in the business between employees and the employers

W2/T2: Formalize systems and organizational structure to prevent backward integration

Since the business is in its development phase with minimum formalized systems and simple organizational structure, it does not know how it will discourage backward integration and also

as buyers cannot see the value the business will provide, they cannot tell if it will be viable to not backward integrate and buy the product from the business.

This strategy states the business should hurry up and formalize most to all of its business systems in order to see if it will be able to prevent backward integration and how will it do it. If the business will not be able to discourage it because of the value its systems and organizational structure will provide, this will allow the business to look at other factors or possible issues that can discourage buyer backward integration

W3/T1: Formalize business strategy to not lose customers

Since the business is in its development phase with no formalized strategy to show how the business aims to achieve success in its chosen market, it seems to be unfocused and customers will not buy from it. This is because they do not know what to expect from the business as to what it will be offering them, what its objectives are and where it sees itself in the next five years.

This strategy states the business should state and formalize its business strategy in order to not lose customers because it was not able to tell them what it will be offering, what its objectives will be and where it sees itself in the next five years.

Summary of SWOT Strategies

Figure 23: Summary of SWOT Strategies

5.2. Customer Analysis

The customers for the business 17SunsAgri, are individuals or enterprises that will be purchasing the product which is the speedlings. According to the use of seedlings, it can be assumed that the customers will either be recreational gardeners or farmers as mentioned above. A brief and general analysis on the two types of customers follows:

5.2.1 Farmers

A farmer will be defined as a individual or enterprise that grows crops or plants for consumption or resale. This farmer operates in the agricultural sector and can be classified as either commercial or subsitence. A commercial farmer is a farmer who prodoces crop for the sole purpose of making profit while a subsitence farmer produces crops for the sole purpose of consumption. The different categories for farmers can be seen in the figure 24.

Production Unit	Turnover	Ownership & Management	Number	Binding constraint	Support required
Large commercial on private property	>R2 million	Family owned but incorporated multiple farms. Rent in land – professional management	±5 400	Market size Equity capital	Export market access Financial market innovation
Medium commercial on private property	R300 000 to R2 million	Family owned, could be incorporated. Some renting in of land – family management	17,000	Land capital management	Mortgage capital for land access Management training
Small commercial on private property	<R300 000	Family owned, generally part time. Some lifestyle farming (game ranches, weekend farms)	24 000	Management time	
Commercial in communal areas	>R300 000	Communal ownership Development projects Private ownership	-	Capital management infrastructure	Grants for land access Property rights Comprehensive farmer support Credit Physical infrastructure
"Emerging" commercial in communal areas	<R300 000	>20 hectares Communal ownership Small farmers in development projects Private ownership	35 000	Land (property rights) Capital labour management Employment opportunities	Grants for land access Property rights Comprehensive farmer support Physical infrastructure Institutional infrastructure
Subsistence farmer in communal areas Allotments Market gardens		<20 hectares Communal ownership Private ownership Little formal market participation	1.256m	Employment opportunities	Social welfare transfers

Figure 24: Categories of farming enterprises (AgriSETA, 2010)

The agricultural sector exudes a dualistic nature with an established formal sector that is composed of the top four types of enterprises (Large commercial, medium commercial, small commercial on private property and commercial in communal lands) and an emergent informal sector composed of two types of farming enterprises (Emergent commercial and subsistence farmers).

In terms of purchasing power in relation to seedlings, the formal sector enterprises have the highest power since they are generally larger than the informal sector enterprises and thus tend to purchase more seedlings. These customers are influenced by price, quality and service since they understand that they have bargaining power in terms of their order sizes and because of this they demand high quality for their purchases from seedling suppliers. The market share in terms of seedling purchases for these customers is large, probably ranging from 85 to 95 percent with the remainder being purchased by recreational gardeners.

These customers generally purchase specific seedlings depending on which region they are based as this affects what types of produce they can grow. The frequency in which they purchase depends on their production cycle time of the various crops they produce therefore crops with shorter production cycle time will be purchased more frequently compared to those with longer production cycle times, in that specific growing season. Considering that crops are grown depending on the season, the frequency of purchase will depend on the seasonality of that specific crop.

These customers purchase the product in two ways. The first is through the storefront. This means that these customers go to the specific seedling supplier physically and check the specific types of seedlings that that supplier has. Depending on what seedlings the customer wants and is satisfied with, they place an order. The repeat business for this type of channel is usually done by telephone as the supplier would already have all the information about the customer and that the customer has already seen what products they have and is already satisfied with what they have.

The second channel is through the web. The customer checks the catalogue for the different products the supplier has on their website and thereafter places an order either telephonically or on the website via an electronic form. Repeat business is done the same way as the first channel or via the electronic form.

The marketing channels with which these customers are exposed to come in a manner of different ways. The most influential is word of mouth where the customer hears about the seedling supplier based on a suggestion of another customer who is currently purchasing seedlings from that specific seedling supplier. The second is at an agriculture expo where different businesses selling different products show off those particular products to these customers. The other channels include marketing though the use of a businesses' website and also through salesforce.

5.2.2 Recreational gardeners

A recreational gardener is defined as an individual who grows produce or crops as a hobby. These gardeners might consume or sell off the produce for profit. There are no distinct categories inside the group for recreational gardeners in comparison to the one that can be seen in figure 24 for farmers. This group of customers' purchasing power is low since these customers generally purchase seedlings in very small quantities, usually less than a 100 seedlings.

These customers are generally influenced by price and quality. Since they do not buy seedlings frequently, they are not price-sensitive as it is usually a once off purchase after a long duration of time. They have a very miniature market share in terms of seedlings purchases due to their infrequent purchases. They purchase seedlings throughout the year since they want to keep themselves occupied and most of the purchase are one time purchase with individuals purchasing them as way to test and see if they can take recreational growing as a hobby.

These customers purchase seedlings through storefront if the seedlings business is in close proximity to their places or work and home but will not be willing to drive to another area to purchase them. They generally prefer to purchase seedling online via the web as it is simpler and more convenient. The may also purchase them telephonically if they have been to the specific seedling supplier or have already checked the catalogue of that specific supplier.

The most influential forms of marketing is advertising though local publications and also on the internet.

5.3. Competitive Analysis

A general and brief competitive analysis was done on the business, 17SunsAgri's competitors. These competitors were grouped in to two large groups which are seed suppliers and seedling suppliers. They were discussed according to the grouping above, looking at the following:

1. List of Competitors
2. Competitor Product Summary
3. Competitor Strengths and Weaknesses
4. Competitor Strategies and Objectives

5.3.1 List of Competitors

5.3.1.1 Seed Suppliers

As mentioned above, there about 31 seed suppliers in the country, according to the South African National Seed Organization (Sansor.org, 2014). These seed suppliers are composed of international and local companies that are based in the country. These suppliers are spread-out through the nine provinces. The list of seed suppliers can been seen in appendix E.

5.3.1.2 Seedling Suppliers

As mentioned above there are about 24 certified seedlings growers in the country spread out the nine provinces, according to the Seedling Growers Association of South Africa (Seedlinggrowers.co.za, 2013). These seedling growers are composed of only local nurseries with no international parental company. The list of seedling growers can been seen in appendix F.

5.3.2 Competitor Product Summary

5.3.2.1 Seed Suppliers

These seed suppliers offer a variety of products, not only limited to seeds but also including mechanical implements and fertilizers. They offer a variety of seeds with categories ranging from vegetable, flower, pasture, forage, herb seeds to tree seeds. These seeds are both for commercial and home garden use. For those different types of categories mentioned above, the offer even more varieties for each plant. For example, the vegetable seeds category under beans,

they offer the following variations: Wintergreen, Imbali, Contender, Lazy Housewife, Witsa and Timbavati bean seeds. The seeds they offer includes seed hybrids and genetically modified seeds in order to make them special characteristics like drought-resistant, etc.

5.3.2.2 Seedling Suppliers

These seedling growers and suppliers offer a wide variety of seedlings ranging from categories such as flower, vegetable, clone, bedding, fruit tree seedlings to forestry seedlings. Under the various categories mentioned above, they have even more varieties of seedlings. For example, the fruit tree seedlings category, they offer the following tree seedlings: apples, pears, nectarines, lemons, persimmons, almonds, etc.

5.3.3 Competitor Strengths and Weaknesses

5.3.3.1 Seed Suppliers

The following are the strengths and weaknesses of the various seed suppliers:

Strengths	Weaknesses
Economies of Scale: These suppliers are medium to large established businesses that have been in the industry for decades and therefore have established processes and equipment. Thus they can produce any quantity of seeds for any customer	**Marketing Channels:** They have a limited amount of channels in which they offer information of their company and products to potential clients. Generally, through their website, at the storefront and agricultural expos.
Distribution Channels: Since they are big business, they established supply chains and distribution channels, and therefore can supply to any customer in any province	**Pricing Information:** They do not offer up information about their pricing for their products on the website so its relatively impossible to compare them against their different competitors
Locality: These suppliers have a multitude of branches and subsidiaries all over the country therefore	

they close to all of their customers in all nine provinces	
Sales Support: They offer a variety of sales support to their customers ranging from advice on the different seeds they offer and how to grow them to personalized sale representatives.	
Extensive Product list: These suppliers offer an extensive list of all the products they offer especially for the South African agricultural market. They offer almost all the different type of seeds that can be grown in the country's climate	

Table 7: Strengths and Weaknesses of Seed Suppliers

5.3.3.2 Seedling Suppliers

The following are the strengths and weaknesses of the various seedling suppliers:

Strengths	Weaknesses
Certification: All of these suppliers and growers are accredited by different bodies and associations. These include the Seedling Growers Association of South Africa (SGASA), South African Nurseryman's Association (SANA) and South African Bureau of Standards (SABS)	**Marketing Channels:** They have a limited amount of channels in which they offer information of their company and products to potential clients. Generally, through their website, at the storefront and agricultural expos
Economies of Scale: Due to the sizes of these businesses and their resources, they have economies of scale and thus can offer lower prices.	**Locality:** These suppliers do not have branches and subsidiaries all over the country therefore

	they only supply seedlings to customers that are in their vicinity
Industry and Market Experience: These businesses have been in operation for almost more than 20 years and therefore have experience and connections in the sector that can only be afforded to those who have been in the sector for that long.	**Pricing Information:** They do not offer up information about their pricing for their products on the website so its relatively impossible to compare them against their different competitors
Broad Product Offering: These suppliers all have broad product offerings. They do not offer just one type of seedlings to their customers but a variety from seedlings that can be used as ornaments to trees to food products.	
Partnerships and Alliances: These suppliers have partnerships and alliances with different businesses that supply them with inputs, with university research departments and even other foreign companies.	

Table 8: Strengths and Weaknesses of Seedling Suppliers

5.3.4 Competitor Strategies and Objectives

5.3.4.1 Seed Suppliers

In order to discuss the different strategies and objectives of seed suppliers, four different seed suppliers were chosen and are discussed as follows:

Starke Ayres

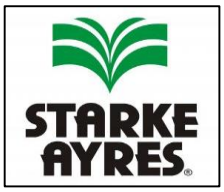


Figure 25: Starke Ayres Logo (Ayres, n.d.)

Starke Ayres is an international seed supplier supplying vegetable, lawn and flower seed varieties specifically for commercial and home garden use. It believes that after sales service is a key differentiator. Its slogan is "Seed for Success" and provides:

- A knowledgeable and professional sales team to advice farmers on the best vegetable seed selections for their growing conditions and marketplace objectives (Ayres, n.d.)
- Ongoing advice and backup support from product managers who are experts in their crop ranges (Ayres, n.d.)
- A constant advantage through the breeding programmes at state-of-the-art research facilities, with comprehensive trials to ensure that new vegetable seed varieties deliver success (Ayres, n.d.)

Hygrotech

Figure 26: Hygrotech Logo (Conradie, 2013)

Hygrotech (Hy – Hybrid, Gro – Growing, Tech – Technologies) is a local South African vegetable seed supplier deemed to be the best in terms of marketing and distribution in the country. It offers a range of necessary products that a modern vegetable farmer needs including the following; seeds, seedling systems, fertilizers, mechanical implements, biological products and plant manipulators. It prides itself in in its extensive sales and technical support teams that are located all over the country. It is a pioneer in the development of F1 hybrids for the vegetable industry (Conradie, 2013).

Monsanto

Figure 27: Monsanto Logo (Monsanto.co.za, 2014)

Monsanto is an American multinational agrochemical and agricultural biotechnology company that has a subsidiary in South Africa. It offers seeds, herbicides and crop production systems like conservation tillage. Monsanto aspires to be a sustainable agriculture company and is focused on empowering farmers – large and small. It aims to strengthen its current product portfolio by integrating chemical crop protection, seed biotechnology and information technology capabilities into the market place as well through new alliances and partnerships (Monsanto.co.za, 2014).

Pannar Seed

Figure 28: Pannar Seed Logo (Pannar.com, 2014)

Pannar Seed is a South African seed company with research and development at its core. It is one of the largest field crop seed producers and suppliers in Africa operating from Greytown, KwaZulu-Natal. It prides itself in its extensive research capabilities and activities. Its products are synonymous excellent yield performance and the production of quality oilseed/grain. Since it has expertise in innovative pre-plant handling and post-planting crop care, it offers comprehensive risk management options to assist farmers in their success (Pannar.com, 2014).

5.3.4.2 Seedling Suppliers

In order to discuss the different strategies and objectives of seedling growers and suppliers, four different seedling suppliers were chosen and are discussed as follows:

Sunshine Seedlings Services

Figure 29: Sunshine Seedling Services (Sunshineseedlings.co.za, 2014)

Sunshine Seedlings Services is the leader in the South African containerized seedling industry producing over 35 million vegetable seedlings, 12 million timber seedlings and 8 million clones annually. They distinguish themselves from are suppliers due to the fact that all their seedlings are grown to perform specifically in the area in which they will be grown. Thus the seedlings are grown according to the weather, climate and soil conditions they will face when the customer plants them in their area. This company prides itself in the high quality timber and vegetable seedlings they produce at competitive prices. They have been in the industry for about 32 years and have about 130 years of practical and academic experience from qualified agriculturalists (Sunshineseedlings.co.za, 2014).

Sutherland Seedlings

Figure 30: Sutherland Seedlings Logo (Sutherlandseedlings.co.za, 2014)

Sutherland Seedlings is one of South Africa's largest seedling producer, producing an excess of 40 million seedlings annually. It supplies the following markets with their seedlings: forestry companies, commercial farmers, emerging farmers, gardeners, agricultural projects, seedling retailers and landscapers in KwaZulu-Natal and Eastern Cape. It offers a wide variety of vegetable, forestry and tree seedlings. It believes that it key asset is its staff who have an excess of 20 years of experience working at Sutherland. It also prides itself in the high quality seedlings that they produce and it is all accredited to their own specially developed and blended growing medium whose components are sourced from various countries (Sutherlandseedlings.co.za, 2014).

Northern Natal Seedlings

Figure 31: Northern Natal Seedlings (Forestry.co.za, n.d.)

Northern Natal Seedlings is a family run business that produces about 25 million forestry seedlings and 5 million vegetable seedlings annually. It also prides itself with good quality seedlings with samples been regularly sent to the Forestry and Agricultural Biotechnology Institute (FABI) at the University of Pretoria to check for unwanted diseases and pests. It has state-of-the-art technology in use in its nurseries. It is the major producer of all eucalyptus, wattle and pine seedlings in the South African Forestry industry. It aims to improve its quality in seedling growth and customer service through the implementation of new structures. In addition, it aims to produce and market seedlings which obtain optimal yield and growth and would be free of pathogens through the new partnerships and alliances it has formed (Forestry.co.za, n.d.).

Zululand Nursery

Figure 32: Zululand Nursery Logo (Zne.co.za, 2014)

Zululand Nursery is a seedling supplier and grower who is one of the leaders in subsistence farming in Africa. They produce about 30 million seedlings annually. They offer the following seedlings varieties: timber, bedding, fruit tree and vegetable. It prides itself in the growing medium it uses as it uses two of the five top brands in the world. These growing medium brands are blended according to the customer's requirement and specific crops need. Its aim is to provide quality seedlings at wholesale prices and also to keep up to date and keep improving in its product offering.

5.4. Strategy Formulation

These two interlinked statements are the main reasons for the existence of 17SunsAgri:

"The global food supply needs to increase by 50 percent by 2030 in order to meet the world's demand"

And

"Sub-Saharan Africa's agriculture sector is projected to be worth US$1 trillion by 2030"

Due to the ever-increasing population of the world and sluggish growth of the global food supply, the world has more people than it can feed and it is getting even worse. Luckily, no other continent in the world is in a prime position to do something about this other than Africa which has about 60 percent of the world's arable land. This is where 17SunsAgri comes in.

17SunsAgri aims to help farmers from all over South Africa grow more food by providing them with high quality seedlings in the quickest and shortest time than other seedlings supplier in order to allow farmers to grow more produce in the same growing season than before.

These seedlings will be of the utmost high quality and delivered to farmers in the most timeously manner after growth to ensure that the farmer does not need to worry about his most essential farming input. The business aims to serve the different types of farmers found in South Africa, ranging from large commercial farms to emergent commercial farmers with high quality seedlings at competitive price. This will be possible due to the crucial strategic partnerships that the business will have made on both sides of its supply chain and the innovative farming techniques and technology it will employ in its operations.

17SunsAgri aims to be one of the leading grower and supplier of seedlings in South Africa supplying high quality horticulture and forestry seedlings at a competitive price in the shortest time.

The vision of the business is to revolutionize the agriculture industry in such a manner as to bring about economical welfare to South Africa and to bring about food security for the continent.

The business's core values are as follows:

- To be Innovative.
- Have a Passion for development.
- A heart for the people of the continent.
- Considering Environmental Concerns at all times.

The business has the following goals:

- ✓ To build the brand 17SunsAgri
- ✓ To be synonymous with quality when seedlings are considered in the industry
- ✓ To establish farming practices that will allow superior yields not only per surface area but also when considering volume
- ✓ To be at the forefront of innovative farming practices and techniques in the industry
- ✓ To be a sustainable, green agribusiness that practices organic farming

To achieve these goals mentioned above, the business intends to focus on the following:

- ❖ Leveraging the business's wealth of expertise and experience to grow the business's seedling and product portfolio
- ❖ To strengthen the business's technology capabilities through an innovate corporate, cultural spirit
- ❖ Adapting the organizational structure in order to be in a better position to respond to a changing competitive environment
- ❖ Broadening the business's geographic footprint through organic growth and strategic joint ventures, partnerships and alliances.

Chapter 6: Business Model Design and Evaluation

In this chapter, the business model for 17SunsAgri based on the strategy defined before was designed. The business model designed will show the rationale that the business will use in order to create and deliver value to its customers. This design was done in the following steps:

1. Product Offering Description
2. Business Model Criteria
3. Business Model Alternatives
4. Business Model Evaluation

6.1 Product Offering Description

In this section, the product offering that the business was offering to its customers was briefly discussed and further extended to include the system/s that will make this offering come into realization. This description was divided into three parts:

6.1.1 What is the Product Offering?

Figure 33: Seedlings in a trays (My Little Vegetable Garden, 2011)

The product that the business is offering to its customer is simple seedlings. The seedlings, as seen in figure 34, are young plants that have emerged from the seed after been planted and grown for certain number of weeks depending on the specific type of plant. These seedlings can be easily taken and transplanted into the farmer's land. These seedlings are not really that much different than the ones other suppliers produce, just the quality of these will be on the same or higher level.

The business's competitive advantage over other supplies in the market is its make-to-order process. Normally, the customer will make an order of a certain quantity of seedlings from a

supplier. The supplier would then plant the seeds of those plants and it would take about 35 days for the seeds to reach seedling size and be shipped off to the customer who placed the order.

In the case of 17SunsAgri, it has invested a lot time, money, energy and financial resources to make the make-to-order process more efficient and effective therefore reducing the time the process takes from 35 days to about 17 days. This is because the business understands how important time is to a farmer as time to them money means money. Thus the farmer can produce twice the quantity of produce in the same growing season without the need of acquiring more and more costs. In the next section, it was explained what systems the business will employ in order to reduce the make-to-order process from 35 days to 17 days.

6.1.2 How 17SunsAgri makes Product Offering a reality?

The main way the business aims to make it possible to reduce the make-to-order process from 35 days to 17 days is to focus on the growing period between seed to seedlings. It aims to halve the time it takes to grow from seed to seedling by leveraging on the following two ideologies and systems:

6.1.2.1 Manipulate Plant Environment

The first ideology that will make what the business aims to do possible is to manipulate the environment in which the seedlings will grow in. Due to the expertise of the management teams in terms of plant growth and nutrition, the business will leverage these skills and expertise to manipulate the plant environment in order to make the seedlings grow faster but still providing the same or higher quality of its competitors.

It will do this by employing up-to-date research and information that the science committee has published in relation to plant growth and nutrition. This will include techniques that make plants grow fast, including but not limited to:

- Increasing the rate of photosynthesis by increasing the light intensity and availability to the plant, possible adding more carbon dioxide to the plant environment

- Manipulating how the plant will grow in terms of its plant structure such as if the plant has long roots, the usage of trays that can accommodate this and give the plant roots more space
- By providing the plant with the optimal quantity of nutrients at the optimal time in order to ensure effective plant absorption of nutrients to encourage faster plant growth
- Introduction of plant growth-promoting bacteria, such as rhizobacteria, to the plant environment to enhance plant growth and suppress plant pathogens
- The promotion of pore openings in plants to enhance photosynthesis and thus directly enhance plant growth

All of the techniques that will be employed in order to manipulate the plant's environment will be further supported by the second ideology that follows.

6.1.2.2 Application of an innovate, retrofitted technology

The second ideology that the business will use in order to support the first as to ensure that the first ideology works in the way it was intended is the application of an innovate technology in the business. The business will use an exceptional technology from another industry, retrofit it and then make it work in this industry. The technology that the business will be leveraging is the use of High Density Storage Systems.

High Density Storage Systems are systems that many manufacturers in other industries use in order to effectively and efficient store items. These systems are very efficient since the aim to maximize space utilization by using compact designs that utilize the available room height. So instead of storing items on shelves using machinery such forklifts or stairs, these systems are automated and thus the part is stored automatically by the system at location where there is available space. The item can then be requested at any time at the push of a button and the item will brought automatically. The following are a couple of names of high density storage systems:

- Lean Lifts: High tech system for storage organization and material handling that enables a more efficient work flow
- Rotomat Industrial Carousels
- Rotomat Office Carousels
- Lockomat

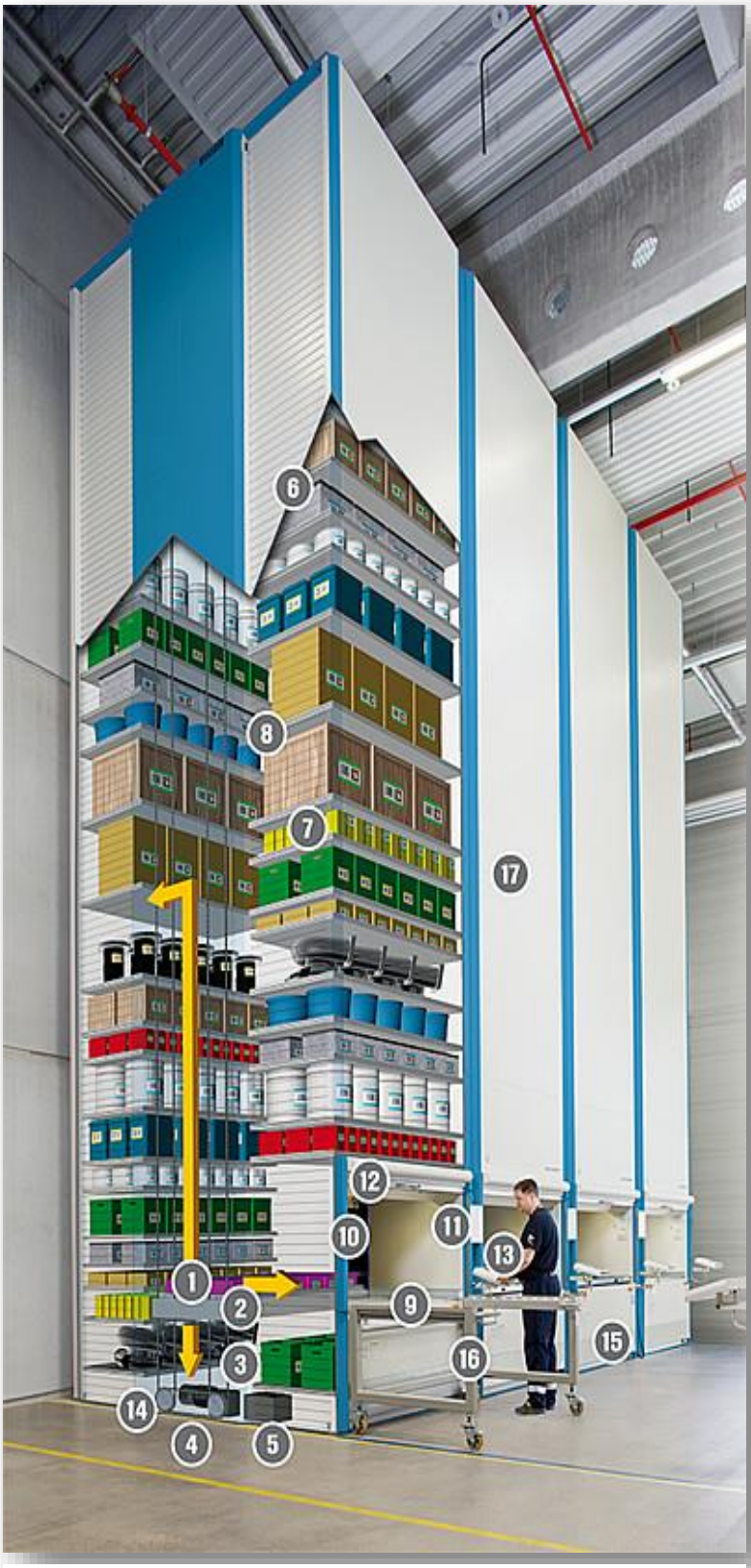


Figure 34: Lean Lift (Haenel, 2014)

The business aims to use this technology of high density storage systems in order to store the seedlings during their growing period. They plan to retrofit these systems so that they can support plant life. Since it is already possible to control the temperature and ventilation of the environment inside these systems, then temperature and ventilation is taken care off. They might add more equipment to the system in order to be able to irrigate the plants with things such as water, fertilizer and herbicide solutions.

This system offers the following benefits to the business:

- It offers a closed system so that the business can manipulate the environment in which the plants grow
- It offers more space to grow seedlings while

minimizing floor space thus more volume of seedlings can be grown or stored per meter of floor space

- It allows the business to be compact in the sense that the business does not need to have large plots of greenhouses in order to produce a large quantity of seedlings thus saving land-acquiring costs

Thus the two ideologies mentioned above support each other in order to offer the business a competitive advantage against other suppliers. This is just one of the many ways that the business will ensure they have a competitive advantage in the market.

6.2 Business Model Criteria

Before the actual design of the different alternative business models that the business 17SunsAgri can employ, the criteria in which the business model alternatives must consider and keep in mind throughout the design and development were stated. These criteria were found from a Master's Thesis done by David Weiss, where it looks at the evaluation criteria that venture capitalists and investment managers look at when the evaluate business models to see if they are viable and will produce worthwhile returns. The results from the literature done in the thesis and the views from venture capitalists and investment managers produced the following criteria:

1. Efficiency

   Efficiency refers to transaction efficiency. A transaction is efficient only if the costs incurred per transaction are significantly much lower than what it is considered as an industry standard thus a business model is efficient only when transactions are cheaper, faster, of better quality and simpler than the average (Weiss, 2010).

2. Complementarities

   Complementarities refer to the bundles of goods that deliver more value than the total separate value of each single good. Thus there is a need to integrate products and services from partners to create an all-encompassing solution that serves the customer's need and

wants as well as can be done. Thus a business model performs well in terms of complementarities when products and/or services are complementarily combined (alone or with partnering companies) to bundles in a "job-to-be-done" mentality, meeting the needs and wants of customers extremely well (Weiss, 2010).

3. Lock-in

   Lock-in refers to effective ways of motivating customers to engage in repeat business and finding ways to incentives the partners the business has to improve their associations consequently preventing customers and strategic partners from switching to competitors. Thus a business model performs well in terms of lock-in when customers stay loyal because they love the product/service or due to the fact that it would be cumbersome or painful to leave or switch (Weiss, 2010)

4. Novelty

   Novelty refers to the specific individually unique ideas that a company comes up with in terms of structuring the business and its transactions. It looks at new innovate ways to value creation opposed to the traditionally value creation of introducing new products and services; new production, marketing or distribution methods and accessing new market. Thus a business model is novel when something in the business is new, be it components or connections or innovatively new combinations thereof (Weiss, 2010).

5. Uniqueness

   Uniqueness refers to when above average profits can be realized because the model was able to differentiate itself from others in the market and thus the aim is to create a business model that is unique in conception and uniqueness. In addition, the uniqueness must be valued by the customers (Weiss, 2010)

6. Fit

   Fit between business model elements allows a business to produce healthy profits and occurs when all the elements in the business model are mutually reinforcing. Since all the parts work together for the same end goal, thus the business model can be considered internally consistent (Weiss, 2010).

7. Profitability

   Profitability is very straightforward and refers to over performing financial indicators that boost the business's likelihood of making more profit (Weiss, 2010)

8. Inimitability

   Inimitability refers to any aspect that is afforded to the business by its business model resulting in it not been easy to replicate such as rare and unique resources or exclusive partnerships. It can also include aspects such as reputation, experience, competence and corporate culture (Weiss, 2010)

9. Robustness

   Robustness refers to the ability that the business model affords the business to be able to fend off threats well (Weiss, 2010)

10. Adaptability

    Adaptability refers to the plasticity allowed by the adaption of the business model should the environment in which the business operates should change (Weiss, 2010)

11. Scalability

    Scalability refers to the large customer basis attainable by expanding into new customer segments and/or new geographical regions (Weiss, 2010)

12. Patentability

    Patentability refers to the ability that some aspects of the business model can be patented and thus not be copied or replicated by other businesses and can relate not only to equipment and technology but also structure and ways of doing business (Weiss, 2010).

13. Plausibility

    Plausibility refers to the assumptions in the business plan are supported with reliable data, field tests have been done or the business already has experience from running operations (Weiss, 2010)

14. Completeness

    Completeness refers to whether or not business model is complete in terms of it consists of the 10th component in the Extended Business Model Canvas which is Governance Instruments. Governance instruments refers to the ways in which flows of information, resources and goods are controlled by the relevant and thus refers to the legal form of the business (Weiss, 2010).

The above mentioned 14 criteria will be used to evaluate the different alternative business models that will be discussed in the next section. In the evaluation phase, these criteria will be rationalized based on what is considered important in the sector or industry in which the business aims to operate in.

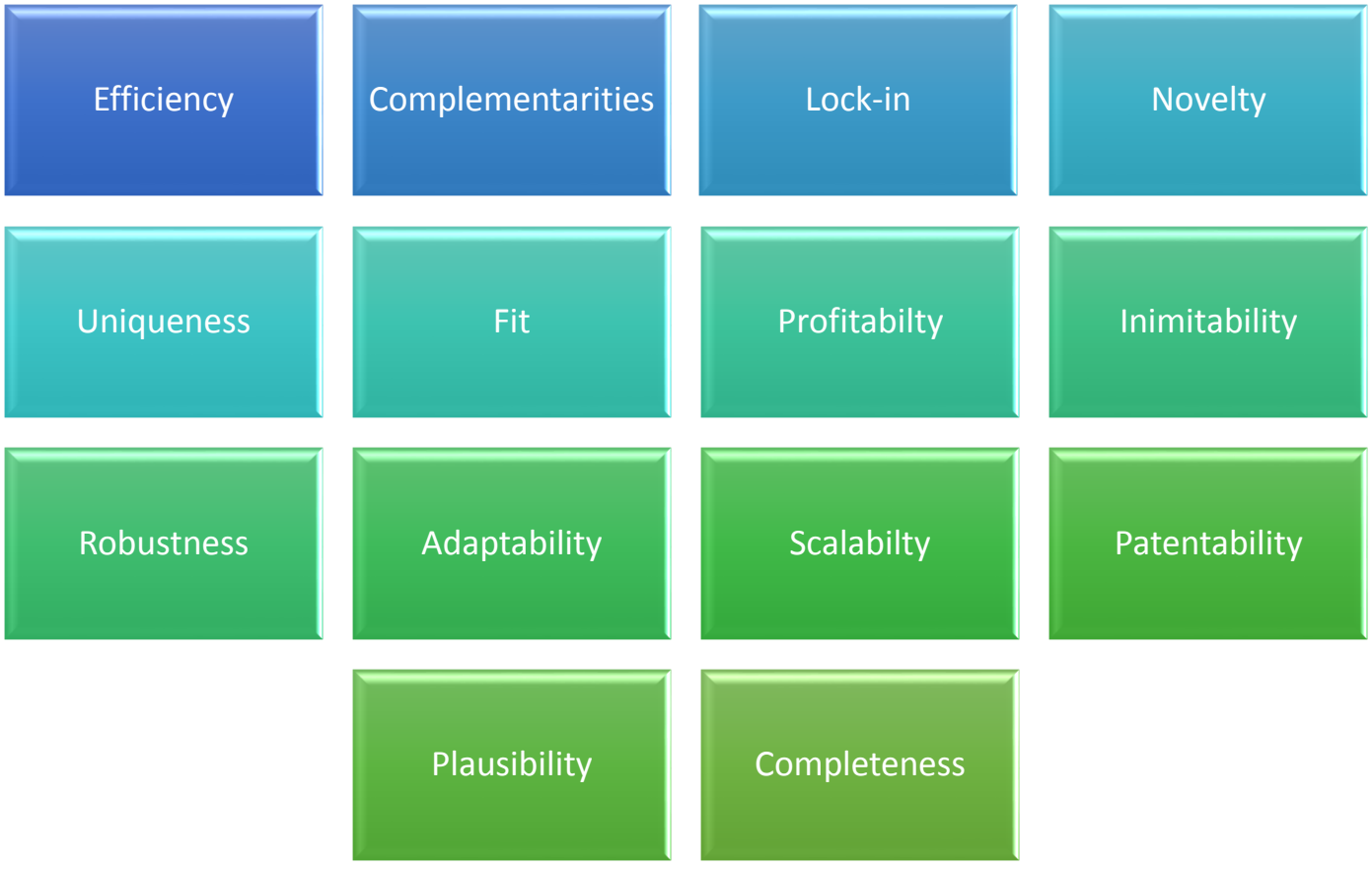


Figure 35: 14 Criteria to evaluate Business Models (Weiss, 2010)

6.3 Business Model Alternatives

In this section, three alternative business models for the business 17SunsAgri describing the rationale of how the business will create, deliver, and capture value were discussed and developed using the Business Model Canvas as a framework. These models were discussed as follows:

1. Business Model A
2. Business Model B
3. Business Model C

8.1.1 Business Model A

6.3.1.1 Description

This business model is designed with a very strong emphasis done on the customer segment and how the business model, in its entirety will support the specific proposition offered to the customer. This model suggests that the business should enter the market aggressively and attract the large customers such as small to large commercial farmers who are very time and service sensitive and offer them a very service and time-orientated product package that meets the customer's needs and wants.

6.3.1.2 Explanation of Nine Building blocks

In this section, the business model explained above was decomposed by looking at each of the nine building blocks that make up the business model:

Customer Segments

The customer segment that this business model will serve is a niche market composed of small, medium and large commercial farmers who are already established in the market and produce considerable large volumes of produce annually. These customers due to the nature of their size, are time and service sensitive buyers who are mostly loyal to their suppliers if their suppliers provide what they are supposed to provide, and when they are supposed to.

Value Propositions

The value proposition of the business is to be providing farmers with high quality seedlings in the quickest and shortest time than other seedlings supplier in order to allow farmers to grow more produce in the same growing season than before. They will be supplying these farmers with high quality horticulture and forestry seedlings at a competitive price. This will be coupled with an extensive customer support and service allowing the customer to always be taken care of regarding their needs

Channels

The following are the channels that the business will use to interface with this specific customers:

- Communication Channels will include direct personal contact through a sales person or team, a web site with all the information on the business include and lastly ads at agricultural expos and sites like farmersweekly.com
- Distribution Channels will be indirect with a partnering logistics business been used to deliver the product to the customer using their own vehicles. This is due to the fact that large-sized trucks are needed to transport the large volume of seedlings
- Sales Channels will be direct including storefront sales with the customer coming to the store in person to make sales while repeat business can be done over the phone

Customer Relationships

The relationship that the business will have with these customers will be a personalized one with high, any time access and support to be given to these customers to ensure a high customer service experience leading to high customer retention. The customers will be helped by a human representative throughout the sales process and also after sale through means such as phone calls, video calls, emails and other means.

Revenue Streams

The cash that the business will be generating from this customer segment will be mainly asset sale with the customer paying the business in order to acquire ownership rights to specific quantity and quality of seedlings. In this fee, post-sale support fees will have been included in it.

Key Resources

The resources that the business will leverage in order to create and market the business's value proposition include:

- Partnerships and alliances with input suppliers and a distribution business
- The expertise of the management team
- A small to medium sized, skilled workforce with part of the workforce having competence in customer service
- Innovate technology such as the retrofitted lean lift discussed in the previous section

Key Activities

In order to make the business model, the following activities will be done by the business:

- Production of substantial quantities of high quality seedlings
- Research and development into new innovate farming processes, techniques and technology

Key Partnerships

The partnerships that the business will have, will be with businesses such as:

- Input suppliers such as seed and fertilizer suppliers in order to reduce the risk and uncertainty of supply
- Customer businesses in order to reduce the uncertainty of demand
- Associations for certification

Cost Structure

The business is value-driven as it will incur costs in order to the customer the benefits of higher quality seedlings and shorter lead times. This costs will include:

- Large fixed costs of the necessary equipment and technologies, infrastructure and staff
- Costs due to logistics outsourcing
- Costs due to research and development

- Costs due to sales and marketing

6.3.1.3 Final Integrated Explanation

In summary, Business Model A states the business should target large customers in the market which are small to large commercial farmers and offer them high quality seedlings in the quickest and shortest time than other seedlings supplier at competitive prices coupled with an extensive customer support. Communication with these customers will be through direct personal contact or through the business's website with distribution of the product done by an external logistics company. Sales will be done in person with repeat business done over the phone. The relationship with these customers will be a personalized one with high, any time access and support through a sales team. Thus the business will accrue revenues though mainly asset sale with the customer paying the business in order to acquire ownership rights to specific quantity and quality of seedlings with a post-sale support fee.

The business will leverage its partnerships, expertise and innovative technology to remain competitive through activities such as production of seedlings and R&D of new technology and practices. Its key partnerships will be with input suppliers, customers and association. With it accruing costs due to capital investment in equipment, labour and infrastructure combined with outsourcing, R&D and, sales and marketing costs.

This business model's canvas can been seen below in figure 36.

Business Model Canvas Diagram for Business Model A

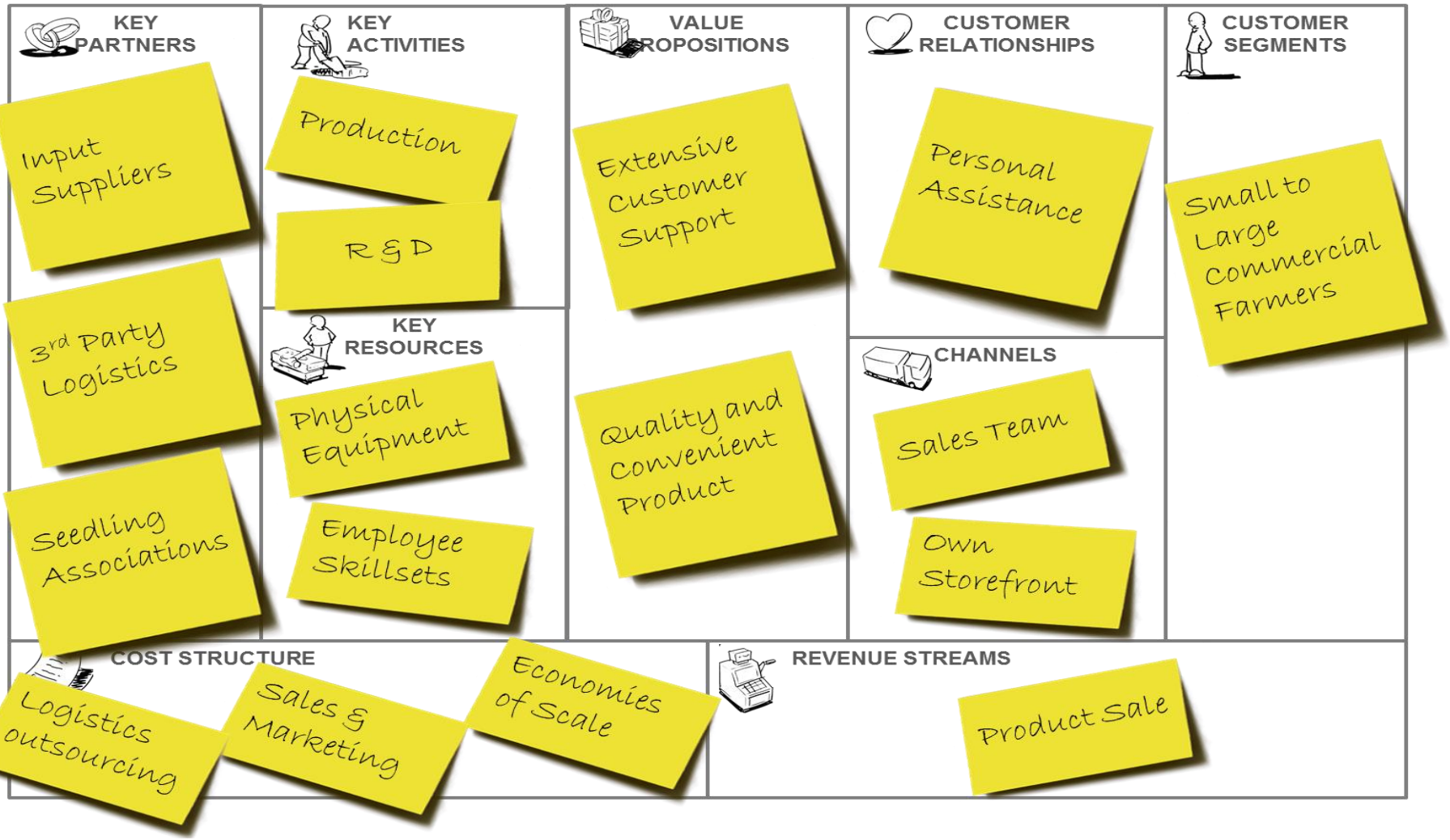


Figure 36: Business Model Canvas Diagram for Business Model A

8.1.2 Business Model B

6.3.2.1 Description

This business model is designed with a very strong emphasis done also on the customer segment and how the business model, in its entirety will support the specific proposition offered to the customer. This model suggests that the business should enter the market and attract or target small, developing customers such as emergent commercial farmers who require support and development in order to grow their businesses. The offering consists of a very service and support orientated product package that will help those farmers to grow into large commercial farms. These farmers will grow and in turn buy more products from the business, facilitating mutual growth.

6.3.2.2 Explanation of Nine Building blocks

In this section, the business model explained above was decomposed by looking at each of the nine building blocks that make up the business model:

Customer Segments

The customer segment that this business model will serve is a niche market composed of small, emerging commercial farmers who are trying to get established in the market and produce small to medium sized quantities of produce annually. These customers are interested in partnerships and alliances that will help them grow and enter new markets. Thus they are looking for support related product packages

Value Propositions

The value proposition of the business is to be providing farmers with high quality seedlings in the quickest and shortest time than other seedlings supplier in order to allow farmers to grow more produce in the same growing season than before. They will be supplying these farmers with high quality horticulture and forestry seedlings at a competitive price. This will be coupled with customer support that will help the farmers identify new markets to enter and products to produce. The business will help provide these farmers with information on the latest trends in the industry and also provide help in regard to production planning and scheduling.

Channels

The following are the channels that the business will use to interface with this specific customers:

- Communication Channels will include direct personal contact through a personalized sales person or team that knows the business very well or a web site with all the information on the business included and available resources based on membership
- Distribution Channels will be direct with the business delivering the product to the customer using their own vehicles and resources. Thus the business will have an internal logistics function
- Sales Channels will be direct including storefront sales with the customer coming to the store in person to make sales or via the internet with an electronic web form while repeat business can be done over the phone

Customer Relationships

The relationship that the business will have with these customers will be a dedicated personalized one with high, any time access and support to be given to these customers to ensure a high customer service experience leading to high customer retention. The customers will be helped by a human representative throughout the sales process and also after sale through means such as phone calls, video calls, emails and other means. This relationship will be a deeper and more intimate one than the one offered to large customers in business model A as this one will be developed over time. This is to ensure that the right person who understands the specific farmer's business will always service that specific farmer in order to provide the most relevant information.

Revenue Streams

The cash that the business will be generate from this customer segment will be mainly asset sale with the customer paying the business in order to acquire ownership rights to specific quantity and quality of seedlings. In addition farmers will also be charged either a small subscription fee for use of the services that business will be offering such as the business support in combination

with fixed contract clause that names 17SunsAgri as its premium supplier of seedlings or a once-off consulting fee for business support

Key Resources

The resources that the business will leverage in order to create and market the business's value proposition include:

- Partnerships and alliances with input suppliers and a distribution business
- The expertise of the management team
- A small skilled workforce with competence in customer support
- Innovate technology such as the retrofitted lean lift discussed in the previous section

Key Activities

In order to make the business model, the following activities will be done by the business:

- Production of substantial quantities of high quality seedlings
- Problem solving activities in order to solve problems and issues of emerging farmers

Key Partnerships

The partnerships that the business will have, will be with businesses such as:

- Input suppliers such as seed and fertilizer suppliers in order to reduce the risk and uncertainty of supply
- Customer businesses for joint-ventures to develop new business
- Associations for certification

Cost Structure

The business is value-driven as it will incur costs in order to the customer the benefits of higher quality seedlings and shorter lead times. This costs will include:

- Large fixed costs of the necessary equipment and technologies, infrastructure and staff
- Costs due to sales and marketing
- Costs due to business support skills and technologies

6.3.2.3 Final Integrated Explanation

In summary, Business Model B states the business should target small customers in the market which are small, emerging commercial farmers and offer them high quality seedlings in the quickest and shortest time than other seedlings supplier at competitive prices coupled with an extensive customer support and business support. Communication with these customers will be through direct personal contact or through the business's website with distribution of the product done internal with the business's own vehicles and resources. Sales will be done in person or via the internet with an electronic web form with repeat business done over the phone. The relationship with these customers will be a deeper and more intimate, dedicated personalized one with high, any time access and support through a sales team. Thus the business will accrue revenues though mainly asset sale with the customer paying the business in order to acquire ownership rights to specific quantity and quality of seedlings with a post-sale support fee. And also through a small subscription fee for use of the services that business will be offering such as the business support in combination with fixed contract clause that names 17SunsAgri as its premium supplier of seedlings or a once-off consulting fee for business support

The business will leverage its partnerships, expertise and innovative technology to remain competitive through activities such as production of seedlings and problem solving activities such as business support. Its key partnerships will be with input suppliers, customers and association. With it accruing costs due to capital investment in equipment, labour and infrastructure combined with business support skills and technologies and, sales and marketing costs.

This business model's canvas can been seen below in figure 37.

Business Model Canvas Diagram for Business Model B

Figure 37: Business Model Canvas Diagram for Business Model B

8.1.3 Business Model C

6.3.3.1 Description

This business model is designed with a very strong emphasis done also on the customer segment and how the business model, in its entirety will support the specific proposition offered to the customer. This model suggests that the business should enter the market and target both small, developing customers such as emergent commercial farmers who require support and development in order to grow their businesses and also large customers such as small to large commercial farmers who are time and service sensitive. Thus the business will offer either one of the two different product packages to its customers depending on the customer's needs and wants

6.3.3.2 Explanation of Nine Building blocks

In this section, the business model explained above was decomposed by looking at each of the nine building blocks that make up the business model:

Customer Segments

The customer segment that this business model will serve is a segmented market composed of both small, emerging commercial farmers and small, medium and large commercial farmers. The business will try and offer both customer segments a product package that closely meets their needs and wants. Thus both customers will likely receive a basic product package with additional features only included based on which segment the customer is in.

Value Propositions

The value proposition of the business is to be providing farmers with high quality seedlings in the quickest and shortest time than other seedlings supplier in order to allow farmers to grow more produce in the same growing season than before. They will be supplying these farmers with high quality horticulture and forestry seedlings at a competitive price. This will be coupled with customer support and service ranging from help with production planning to focused, personalized services for the different customers

Channels

The following are the channels that the business will use to interface with this specific customers:

- Communication Channels will include direct personal contact through a sales person or team, a web site with all the information on the business include and lastly ads at agricultural expos and sites like farmersweekly.com occasionally
- Distribution Channels will be direct with the business delivering the product to the customer, using their own vehicles and resources thus the business will have an internal logistics function instead
- Sales Channels will be direct including storefront sales with the customer coming to the store in person to make sales or via the internet with an electronic web form while repeat business can be done over the phone

Customer Relationships

The relationship that the business will have with both customer segments will be a personalized one with high, any time access and support to be given to these customers to ensure a high customer service experience leading to high customer retention. The customers will be helped by a human representative throughout the sales process and also after sale through means such as phone calls, video calls, emails and other means. While the relationship with the small emerging farmers will be a deeper and more intimate one than the one offered to large customers in as this one will be developed over time. This is to ensure that the right person who understands the specific farmer's business will always service that specific farmer in order to provide the most relevant information.

Revenue Streams

The cash that the business will be generate from both this customer segments will be mainly asset sale with the customer paying the business in order to acquire ownership rights to specific quantity and quality of seedlings. In this fee, post-sale support fees will have been included in it. While the small, emerging farmers will also be charged either a small subscription fee for use of the services that business will be offering such as the business support in combination with fixed contract clause that names 17SunsAgri as its premium supplier of seedlings or a once-off consulting fee for business support

Key Resources

The resources that the business will leverage in order to create and market the business's value proposition include:

- Partnerships and alliances with input suppliers and a distribution business
- The expertise of the management team
- A small to medium sized, skilled workforce with part of the workforce having competence in customer service and support
- Innovate technology such as the retrofitted lean lift discussed in the previous section

Key Activities

In order to make the business model, the following activities will be done by the business:

- Production of substantial quantities of high quality seedlings
- Research and development into new innovate farming processes, techniques and technology
- Problem solving activities in order to solve problems and issues of emerging farmers

Key Partnerships

The partnerships that the business will have, will be with businesses such as:

- Input suppliers such as seed and fertilizer suppliers in order to reduce the risk and uncertainty of supply
- Customer businesses in order to reduce the uncertainty of demand
- Customer business for joint-ventures to develop new business
- Associations for certification

Cost Structure

The business is value-driven as it will incur costs in order to the customer the benefits of higher quality seedlings and shorter lead times. This costs will include:

- Large fixed costs of the necessary equipment and technologies, infrastructure and staff
- Costs due to research and development
- Costs due to sales and marketing
- Costs due to business support skills and technologies

6.3.3.3 Final Integrated Explanation

In summary, Business Model C states the business should target large customers in the market which are small to large commercial farmers and also small customers in the market which are small, emerging commercial farmers. And then offer them high quality seedlings in the quickest and shortest time than other seedlings supplier at competitive prices coupled with an extensive customer support and business support. Communication with these customers will be through direct personal contact or through the business's website with distribution of the product internal with the business's own vehicles and resources. Sales will be done in person or via the internet with an electronic web form with repeat business done over the phone. The relationship with these customers will be a personalized one with high, any time access and support through a sales team. With the one with small emerging farmers being deeper and more intimate. Thus the business will accrue revenues though mainly asset sale with the customer paying the business in order to acquire ownership rights to specific quantity and quality of seedlings with a post-sale support fee for both segments. And also through a small subscription fee for use of the services that business will be offering in combination with fixed contract clause that names 17SunsAgri as its premium supplier of seedlings or a once-off consulting fee for business support, only for the small emerging farmers.

The business will leverage its partnerships, expertise and innovative technology to remain competitive through activities such as production of seedlings, problem solving activities such as business support and, R&D of new technology and practices. Its key partnerships will be with input suppliers, customers and association. With it accruing costs due to capital investment in equipment, labour and infrastructure combined with outsourcing, R&D, business support skills and technologies and, sales and marketing costs.

This business model's canvas can been seen below in figure 38.

Business Model Canvas Diagram for Business Model C

Figure 38: Business Model Canvas Diagram for Business Model C

6.4 Business Model Evaluation

In this section, the three alternative business model discussed and developed in the previous section were evaluated against each using the following method in order to select the best and most feasible business that 17SunsAgri can adopt:

1. Analytical Hierarchy Process
2. Business Model Canvas SWOT Evaluation
3. Business Model Selection Based on Final Collective Weight

6.4.1 Analytical Hierarchy Process

The Analytical Hierarchy Process was used to evaluate the three alternate business models that were discussed and developed in the previous section. This process is a multi-criteria decision making tool for organizing and analyzing complex decisions based on mathematics. This process will assess the three alternative business models by focusing on the business model's overall integrity. This process was done in the following steps:

6.4.1.1 Step 1: Pairwise Comparison

In this step, a pairwise comparison matrix was created with the criteria discussed in section 2 been on I (first column) and J (first row) axis. This matrix can be seen in appendix G. Then the criteria were compared in pairs to judge which of each criteria is preferred, or has a greater amount of value and importance in the selection of the best and viable business model for the scenario in which 17SunsAgri is in. The combination of criteria were given the following points with the following meanings:

- 1 : Criterion I and J are of equal value and importance
- 2 : Criterion I is weakly more valuable and important than Criterion J
- 3 : Criterion I is strongly more valuable and important than Criterion J
- 4 : Criterion I is very strongly more valuable and important than Criterion J
- 5 : Criterion I is absolutely more valuable and important than Criterion J

Thereafter an intermediate matrix was created, can be seen in appendix G, from which the following weights were derived. These weights indicate how each criteria is worth or valued in the final selection of the best viable business model which 17SunsAgri will employ, as can be seen in figure 39

Criterion	Weights
Efficiency	3.56%
Complementarities	6.46%
Lock-in	8.16%
Novelty	4.27%
Uniqueness	8.87%
Fit	3.83%
Profitability	23.54%
Inimitability	8.62%
Robustness	11.74%
Adaptability	5.01%
Scalability	10.19%
Patentability	1.94%
Plausibility	2.45%
Completeness	1.35%

Figure 39: Business Model Criteria and their respective weights

6.4.1.2 Step 2: Pairwise Comparison Matrices and Weights for all the Alternatives with respect to all the Criteria

In this step, pairwise comparison matrices were done for each individual criteria by comparing pair of models in terms of seen how each model fairs against the other in relation to that criteria. The combination of models, for a specific criteria, were given the following points with the following meanings:

- 1 : Model I and J both have demonstrated the importance of that criteria
- 2 : Model I has weakly demonstrated the importance of that criteria more than Model J
- 3 : Model I has strongly demonstrated the importance of that criteria more than Model J
- 4 : Model I has very strongly demonstrated the importance of that criteria more than Model J
- 5 : Model I has absolutely demonstrated the importance of that criteria more than Model J

From those matrices, the relative weights of each model for each criteria were calculated and can be seen in appendix H.

6.4.1.3 Step 3: Final Weights for Each Model

In this step, the relative total weights for each criteria (as were calculated in step 1) were multiplied by the relative weight that the model got for that criteria (as were calculated in step 2) in order to get the final weight. This was done for all three alternative business models to get the final weight for each. The final weights calculated are as follows:

- Business Model A scored 27.52%
- Business Model B scored 34.47%
- Business Model C scored 38.01%

Thus the business model that scored the highest in this evaluation is business model C. Therefore this model is the most suitable considering the overall integrity of the business model. This business model was chosen as it scored the highest weighted score which indicates that this model takes into account the most important criteria from the 14 criteria considered. And thus is the best viable business model that the business 17SunsAgri can use.

6.4.2 Business Model Canvas SWOT Evaluation

In this section, an evaluation of the three alternative business models for 17SunsAgri was done using a SWOT analysis at the building block level. This evaluation measured the external and internal positive and negative areas of the business model by following a checklist that assessed each of the business model's nine building blocks in detail (Engdahl and Rensfelt, n.d.). This was done by describing the strengths, weaknesses, opportunities and threats.

As stated above, this evaluation was done at the building block level by grouping the blocks into four group that are as follows:

- Value Proposition : Composed of Value Propositions block
- Cost/Revenue : Composed of Cost Structure and Revenue Streams blocks
- Infrastructure : Composed of Key Activities, Key Resources and Key Partners block
- Customer Interface: Composed of Customer Segments, Customer Relationships and Channels Block

This process was done in the following steps:

6.4.2.1 Step 1: Strength and Weakness Assessment

In this step, a strength and weakness assessment was done for the nine building blocks. This was done by scoring each business model alternative against a set of questions checklist, seen in appendix I, with a score of -5 to -1 indicating a weakness and a score of +1 to +5 indicating a strength.

The results can be seen in appendix L with the graphical view shown in figures 40 to 42. The higher the score is, the better as this indicates that that business model alternative has a stronger strength compared to the others. For example looking at figure 40, Business model A has the highest score of 3 in the Value Proposition Strength and Weakness Assessment which shows that it has the best value proposition according to the checklist when comparing the three alternative business models.

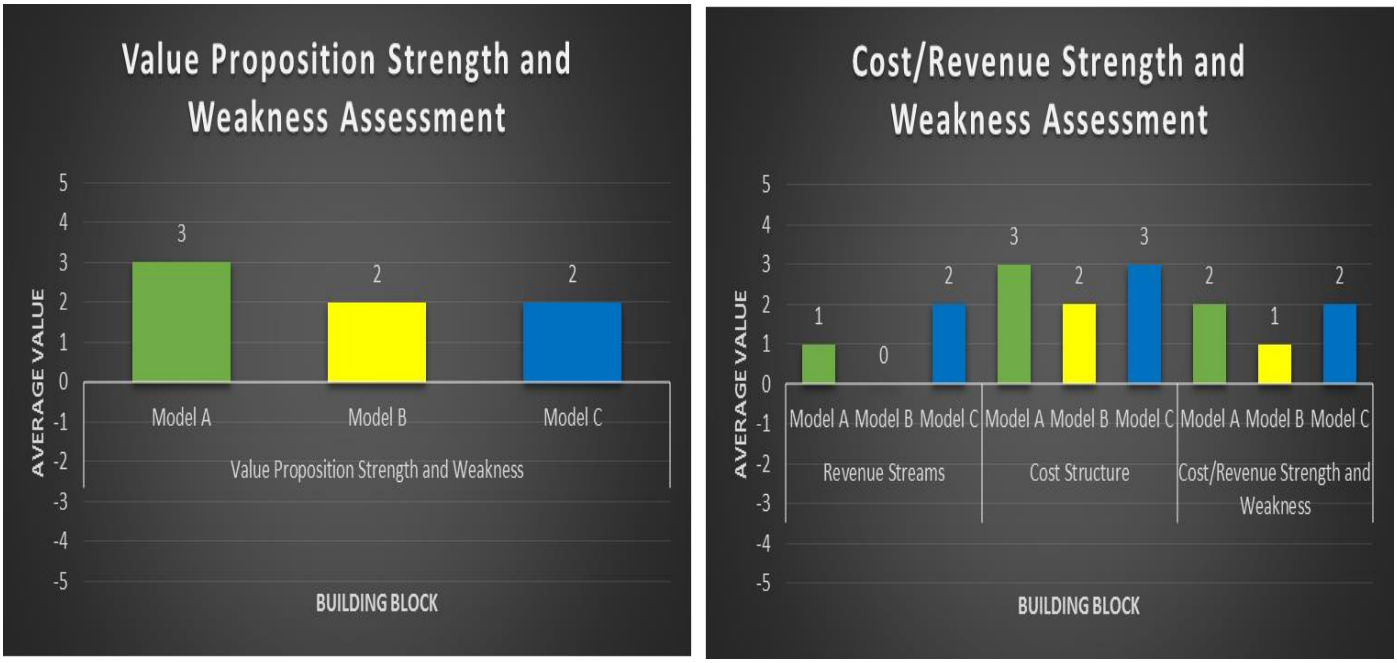


Figure 40: Value Proposition & Cost/Revenue Strength and Weakness Assessment Results Graph

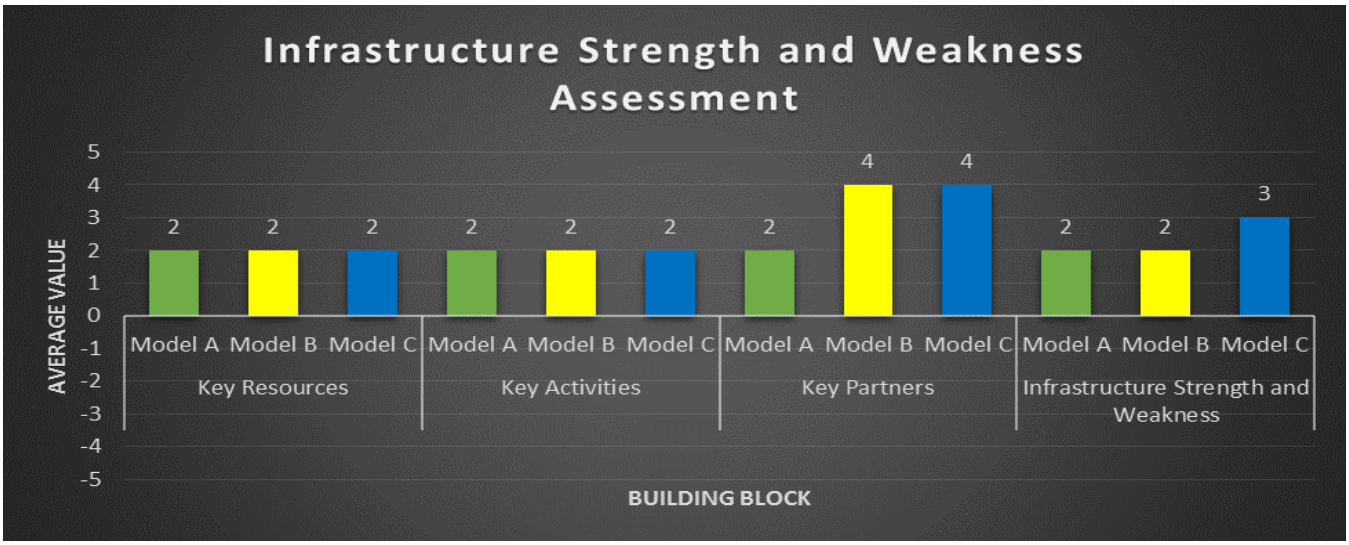


Figure 41: Infrastructure Strength and Weakness Assessment Result Graph

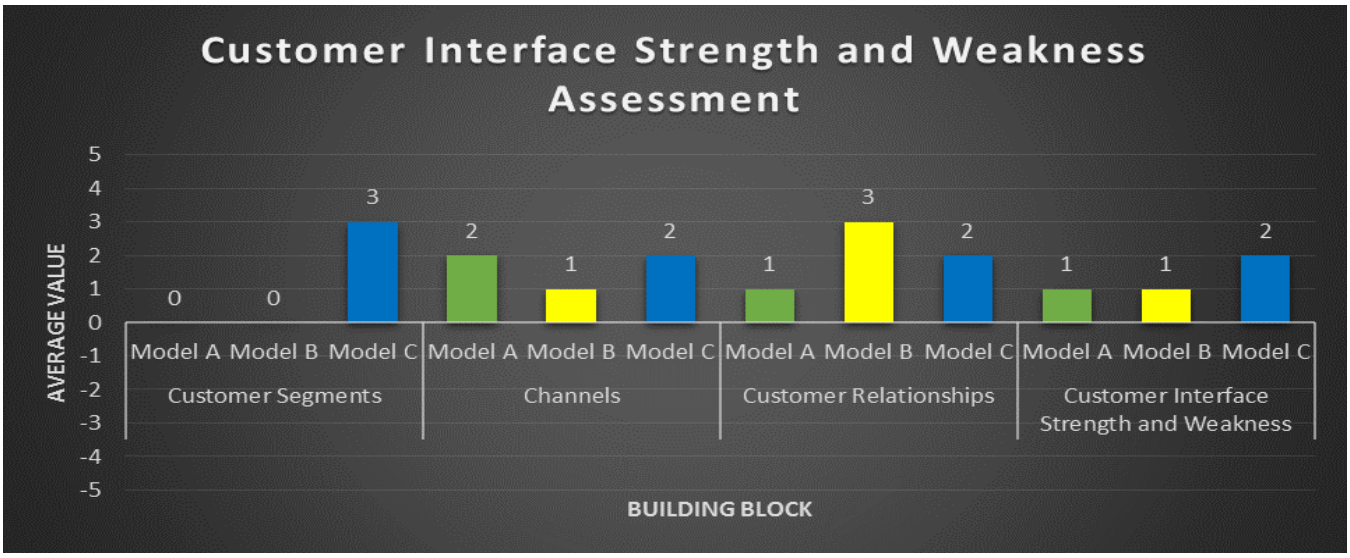


Figure 42: Customer Interface Strength and Weakness Assessment Result Graph

6.4.2.2 Step 2: Threat Assessment

In this step, a threats assessment was done for the nine building blocks. Similar to the previous step, this was done by scoring each business model alternative against a set of questions checklist, seen in appendix J, with a score of -5 to -1 been given as these are threats which affect the business model negatively.

The results can be seen in appendix M with the graphical view shown in figures 43 to 45. The lower the score is, the better as this indicates that that business model is in a stronger position to manage threats compared to the others. For example looking at figure 43, Business model B has the lowest score of -1 in the Value Proposition Threats Assessment which shows that it has the better value proposition to handle threats according to the checklist when comparing the three alternative business models.

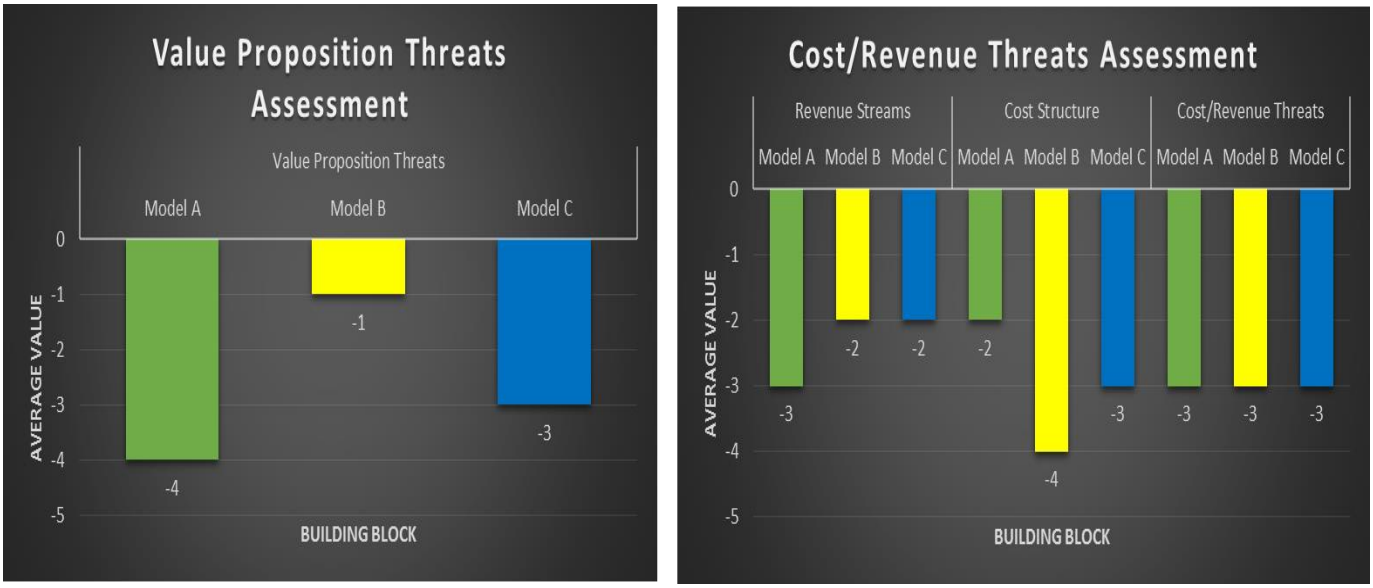


Figure 43: Value Proposition & Cost/Revenue Threats Assessment Results Graph

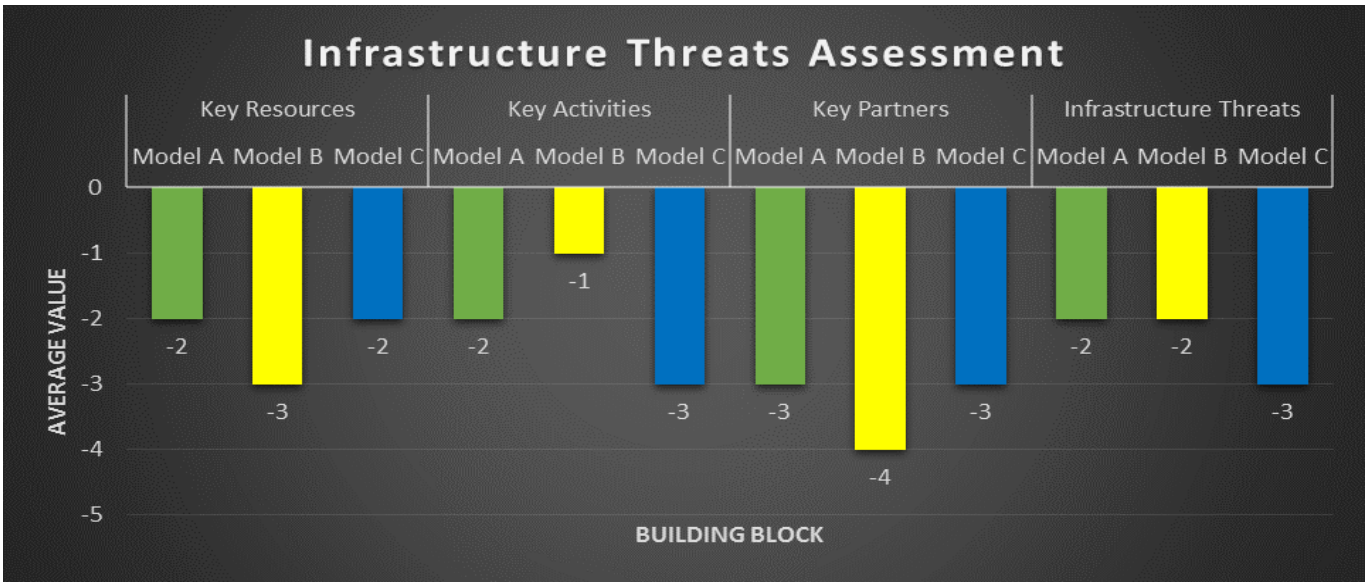


Figure 44: Infrastructure Threats Assessment Results Graph

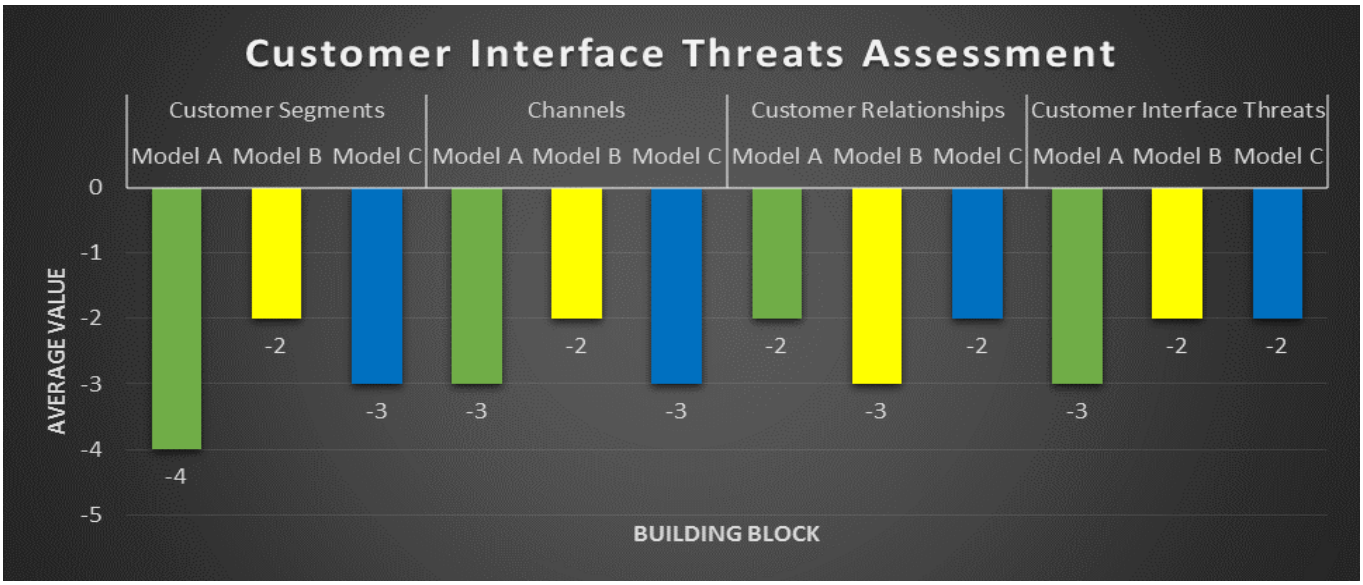


Figure 45: Customer Interface Threats Assessment Results Graph

6.4.2.3 Step 3: Opportunity Assessment

In this step, an opportunity assessment was done for the nine building blocks. Similar to the previous step, this was done by scoring each business model alternative against a set of questions checklist, seen in appendix K, with a score of +1 to +5 been given as these are opportunities which affect the business model positively.

The results can be seen in appendix N with the graphical view shown in figures 46 to 48. The higher the score is, the better as this indicates that that business model alternative is in a stronger position to exploit opportunities compared to the others. For example looking at figure 46, Business model B has the highest score of +3 in the Value Proposition Opportunity Assessment which shows that it has the better value proposition to exploit opportunities according to the checklist when comparing the three alternative business models

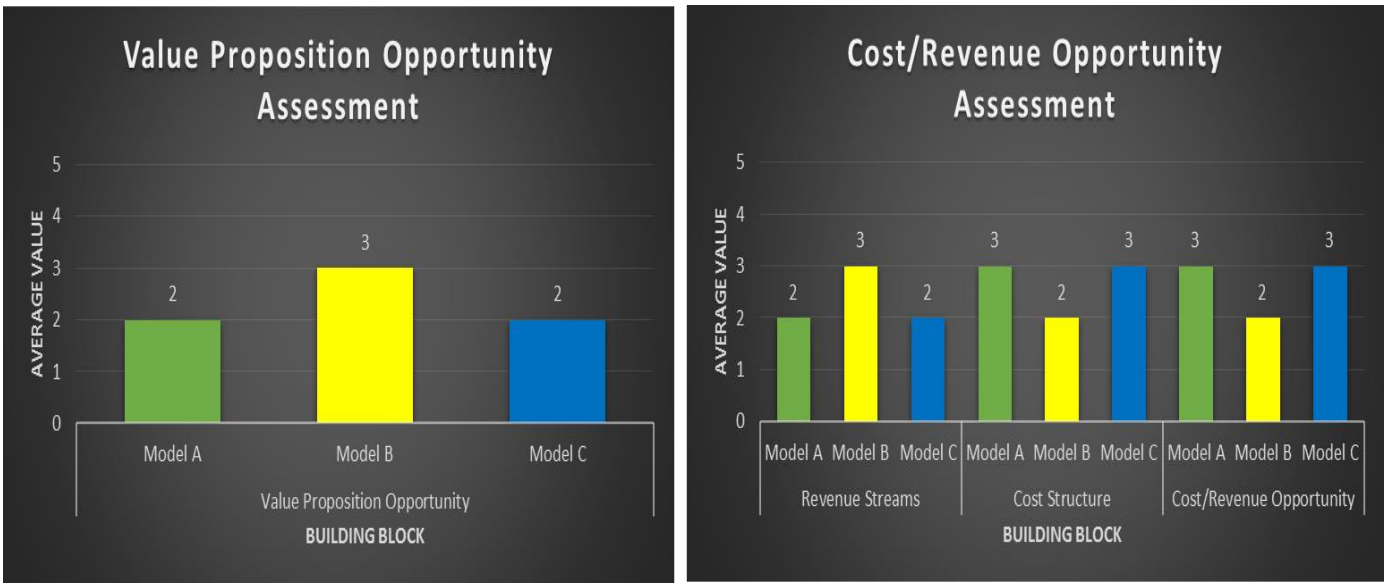


Figure 46: Value Proposition & Cost/Revenue Opportunity Assessment Results Graph

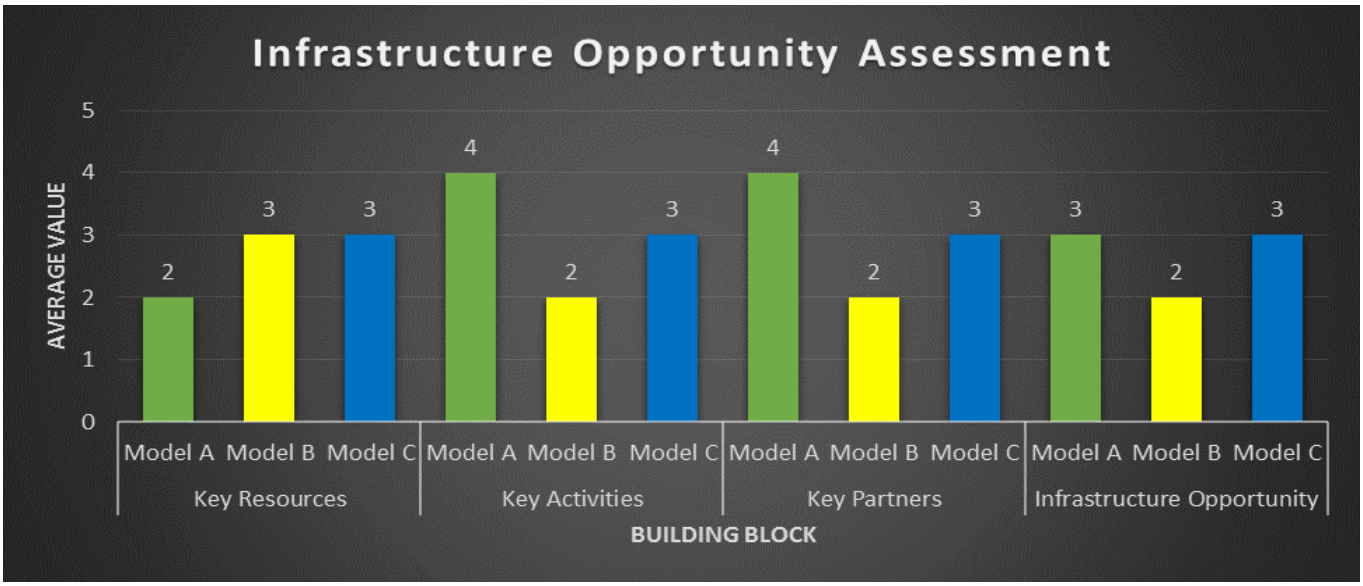


Figure 47: Infrastructure Opportunity Assessment Results Graph

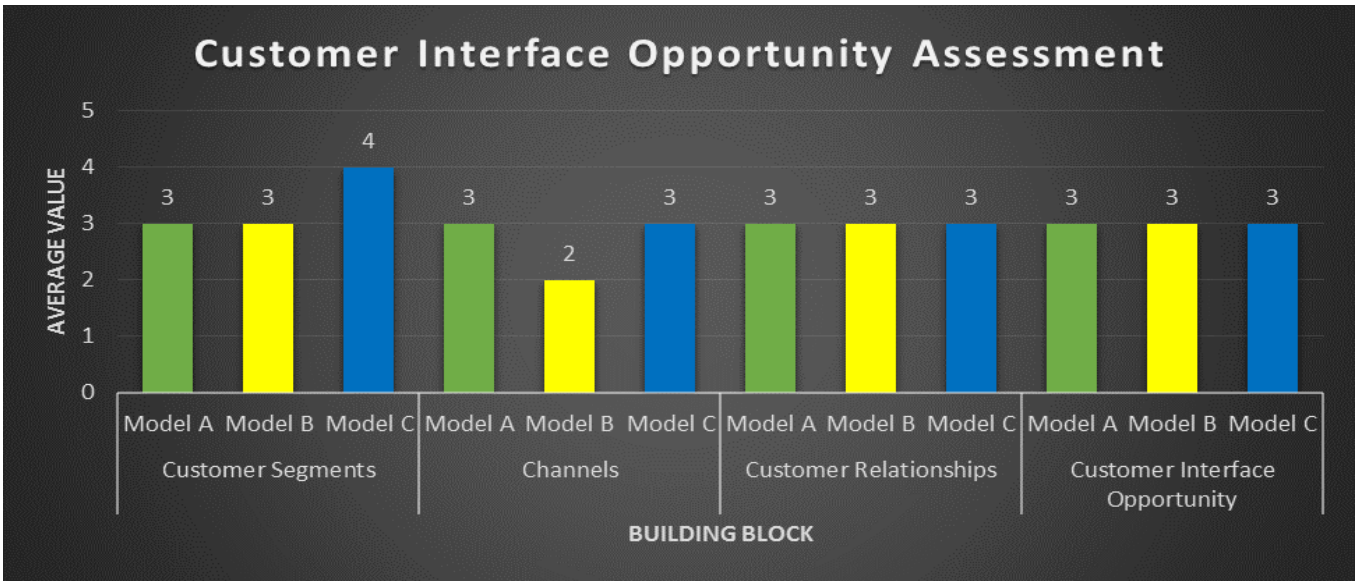


Figure 48: Customer Interface Opportunity Assessment Results Graph

6.4.1.4 Step 4: Final Score for Each Model

In this step, an average value out of 5 was calculated by averaging the score for a specific business model for the four groupings (Value Proposition, Cost/Revenue, Infrastructure and Customer Interface) under each of the three assessment sections (Strength and Weakness, Threats, Opportunity) with the results been in appendix O. This was done for all three alternative business models. To get the final score for each, the scores for each assessment section were summed. The final scores calculated are as follows:

- Business Model A scored 1.64
- Business Model B scored 2.02
- Business Model C scored 2.46

Thus the business model that scored the highest in this evaluation is business model C with a score of 2.46 out of 5. Therefore this model is the most suitable based on SWOT analysis at the building block level as the one that the business 17SunsAgri should employ to show the rational on how the business will create, deliver, and capture value in the sector it has chosen.

6.4.3 Business Model Selection Based on Final Collective Weight

In this section, the business model that the Business 17SunsAgri should use was chosen based on a final collective weight gathered from the two evaluation methods.

The first evaluation technique, the Analytical Hierarchy Process yielded the following final relative weights:

- Business Model A scored 27.52%
- Business Model B scored 34.47%
- Business Model C scored 38.01%

The second evaluation technique, the Business Model Canvas SWOT Evaluation yielded the following final relative weights, seen in appendix O:

- Business Model A scored 26.78%
- Business Model B scored 32.97%
- Business Model C scored 40.26%

Thus by using the following formula, the final collective weight can be calculated.

$$Final\ Collective\ Weight = \frac{Technique\ 1\ Weight + Technique\ 2\ Weight}{2}$$

The final collective weights for each business model is as follows:

- Business Model A scored 27.15%
- Business Model B scored 33.72%
- Business Model C scored 39.13%

Thus the business model that is chosen based on the two evaluation technique is business model C. This is because it has the highest final collective weight of 39.13%indicating that it is the most suitable business model as its combination of business model overall integrity and SWOT analysis at the building block level exceeds the other alternatives.

Chapter 7: Business Model Validation

As stated from the evaluation results in the previous section, the most suitable business model that the business might employ was business model C.

This model suggests that the business should enter the market and target both small, developing customers such as emergent commercial farmers who require support and development in order to grow their businesses and also large customers such as small to large commercial farmers who are time and service sensitive. Thus the business will offer either one of the two different product packages to its customers depending on the customer's needs and wants. The business model canvas for this model can be seen in figure 49 below.

Figure 49: Chosen Business Model for Business, 17SunsAgri

From this, it can be concluded that the business will have two core capabilities which it will need to further develop as these will differentiate them from their competitors. These capabilities are as follows:

- The business will reduce its customers planting cycle lead times by leveraging its business processes, technology and human resources to provide a high quality and convenient product
- The business will help grow its customer's businesses by offering them a range of business support tools through consultation

17SunsAgri's raison d'étre is to create value or meaning by providing a high quality and convenient product that improves the quality and standard of people's lives with profit been the resultant. The business model above supports this statement by the following:

- The business targets small to large commercial farmers with its seedlings that it provides to them in half the time that other suppliers do therefore acquiring capital to survive and exist. This ensures that the farmers double their produce output each planting cycle therefore producing more food and help to reduce hunger in the population. Thus improving the standard of living of the population as a whole. These customers become the business's stable and fixed income.
- The business then targets emerging commercial farmers with its seedlings and also offers them business support which helps these farmers grow their businesses. This ensures that these farmers grow bigger and therefore uplift the communities where they are situated as these farmers will be able to hire more employees. At the same time, as these farms grow they will be able to produce more food for the population. These customers become the business's variable and growing income.

Chapter 8: Operating Model Design

In this chapter, the operating model of 17SunsAgri was design by looking at the possible business functions that the business might have in order to deliver value. This was done by considering an adaptation of Porter's Value Chain Analysis for an agricultural business as stated in the literature review. Thus 17SunsAgri's value chain was discussed according to figure 50.

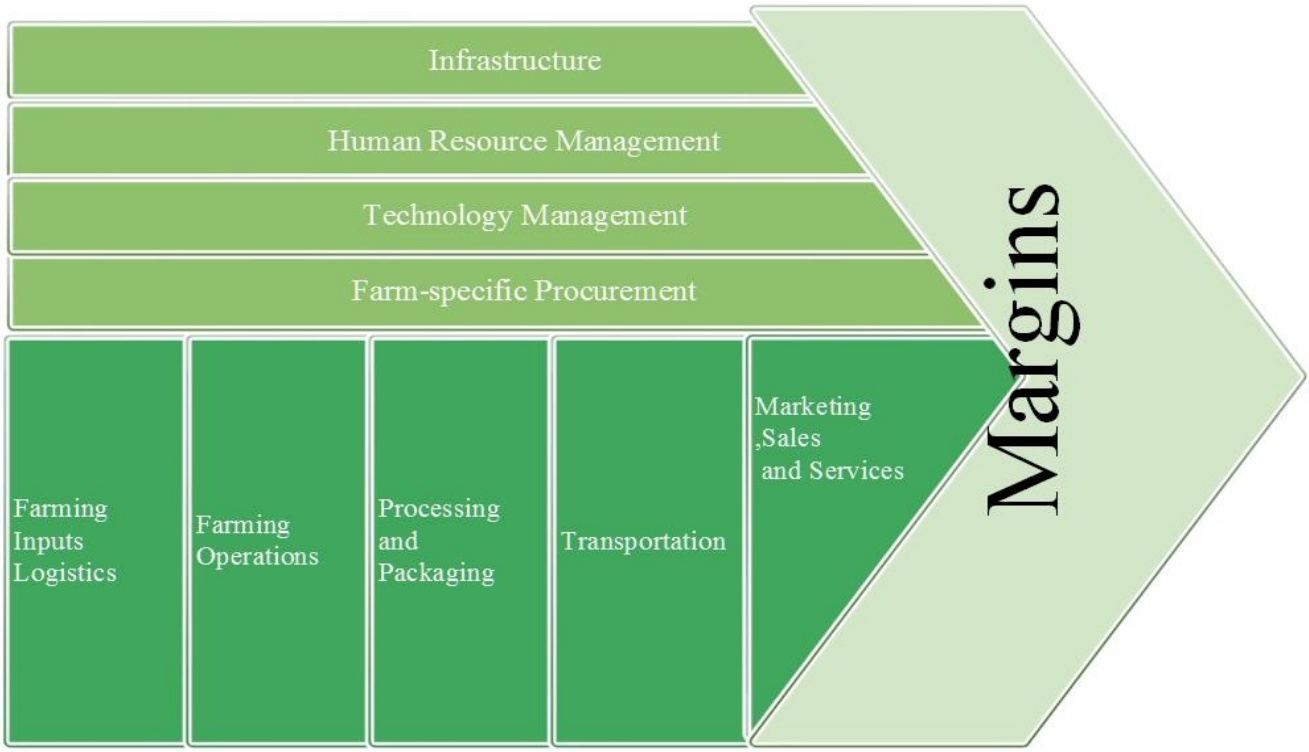


Figure 50: 17SunsAgri's Value Chain

8.1 Porter's Value Chain: Primary Activities

8.1.1 Farming Inputs Logistics

This encompasses all the relationships with the suppliers of the business and includes all the activities that are necessary to take delivery of, to store, and circulate the farming inputs. These relationships with most of the suppliers can be seen in figure 51. Some of the relationships the business will have with its suppliers will be two-way as indicated by the arrows. For example, the business will acquire the product seeds from seed suppliers and at the same time it will provide feedback to those suppliers on their product therefore helping their suppliers.

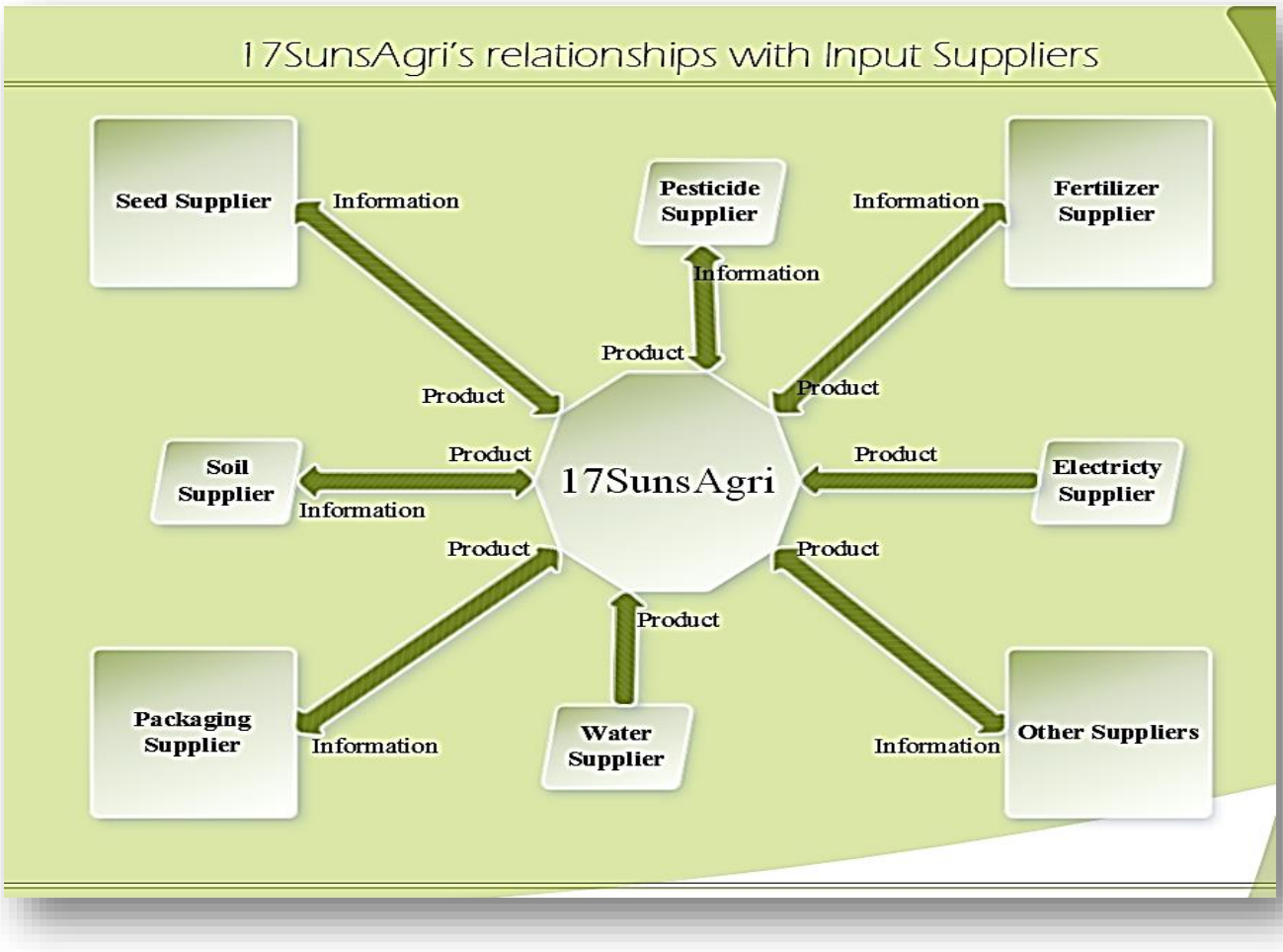


Figure 51: 17SunsAgri's relationship with Input Suppliers

8.1.2 Farming Operations

This includes all the activities and their complementarities that are necessary in order to transform the seeds into speedlings. There are two main activities that will make up the operations of the business which are:

- Seedling operation process that can be seen in figure 52 where the seeds are grown into seedlings
- Business support processes that can be seen in figure 53 where the business helps its struggling customers with market entry, choosing the right product to farm, how to schedule their production and farm improvements

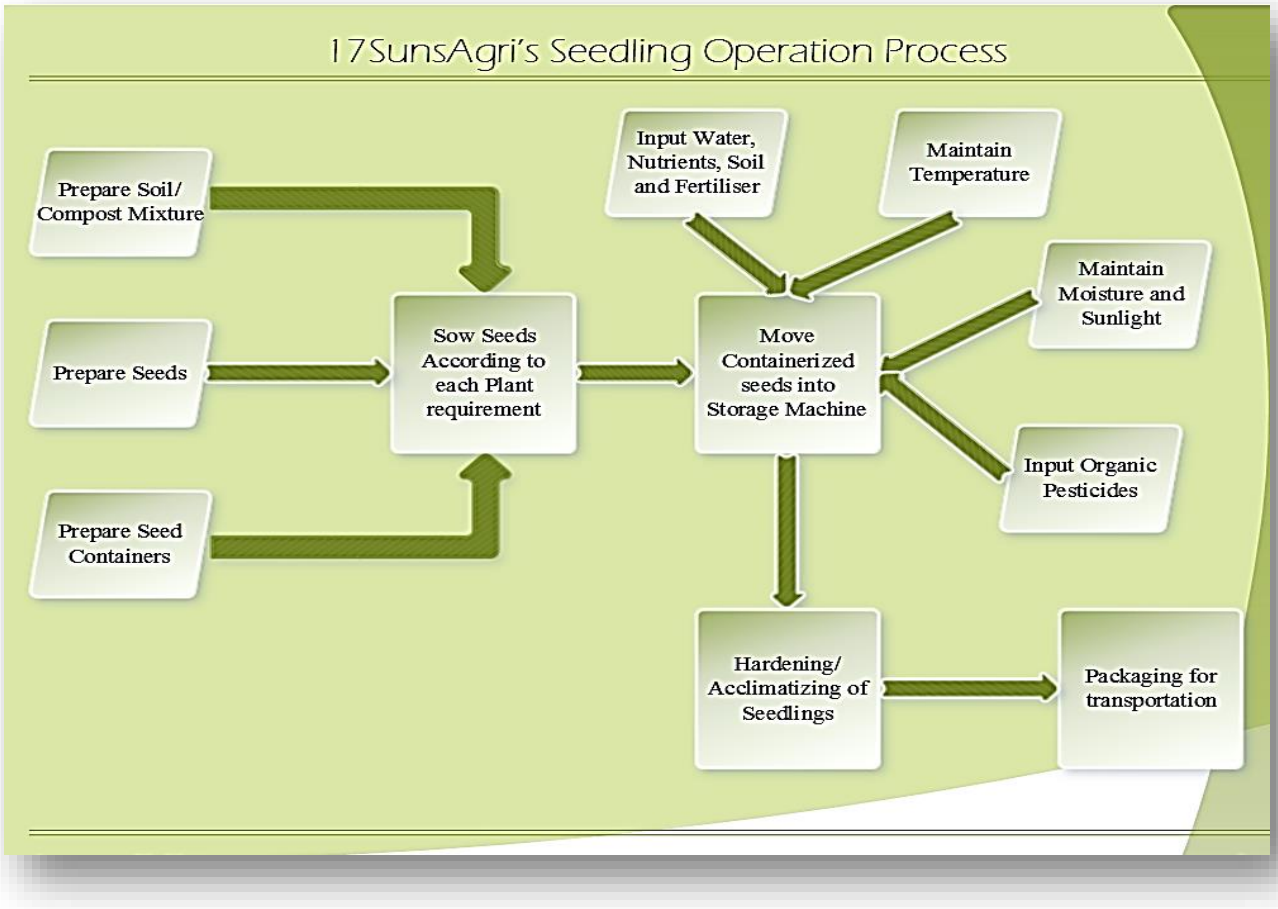


Figure 52: 17SunsAgri's Seedling Operation Process

Figure 53: Business Support Activities

8.1.3 Processing and Packaging

This encompasses all the activities required in order to further process the speedlings, collect, package and store them before they are transported. The two main activities are:

- Hardening/Acclimatizing where the seedlings follow a specific process that makes them ready to be planted outside in the open by acclimatizing them
- Thereafter the seedlings are then packaged for storage or transportation to their final customer

Figure 54: Processing and Packaging Activities

8.1.4 Transportation

This involves all the activities that are necessary to distribute the speedlings to their intended buyers after been packaged. The business has will follow the two options given in figure 55.

- It will use its own transportation to deliver the seedlings to its customers if the customers are in close proximity with business and also if the quantity is reasonable small enough to allow use of their own transport
- If the quantity is too large or the customer is too far from the business, then the business will outsource to an external logistics business to transport the seedlings to the final customer since it would not be viable to make multiple trips to far area

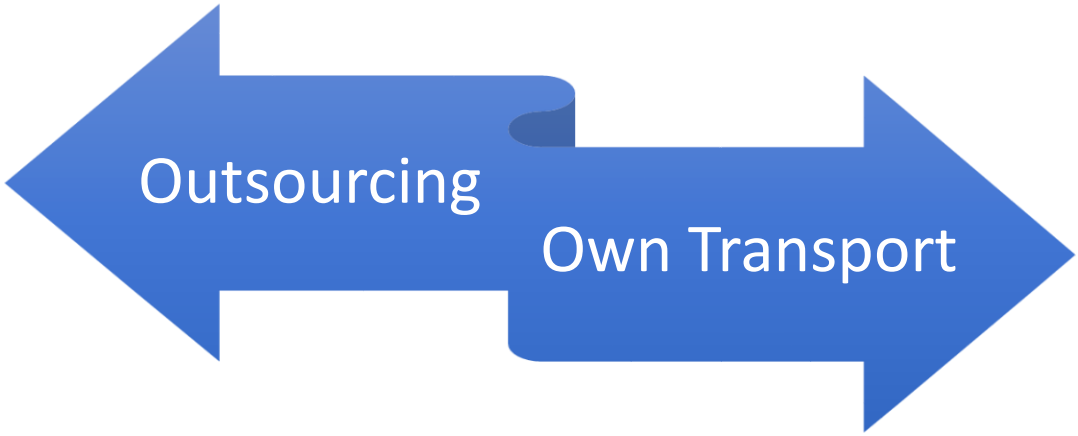


Figure 55: Transportation Activities

8.1.5 Marketing, Sales and Services

This encompasses all the activities that are necessary to inform the customers about the speedlings, persuade the customers to buy them, facilitate their buying, and also all the after-sale activities. The activities that business will do in this section can be seen in figure 56.

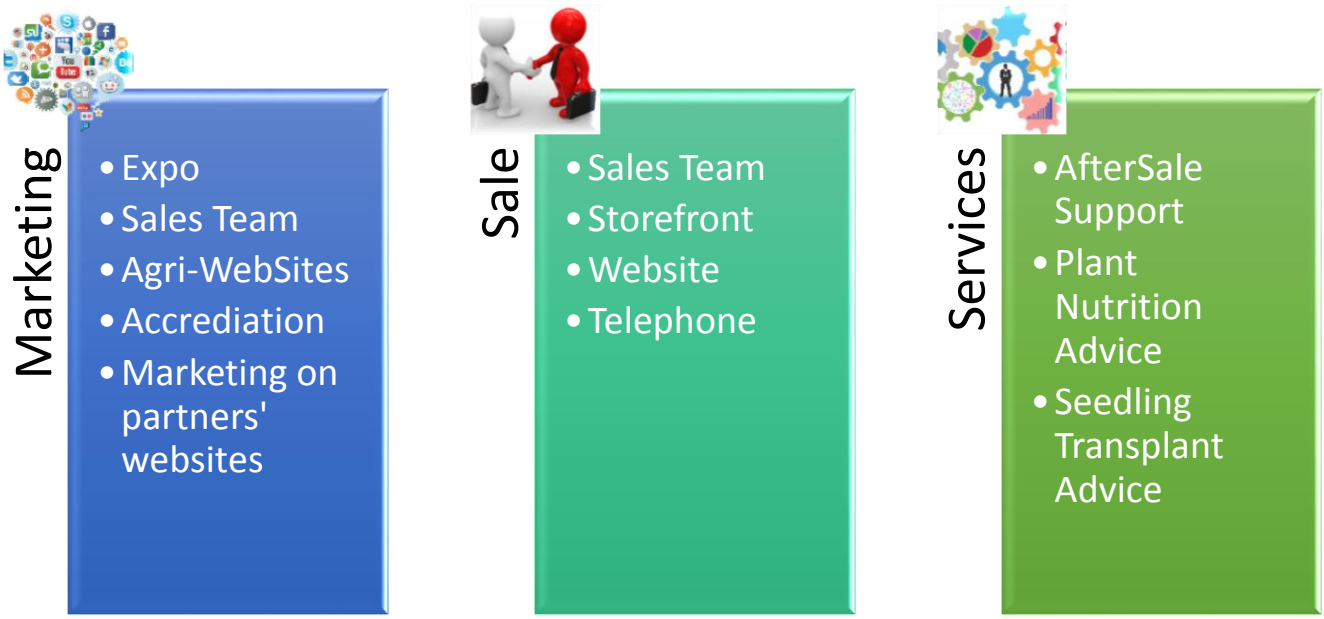


Figure 56: Marketing, Sales and Services Activates

8.2 Porter's Value Chain: Support Activities

8.2.1 Farm-specific Procurement

This encompasses the acquiring of the farming inputs or resources that the business needs in order to create and deliver value to its customers. The different suppliers that the business might purchase from, to name a few, are seen in figure 57.

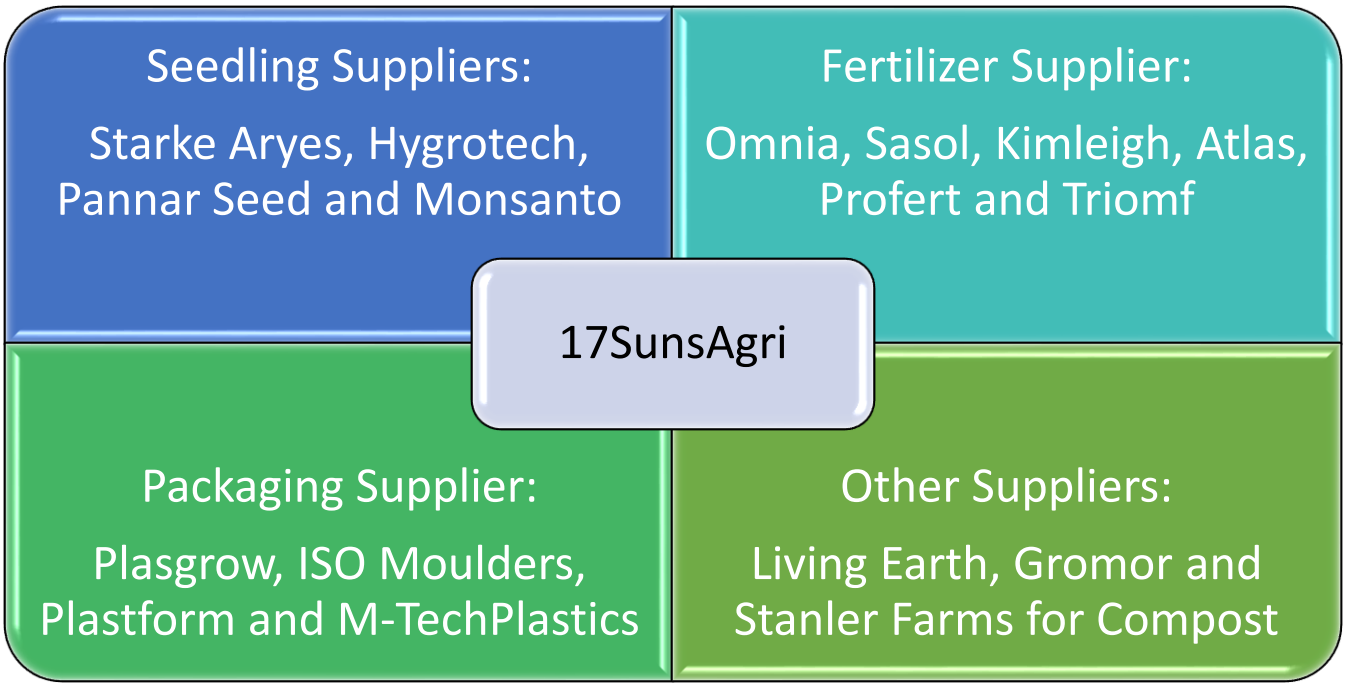


Figure 57: Suppliers

8.2.2 Technology Management

This refers to the hardware, software, equipment, technical knowledge and procedures that are essential to the business's conversion of seeds into seedlings. The two main equipment that vital for the business are:

- Internally-designed high density storage facility, mentioned in section 6.1.2, that will be used to store and grow the seedlings in a controlled environment
- Seedling line machines (Urbinati, 2014); such as those in figure 58; that take seeds, compost, fertilizer, water, containers as inputs and through a fully mechanized process containerizes the seedlings and packs them.

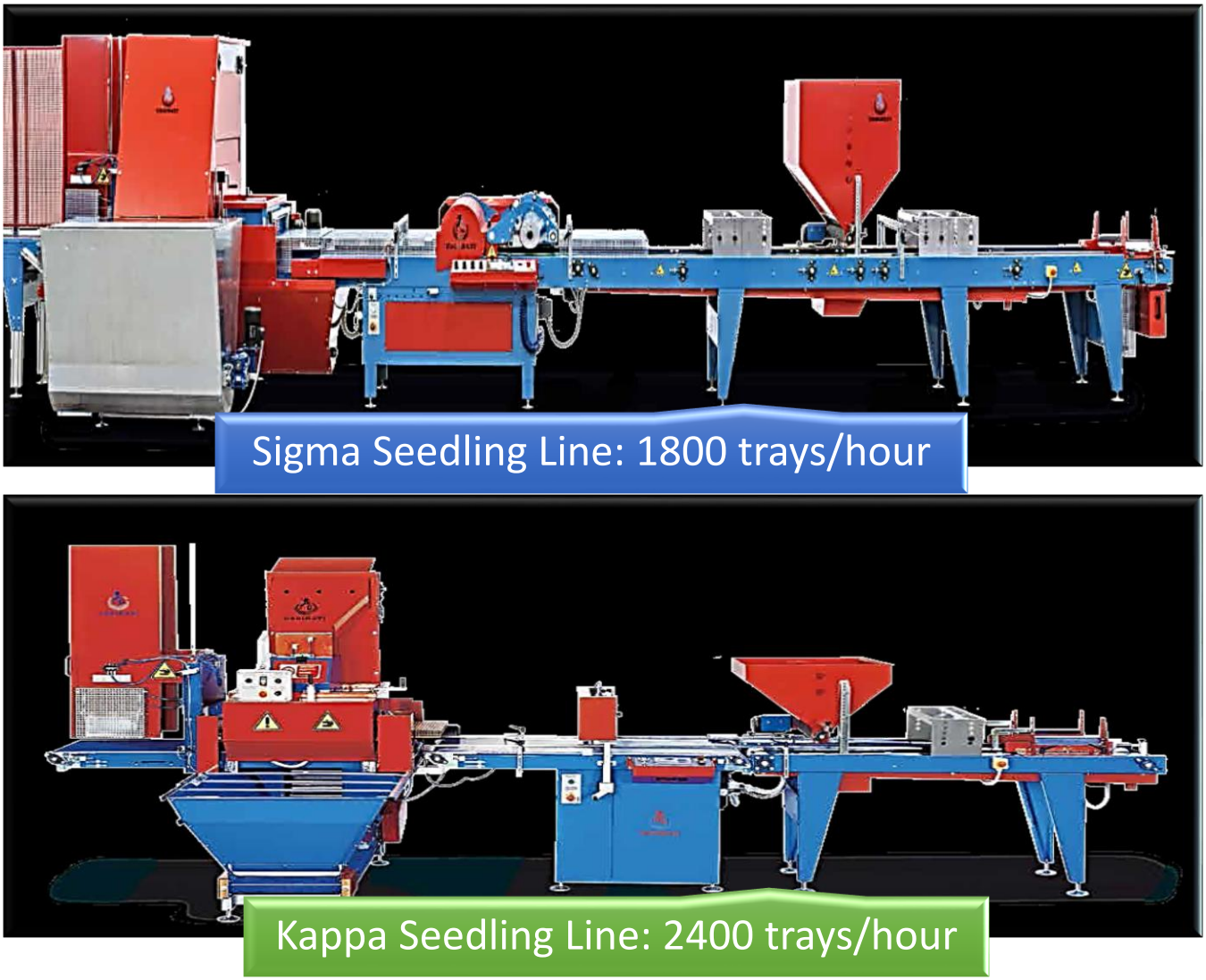


Figure 58: Seedling Equipment (Urbinati, 2014)

8.2.3 Human Resource Management

This encompasses all the activities involved in the enlisting, employing, training, developing, paying and firing off of employees in the business. When the business starts hiring employees into the business, it will then have to put down processes on how it will attract, educate, train, motivate, empower and reward its employee. Some of the activities that will require process are shown in figure 59.

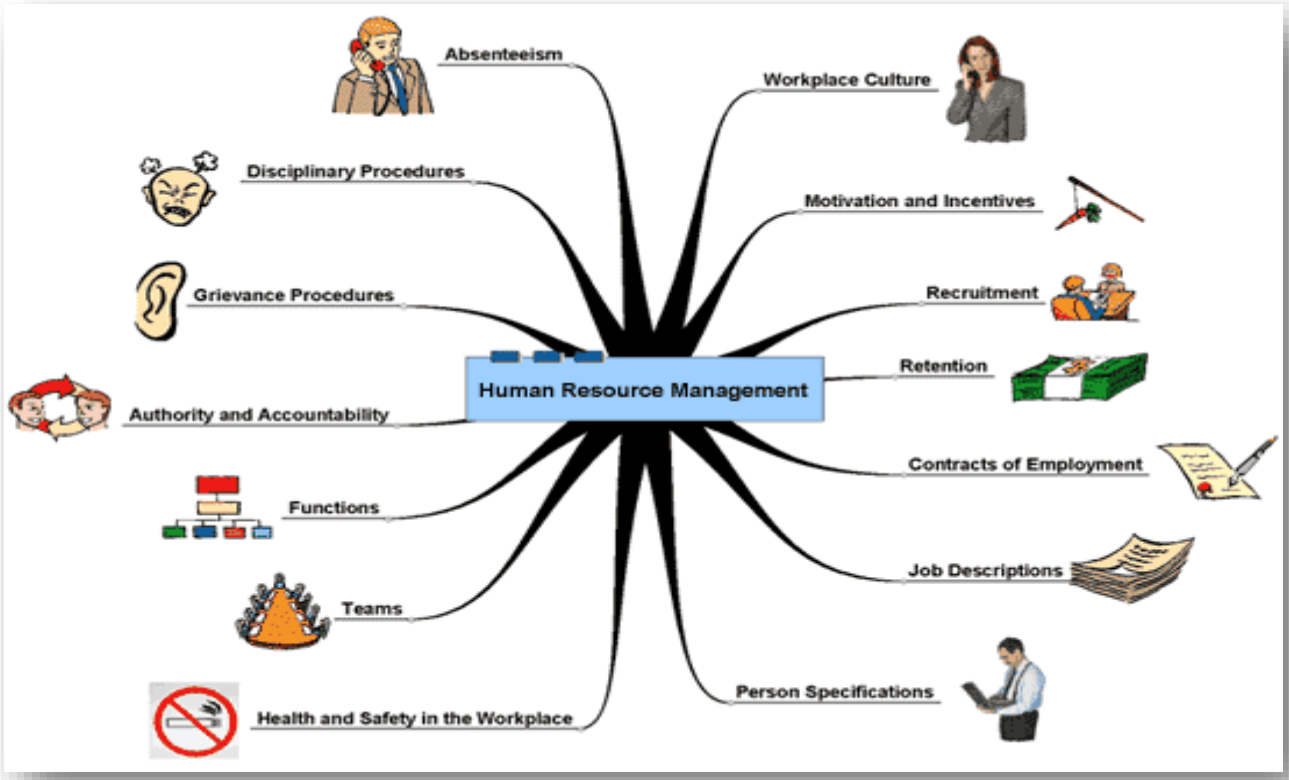


Figure 59: Human Resource Management Activities (Bized.co.uk, 2014)

8.2.4 Infrastructure

This consists of functions or departments such as the planning management, legal framework, financing, accounting, public affairs, quality management, general management, etc. These functions are the one's required in order to attend to the business's daily needs and connects the business's various components together. These functions are required to perform the value added activities, mentioned in the rest of Porter's value chain, efficiently to drive the organization forward to meet the business's strategic plan and the objectives.

In the case of 17SunsAgri, they will be stated and further explained when all the other elements in the value chain have been formulated and formalized.

Chapter 9: Business Design Verification and Validation

In this chapter, the verification and validation of the business design was done.

9.1 Business Design Verification

The business design for 17SunsAgri was verified by seeing if the business design was able to meet the following business objectives that were initial stated and continuously updated throughout the project, as can be seen in this section. These are the objectives that the business must have in order to be considered viable and successful. These objectives are stated in table 9 that follows and then verified against yes, maybe or no for the business design. From the verification, it can be seen that the business complies with 5 out of the 10 business objectives indicating that the business design does do what it was supposed to do, 50 percent of the time.

OBJECTIVES	YES	MAYBE	NO
1. The business design must show that the business will create value by either correcting an injustice or improving the standard of living of some people	✓		
2. The business design must show how the business will make a profit and substantiate it with research		✓	
3. The business design must show how the business will be sustainable in terms of sustainable business growth	✓		
4. The business design must show that the business is mechanized and technology-based as far as possible	✓		
5. The business design must show that the business has a low cost structure while producing good quality speedlings as far as possible		✓	
6. The business design must show that the value proposition that it offers its customer is unique and differentiable from its competitors	✓		
7. The business design must show how the business will become one of the leading suppliers of seedlings in the country	✓		

8. The business design must show that the business model that it will follow, has built-in robustness		✓	
9. The business design must show that the business will be able to export its product to other countries			✓
10. The business design must show that the business can be turned into a franchise by replicating the business model		✓	

Table 9: Business Objectives Verification

9.2 Business Design Validation

The business design for 17SunsAgri was validated by project sponsor, in their capacity as project owner and also as a business design expert. The following is the comments of the project sponsor:

Question	Project Sponsor Comments
1. Based on your knowledge and expertise as a business design expert, do you think the business design mentioned in this report is viable?	Yes. Several aspects of this business model has successfully been replicated at various locations. Even though not all aspects of the business design has been incorporated yet, the successes that have been realized indicate that it is a viable business design
2. Based on your knowledge and expertise as a business design expert, do you think the business design mentioned in this report can be profitable and sustainable?	Yes, the business is highly profitable even without the deliberate modernization of the farming methods. Even though CAPEX is required, this business is profitable with a short repayment period.
3. Based on your knowledge and expertise as a business design expert, do you think the business design mentioned in this report is robust enough?	Maybe. I would be more comfortable with a greater understanding of the market forces that influences this business. I would have preferred a better understanding of the

	microeconomics through the use supply and demand curves for the product.
4. Based on your knowledge and expertise as a business design expert, do you think the business design mentioned in this report is implementable?	Yes. As mentioned earlier, several aspects of this business has been successfully replicated during the time of this study, although not necessarily all components at the same location.
5. Based on you view as the project sponsor, does the business design conform to the requirements you had envisioned?	Yes. I believe that the student has met my design criteria.
6. Based on you view as the project sponsor, does the strategy formulated in the business design comply with what was set out initial?	Yes. The strategy design incorporated all our macro-environmental concerns, the market and industry structure and our internal capabilities. The only improvement I would suggest is to have a singular 17SunsAgri-authentic mantra or phrase that encapsulates the strategy.
7. Based on you view as the project sponsor, does the business model formulated in the business design comply with what was set out initial?	The business model is derived from the strategy and equally meets my requirements. I am certain that it will add significant value as we build the business.
8. Based on you view as the project sponsor, does the operating model formulated in the business design comply with what was set out initial?	The operating model provides me with a good baseline from which to work. I would typically expect significantly more detail in developing the operating model, including views on the architecture, people, process and technology.

Table 10: Business Design Validation through Expert Opinion

Chapter 10: Conclusion

There are many issues and concerns, of which the pressing ones have being discussed in the report, that are occurring in the agricultural sector and the rest of the world that result in a unique business opportunity for a certain client who can fulfil the certain requirements and is willing to take the risk. But also, if these issues are left unchecked could result in disastrous effects on the agricultural sector, the livelihood of so many people, and also the economy as a whole.

In this report, one of the solutions of the problem concerning the fact that the global food supply needs to increase by 50 percent by 2030 in order to meet the world's demand was investigated and designed. This solution was the business design of an agribusiness named 17SunsAgri that produces seedlings in the quickest way possible in order to double the food production of the farmers that the business supplies.

This business design includes the design of the business in its entirety, starting from the business's strategy down to its operating model at a high level. It is believed that should an investor or the project sponsor use this design as a basis, further develop it to include finer details and implement it, a new type of agribusiness shall emerge whose raison d'étre is to create value or meaning by providing a high quality and convenient product that improves the quality and standard of people's lives with profit been the resultant. Which satisfies the objectives of why the project was done in the first place.

Thus the business design contained in this report, in its entirety, is not aiming to solve or fix the world's problems. But where the world sees problems, the business sees opportunities and that's how the business will be founded.

11. Appendix

Appendix A1: Industry Sponsorship Form

Department of Industrial & Systems Engineering
Final Year Projects
Identification and Responsibility of Project Sponsors

All Final Year Projects are published by the University of Pretoria on *UPSpace* and thus freely available on the Internet. These publications portray the quality of education at the University and have the potential of exposing sensitive company information. It is important that both students and company representatives or sponsors are aware of such implications.

Key responsibilities of Project Sponsors:

A project sponsor is the key contact person within the company. This person should thus be able to provide the best guidance to the student on the project. The sponsor is also very likely to gain from the success of the project. The project sponsor has the following important responsibilities:

1. Confirm his/her role as project sponsor, duly authorised by the company. Multiple sponsors can be appointed, but this is not advised. The duly completed form will considered as acceptance of sponsor role.
2. Review and approve the Project Proposal, ensuring that it clearly defines the problem to be investigated by the student and that the project aim, scope, deliverables and approach is acceptable from the company's perspective.
3. Review the Final Project Report (delivered during the second semester), ensuring that information is accurate and that the solution addresses the problems and/or design requirements of the defined project.
4. Acknowledges the intended publication of the Project Report on UP Space.
5. Ensures that any sensitive, confidential information or intellectual property of the company is not disclosed in the Final Project Report.

Project Sponsor Details:

Company:	IT SunsAgri
Project Description:	Business Model Development
Student Name:	Tumelo Abbey Koko
Student number:	11046644
Student Signature:	
Sponsor Name:	ANDRE LIEBENBERG
Designation:	GENERAL MANAGER / OWNER
E-mail:	industrial.andre@gmail.com
Tel No:	072 314 3278
Cell No:	072 314 3278
Fax No:	—
Sponsor Signature:	

Appendix A2: Work Breakdown Structure

Appendix A: Work Breakdown Structure

Appendix B: Porter's Value Chain for 17SunsAgri: Primary Activities

Primary Activity	Definition
Farming Inputs	This encompasses all the relationships with the suppliers of the business and includes all the activities that are necessary to take delivery of, to store, and circulate the farming inputs such as seeds, fertilizer, etc.
Farming Operations	This includes all the farming activities that are necessary in order to transform the seeds into speedlings
Processing and Packaging	This encompasses all the activities required in order to further process the speedlings, collect, package and store them before they are transported
Transportation	This involves all the activities that are necessary to distribute the speedlings to their intended buyers
Marketing, Sales and Service	This encompasses all the activities that are necessary to inform the customers about the speedlings, persuade the customers to buy them, facilitate their buying, and also all the after-sale activities

Appendix B: Table showing Porter's Value Chain for 17SunsAgri: Primary Activities Definitions (Institute for Manufacturing, n.d.)

Appendix C: Porter's Value Chain for 17SunsAgri: Support Activities

Support Activities	Definition
Farming-specific Procurement	This encompasses the acquiring of the farming inputs or resources that the business needs in order to create and deliver value to its customers
Technology Management	This refers to the hardware, software, equipment, technical knowledge and procedures that are essential to the business's conversion of seeds into seedlings
Human Resource Management	This encompasses all the activities involved in the enlisting, employing, training, developing, paying and firing off of employees in the business
Infrastructure	This includes all the functions; such as finance, general management, quality assurance, etc.; that attend to the business's needs and connects the business's various components together

Appendix C: Table showing Porter's Value Chain for 17SunsAgri: Support Activities Definitions (Institute for Manufacturing, n.d.)

Appendix D: Table for Level of Education for South African Population

Type of Education	Number of People (in Thousands)	Percentage
Primary to Secondary Education : Grade 0 - 11	16832	52.25%
Secondary Education : Matric	8752	27.17%
Certificates/Diplomas	1993	6.19%
None	1788	5.55%
Tertiary Education : University	1516	4.71%
Tertiary Education : University of Technology	513	1.59%
N-Levels	425	1.32%
Other/Do not know/Unspecified	398	1.24%
Total	32217	100.00%

Appendix D: Table for Level of Education for South African Population (Statistics SA, 2014)

Appendix E: Table for List of Seed Suppliers

List of Seed Suppliers		
1. Advance Seed (Pty) Ltd.	**2.** Agricol (Pty) Ltd.	**3.** Agri-Seed Technology
4. Agseeds Mozambique	**5.** Delta Saad	**6.** DLF-TRIFOLIUM A/S
7. DuPoint Pioneer	**8.** Enza Zaden SA (Pty) Ltd.	**9.** Golden Tropical Seed cc
10. Hygrotech SA (Pty) Ltd.	**11.** Kaap Agri Bedryf Bpk	**12.** Klein Karoo Seed Marketing
13. MAJ Koegelenberg en Seun cc	**14.** McDonalds Seeds	**15.** Monsanto South Africa
16. Northern Seed Production cc	**17.** Nuseed (Pty) Ltd.	**18.** Pannar Seed (Pty) Ltd.
19. Prime Seed (Pty) Ltd.	**20.** RE Groundnuts (Pty) Ltd.	**21.** Sakata Seed Southern Africa (Pty) Ltd.
22. Seed Genetics International (Pty) Ltd.	**23.** Selected Seeds (Pty) Ltd.	**24.** Shalom Agriculture cc
25. Southern African Cover Crop Solution cc	**26.** Southern Hemisphere Seeds	**27.** Starke Ayres (Pty) Ltd.
28. Syngenta SA (Pty) Ltd.	**29.** United Seeds cc	**30.** Van Rooyen Saad
31. VKB		

Appendix E: Table for List of Seed Suppliers (Sansor.org, 2014)

Appendix F: Table for List of Seedling Growers

List of Seed Growers		
1. Multiplant	**2.** Plantforum	**3.** Mondi Mountain Homes
4. Sutherland Seedlings	**5.** Sappi Richmond Nursery	**6.** Top Crop Nursery
7. Sunshine Seedlings	**8.** CPS Greytown	**9.** Zululand Nursery
10. Northern Natal Seedlings	**11.** TWK Landbou	**12.** Ezigro Amsterdam Nursery
13. Sappi Ngodwana Nursery	**14.** Ezigro White River Nursery	**15.** Moorland
16. MTO Forestry	**17.** Landorf Nursery	**18.** Komatiland Tweefontein Nursery
19. York Timbers Klipkraal Nursery	**20.** Marlo Nursery	**21.** Martin Dale Seedlings
22. Sappi Escarpment Nursery	**23.** Brian Law Seedlings	**24.** CPS Seedlings Pongola

Appendix F: Table for List of Seed Growers

Appendix G: Pairwise Comparison and Intermediate Matrix for Analytical Hierarchy Process

Pairwise Comparison

	Efficiency	Complementarities	Lock-in	Novelty	Uniqueness	Fit	Profitability	Inimitability	Robustness	Adaptability	Scalability	Patentability	Plausibility	Completeness
Efficiency	1.00	0.25	0.20	0.50	0.25	1.00	0.20	0.33	0.25	0.50	0.20	4.00	5.00	5.00
Complementarities	4.00	1.00	2.00	4.00	1.00	2.00	0.20	0.25	0.33	0.50	0.20	5.00	4.00	5.00
Lock-in	5.00	0.50	1.00	5.00	1.00	3.00	0.20	1.00	1.00	3.00	0.33	4.00	5.00	5.00
Novelty	2.00	0.25	0.20	1.00	0.20	2.00	0.20	0.20	0.20	2.00	0.20	4.00	4.00	5.00
Uniqueness	4.00	1.00	1.00	5.00	1.00	5.00	0.20	1.00	0.25	2.00	2.00	5.00	5.00	5.00
Fit	1.00	0.50	0.33	0.50	0.20	1.00	0.20	0.33	0.20	1.00	0.50	4.00	4.00	5.00
Profitability	5.00	5.00	5.00	5.00	5.00	5.00	1.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Inimitability	3.00	4.00	1.00	5.00	1.00	3.00	0.20	1.00	1.00	1.00	1.00	5.00	4.00	5.00
Robustness	4.00	3.00	1.00	5.00	4.00	5.00	0.20	1.00	1.00	5.00	1.00	5.00	5.00	5.00
Adaptability	2.00	2.00	0.33	0.50	0.25	1.00	0.20	1.00	0.20	1.00	0.50	5.00	4.00	5.00
Scalability	5.00	5.00	3.00	5.00	0.50	2.00	0.20	1.00	1.00	2.00	1.00	5.00	5.00	5.00
Patentability	0.25	0.20	0.25	0.25	0.20	0.25	0.20	0.20	0.20	0.20	0.20	1.00	0.25	5.00
Plausibility	0.20	0.25	0.20	0.25	0.20	0.25	0.20	0.25	0.20	0.25	0.20	4.00	1.00	5.00
Completeness	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	1.00
Sum	36.65	23.15	15.72	37.20	15.00	30.70	3.60	12.77	11.03	23.65	12.53	56.20	51.45	66.00

Intermediate Matrix

0.027285	0.010799136	0.0127	0.01344	0.01666667	0.03257329	0.05555556	0.026109661	0.02265861	0.021141649	0.0159574	0.071174377	0.09718173	0.075757576
0.109141	0.043196544	0.1273	0.10753	0.06666667	0.06514658	0.05555556	0.019582245	0.03021148	0.021141649	0.0159574	0.088967972	0.07774538	0.075757576
0.136426	0.021598272	0.0636	0.13441	0.06666667	0.09771987	0.05555556	0.078328982	0.09063444	0.126849894	0.0265957	0.071174377	0.09718173	0.075757576
0.05457	0.010799136	0.0127	0.02688	0.01333333	0.06514658	0.05555556	0.015665796	0.01812689	0.084566596	0.0159574	0.071174377	0.07774538	0.075757576
0.109141	0.043196544	0.0636	0.13441	0.06666667	0.16286645	0.05555556	0.078328982	0.02265861	0.084566596	0.1595745	0.088967972	0.09718173	0.075757576
0.027285	0.021598272	0.0212	0.01344	0.01333333	0.03257329	0.05555556	0.026109661	0.01812689	0.042283298	0.0398936	0.071174377	0.07774538	0.075757576
0.136426	0.215982721	0.3181	0.13441	0.33333333	0.16286645	0.27777778	0.391644909	0.45317221	0.21141649	0.3989362	0.088967972	0.09718173	0.075757576
0.081855	0.172786177	0.0636	0.13441	0.06666667	0.09771987	0.05555556	0.078328982	0.09063444	0.042283298	0.0797872	0.088967972	0.07774538	0.075757576
0.109141	0.129589633	0.0636	0.13441	0.26666667	0.16286645	0.05555556	0.078328982	0.09063444	0.21141649	0.0797872	0.088967972	0.09718173	0.075757576
0.05457	0.086393089	0.0212	0.01344	0.01666667	0.03257329	0.05555556	0.078328982	0.01812689	0.042283298	0.0398936	0.088967972	0.07774538	0.075757576
0.136426	0.215982721	0.1909	0.13441	0.03333333	0.06514658	0.05555556	0.078328982	0.09063444	0.084566596	0.0797872	0.088967972	0.09718173	0.075757576
0.006821	0.008639309	0.0159	0.00672	0.01333333	0.008143322	0.05555556	0.015665796	0.01812689	0.00845666	0.0159574	0.017793594	0.00485909	0.075757576
0.005457	0.010799136	0.0127	0.00672	0.01333333	0.008143322	0.05555556	0.019582245	0.01812689	0.010570825	0.0159574	0.071174377	0.01943635	0.075757576
0.005457	0.008639309	0.0127	0.00538	0.01333333	0.006514658	0.05555556	0.015665796	0.01812689	0.00845666	0.0159574	0.003558719	0.00388727	0.015151515

Appendix G: Pairwise Comparison and Intermediate Matrix

Appendix H: Pairwise Comparison Matrixes and Weights for all the Alternatives with respect to all the criterion

With respect to: Efficiency

	Model A	Model B	Model C
Model A	1.00	2.00	0.33
Model B	0.50	1.00	0.33
Model C	3.00	3.00	1.00
Sum	4.50	6.00	1.67

Intermediate Matrix

0.222222	0.333333	0.2
0.111111	0.166667	0.2
0.666667	0.5	0.6

Weights

Model A	0.251852
Model B	0.159259
Model C	0.588889

With respect to: Complementarities

	Model A	Model B	Model C
Model A	1	0.33	0.5
Model B	3	1	0.5
Model C	2	2	1
Sum	6.00	3.33	2.00

Intermediate Matrix

0.166667	0.1	0.25
0.5	0.3	0.25
0.333333	0.6	0.5

Weights

Model A	0.172222
Model B	0.35
Model C	0.477778

With respect to: Lock-in

	Model A	Model B	Model C
Model A	1	0.2	0.2
Model B	5	1	1
Model C	5	1	1
Sum	11.00	2.20	2.20

Intermediate Matrix

0.090909	0.090909	0.090909
0.454545	0.454545	0.454545
0.454545	0.454545	0.454545

Weights

Model A	0.090909
Model B	0.454545
Model C	0.454545

With respect to: Novelty

	Model A	Model B	Model C
Model A	1	0.2	0.2
Model B	5	1	1
Model C	5	1	1
Sum	11.00	2.20	2.20

Intermediate Matrix

0.090909	0.090909	0.090909
0.454545	0.454545	0.454545
0.454545	0.454545	0.454545

Weights

Model A	0.090909
Model B	0.454545
Model C	0.454545

With respect to: Uniqueness

	Model A	Model B	Model C
Model A	1	0.25	0.33
Model B	4	1	0.5
Model C	3	2	1
Sum	8.00	3.25	1.83

Intermediate Matrix

0.125	0.076923	0.180328
0.5	0.307692	0.273224
0.375	0.615385	0.546448

Weights

Model A	0.127417
Model B	0.360305
Model C	0.512278

With respect to: Fit

	Model A	Model B	Model C
Model A	1	1	1
Model B	1	1	1
Model C	1	1	1
Sum	3.00	3.00	3.00

Intermediate Matrix

0.333333	0.333333	0.333333
0.333333	0.333333	0.333333
0.333333	0.333333	0.333333

Weights

Model A	0.333333
Model B	0.333333
Model C	0.333333

With respect to: Profitability

	Model A	Model B	Model C
Model A	1	5	1
Model B	0.2	1	0.2
Model C	1	5	1
Sum	2.20	11.00	2.20

Intermediate Matrix

0.454545	0.454545	0.454545
0.090909	0.090909	0.090909
0.454545	0.454545	0.454545

Weights

Model A	0.454545
Model B	0.090909
Model C	0.454545

With respect to: Inimitability

	Model A	Model B	Model C
Model A	1	0.25	1
Model B	4	1	4
Model C	1	0.25	1
Sum	6.00	1.50	6.00

Intermediate Matrix

0.166667	0.166667	0.166667
0.666667	0.666667	0.666667
0.166667	0.166667	0.166667

Weights

Model A	0.166667
Model B	0.666667
Model C	0.166667

With respect to: Robustness			
	Model A	Model B	Model C
Model A	1	0.2	0.2
Model B	5	1	2
Model C	5	0.5	1
Sum	11.00	1.70	3.20
Intermediate Matrix			
	0.090909	0.117647	0.0625
	0.454545	0.588235	0.625
	0.454545	0.294118	0.3125
Weights			
Model A	0.090352		
Model B	0.555927		
Model C	0.353721		

With respect to: Adaptability			
	Model A	Model B	Model C
Model A	1	4	1
Model B	0.25	1	0.25
Model C	1	4	1
Sum	2.25	9.00	2.25
Intermediate Matrix			
	0.444444	0.444444	0.444444
	0.111111	0.111111	0.111111
	0.444444	0.444444	0.444444
Weights			
Model A	0.444444		
Model B	0.111111		
Model C	0.444444		

With respect to: Scalability			
	Model A	Model B	Model C
Model A	1	1	5
Model B	1	1	5
Model C	0.2	0.2	1
Sum	2.20	2.20	11.00
Intermediate Matrix			
	0.454545	0.454545	0.454545
	0.454545	0.454545	0.454545
	0.090909	0.090909	0.090909
Weights			
Model A	0.454545		
Model B	0.454545		
Model C	0.090909		

With respect to: Patentability			
	Model A	Model B	Model C
Model A	1	1	1
Model B	1	1	1
Model C	1	1	1
Sum	3.00	3.00	3.00
Intermediate Matrix			
	0.333333	0.333333	0.333333
	0.333333	0.333333	0.333333
	0.333333	0.333333	0.333333
Weights			
Model A	0.333333		
Model B	0.333333		
Model C	0.333333		

With respect to: Plausibility			
	Model A	Model B	Model C
Model A	1	1	1
Model B	1	1	1
Model C	1	1	1
Sum	3.00	3.00	3.00
Intermediate Matrix			
	0.333333	0.333333	0.333333
	0.333333	0.333333	0.333333
	0.333333	0.333333	0.333333
Weights			
Model A	0.333333		
Model B	0.333333		
Model C	0.333333		

With respect to: Completeness			
	Model A	Model B	Model C
Model A	1	1	1
Model B	1	1	1
Model C	1	1	1
Sum	3.00	3.00	3.00
Intermediate Matrix			
	0.333333	0.333333	0.333333
	0.333333	0.333333	0.333333
	0.333333	0.333333	0.333333
Weights			
Model A	0.333333		
Model B	0.333333		
Model C	0.333333		

Appendix H: Pairwise Comparison Matrixes and Weights for all the Alternatives with respect to all the criterion

Appendix I: Business Model Canvas SWOT Evaluation Strength and Weakness Assessment Checklist

Value Proposition Assessment

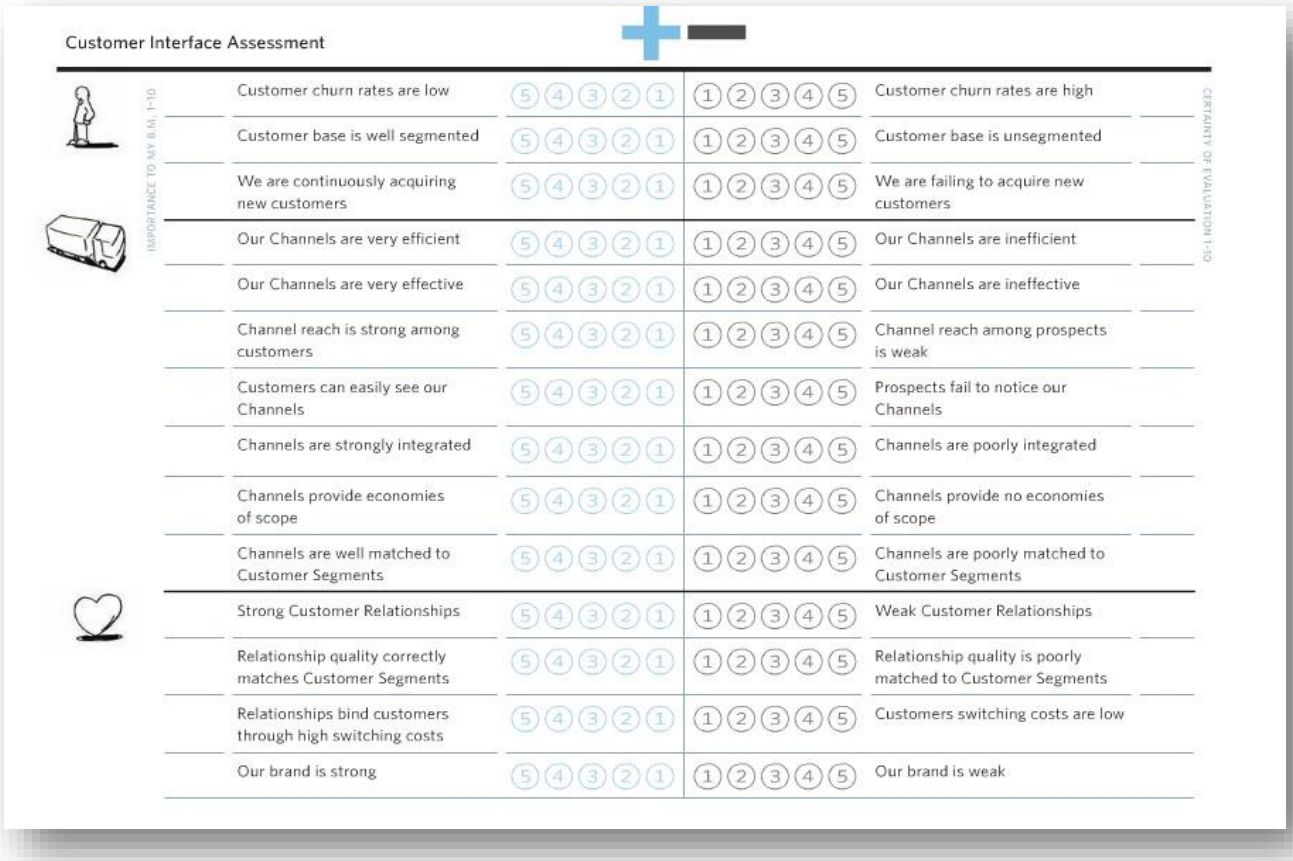
IMPORTANCE TO MY B.M. 1–10				CERTAINTY OF EVALUATION 1–10
	Our Value Propositions are well aligned with customer needs	5 4 3 2 1	1 2 3 4 5 Our Value Propositions and customer needs are misaligned	
	Our Value Propositions have strong network effects	5 4 3 2 1	1 2 3 4 5 Our Value Propositions have no network effects	
	There are strong synergies between our products and services	5 4 3 2 1	1 2 3 4 5 There are no synergies between our products and services	
	Our customers are very satisfied	5 4 3 2 1	1 2 3 4 5 We have frequent complaints	

Cost/Revenue Assessment

IMPORTANCE TO MY B.M. 1–10				CERTAINTY OF EVALUATION 1–10
	We benefit from strong margins	5 4 3 2 1	1 2 3 4 5 Our margins are poor	
	Our revenues are predictable	5 4 3 2 1	1 2 3 4 5 Our revenues are unpredictable	
	We have recurring Revenue Streams and frequent repeat purchases	5 4 3 2 1	1 2 3 4 5 Our revenues are transactional with few repeat purchases	
	Our Revenue Streams are diversified	5 4 3 2 1	1 2 3 4 5 We depend on a single Revenue Stream	
	Our Revenue Streams are sustainable	5 4 3 2 1	1 2 3 4 5 Our revenue sustainability is questionable	
	We collect revenues before we incur expenses	5 4 3 2 1	1 2 3 4 5 We incur high costs before we collect revenues	
	We charge for what customers are really willing to pay for	5 4 3 2 1	1 2 3 4 5 We fail to charge for things customers are willing to pay for	
	Our pricing mechanisms capture full willingness to pay	5 4 3 2 1	1 2 3 4 5 Our pricing mechanisms leave money on the table	
	Our costs are predictable	5 4 3 2 1	1 2 3 4 5 Our costs are unpredictable	
	Our Cost Structure is correctly matched to our business model	5 4 3 2 1	1 2 3 4 5 Our Cost Structure and business model are poorly matched	
	Our operations are cost-efficient	5 4 3 2 1	1 2 3 4 5 Our operations are cost-inefficient	
	We benefit from economies of scale	5 4 3 2 1	1 2 3 4 5 We enjoy no economies of scale	

Infrastructure Assessment

IMPORTANCE TO MY B.M. 1–10				CERTAINTY OF EVALUATION 1–10
	Our Key Resources are difficult for competitors to replicate	5 4 3 2 1	1 2 3 4 5 Our Key Resources are easily replicated	
	Resource needs are predictable	5 4 3 2 1	1 2 3 4 5 Resource needs are unpredictable	
	We deploy Key Resources in the right amount at the right time	5 4 3 2 1	1 2 3 4 5 We have trouble deploying the right resources at the right time	
	We efficiently execute Key Activities	5 4 3 2 1	1 2 3 4 5 Key Activity execution is inefficient	
	Our Key Activities are difficult to copy	5 4 3 2 1	1 2 3 4 5 Our Key Activities are easily copied	
	Execution quality is high	5 4 3 2 1	1 2 3 4 5 Execution quality is low	
	Balance of in-house versus outsourced execution is ideal	5 4 3 2 1	1 2 3 4 5 We execute too many or too few activities ourselves	
	We are focused and work with partners when necessary	5 4 3 2 1	1 2 3 4 5 We are unfocused and fail to work sufficiently with partners	
	We enjoy good working relationships with Key Partners	5 4 3 2 1	1 2 3 4 5 Working relationships with Key Partners are conflict-ridden	



Customer Interface Assessment

IMPORTANCE TO MY B.M. 1–10				CERTAINTY OF EVALUATION 1–10
	Customer churn rates are low	5 4 3 2 1	1 2 3 4 5 Customer churn rates are high	
	Customer base is well segmented	5 4 3 2 1	1 2 3 4 5 Customer base is unsegmented	
	We are continuously acquiring new customers	5 4 3 2 1	1 2 3 4 5 We are failing to acquire new customers	
	Our Channels are very efficient	5 4 3 2 1	1 2 3 4 5 Our Channels are inefficient	
	Our Channels are very effective	5 4 3 2 1	1 2 3 4 5 Our Channels are ineffective	
	Channel reach is strong among customers	5 4 3 2 1	1 2 3 4 5 Channel reach among prospects is weak	
	Customers can easily see our Channels	5 4 3 2 1	1 2 3 4 5 Prospects fail to notice our Channels	
	Channels are strongly integrated	5 4 3 2 1	1 2 3 4 5 Channels are poorly integrated	
	Channels provide economies of scope	5 4 3 2 1	1 2 3 4 5 Channels provide no economies of scope	
	Channels are well matched to Customer Segments	5 4 3 2 1	1 2 3 4 5 Channels are poorly matched to Customer Segments	
	Strong Customer Relationships	5 4 3 2 1	1 2 3 4 5 Weak Customer Relationships	
	Relationship quality correctly matches Customer Segments	5 4 3 2 1	1 2 3 4 5 Relationship quality is poorly matched to Customer Segments	
	Relationships bind customers through high switching costs	5 4 3 2 1	1 2 3 4 5 Customers switching costs are low	
	Our brand is strong	5 4 3 2 1	1 2 3 4 5 Our brand is weak	

Appendix I: Business Model Canvas SWOT Evaluation Strength and Weakness Assessment Checklist

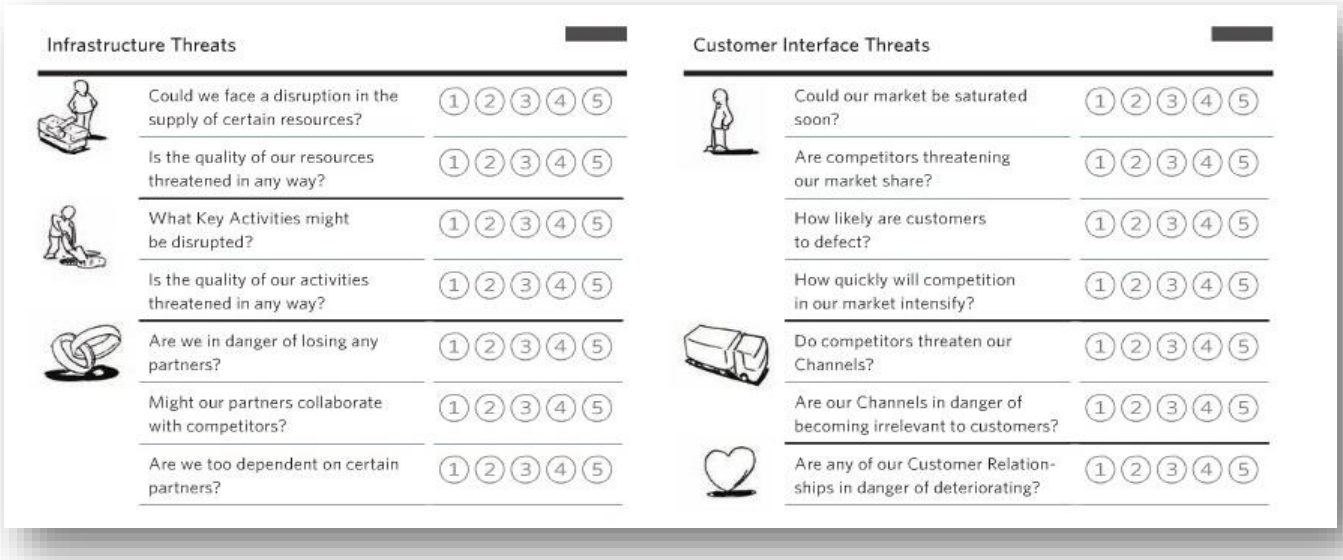
Appendix J: Business Model Canvas SWOT Evaluation Threat Assessment Checklist

Value Proposition Threats

Are substitute products and services available?	1 2 3 4 5
Are competitors threatening to offer better price or value?	1 2 3 4 5

Cost/Revenue Threats

Are our margins threatened by competitors? By technology?	1 2 3 4 5
Do we depend excessively on one or more Revenue Streams?	1 2 3 4 5
Which Revenue Streams are likely to disappear in the future?	1 2 3 4 5
Which costs threaten to become unpredictable?	1 2 3 4 5
Which costs threaten to grow more quickly than the revenues they support?	1 2 3 4 5



Infrastructure Threats

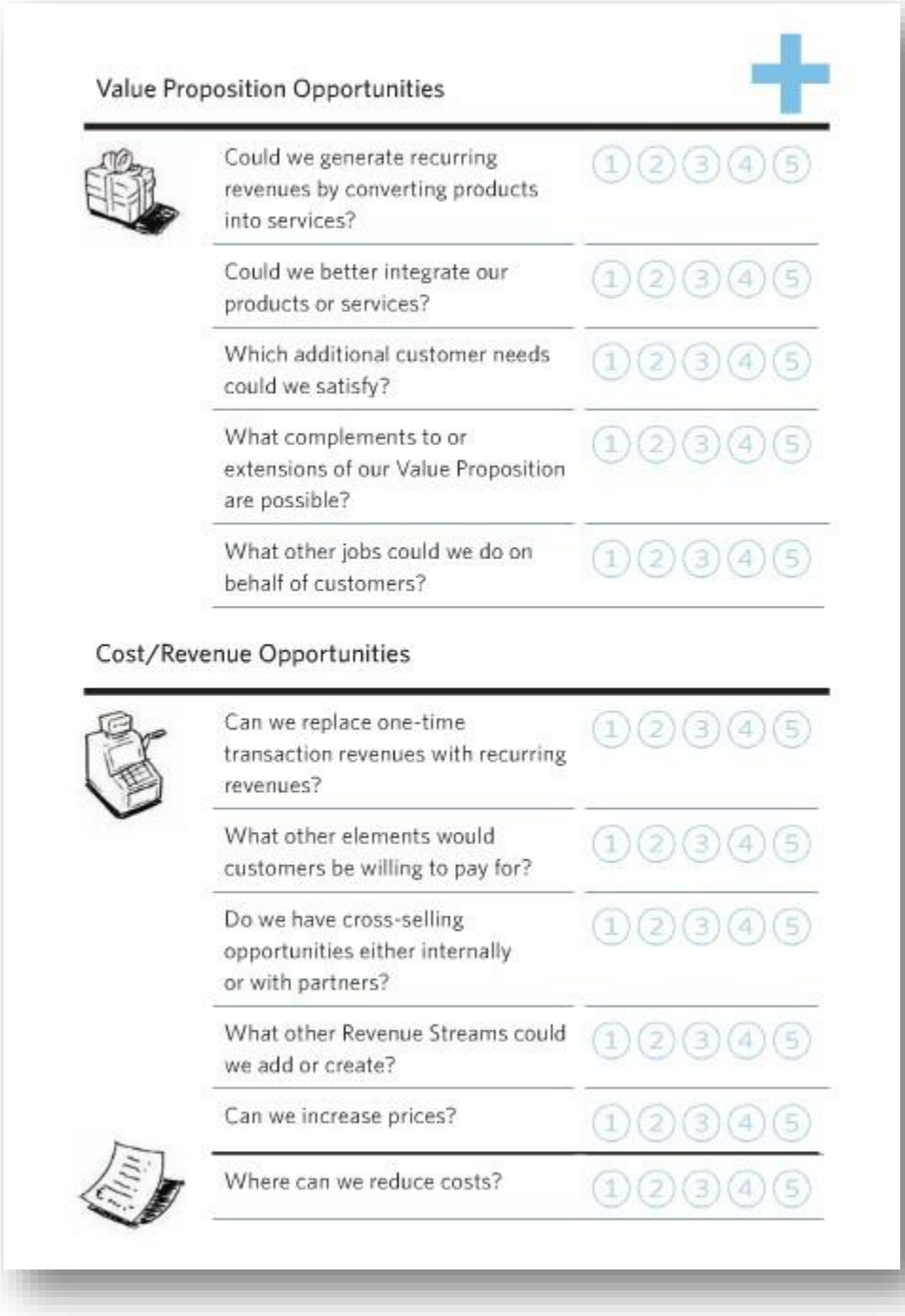
Could we face a disruption in the supply of certain resources?	1 2 3 4 5
Is the quality of our resources threatened in any way?	1 2 3 4 5
What Key Activities might be disrupted?	1 2 3 4 5
Is the quality of our activities threatened in any way?	1 2 3 4 5
Are we in danger of losing any partners?	1 2 3 4 5
Might our partners collaborate with competitors?	1 2 3 4 5
Are we too dependent on certain partners?	1 2 3 4 5

Customer Interface Threats

Could our market be saturated soon?	1 2 3 4 5
Are competitors threatening our market share?	1 2 3 4 5
How likely are customers to defect?	1 2 3 4 5
How quickly will competition in our market intensify?	1 2 3 4 5
Do competitors threaten our Channels?	1 2 3 4 5
Are our Channels in danger of becoming irrelevant to customers?	1 2 3 4 5
Are any of our Customer Relationships in danger of deteriorating?	1 2 3 4 5

Appendix J: Business Model Canvas SWOT Evaluation Threat Assessment Checklist

Appendix K: Business Model Canvas SWOT Evaluation Opportunity Assessment Checklist

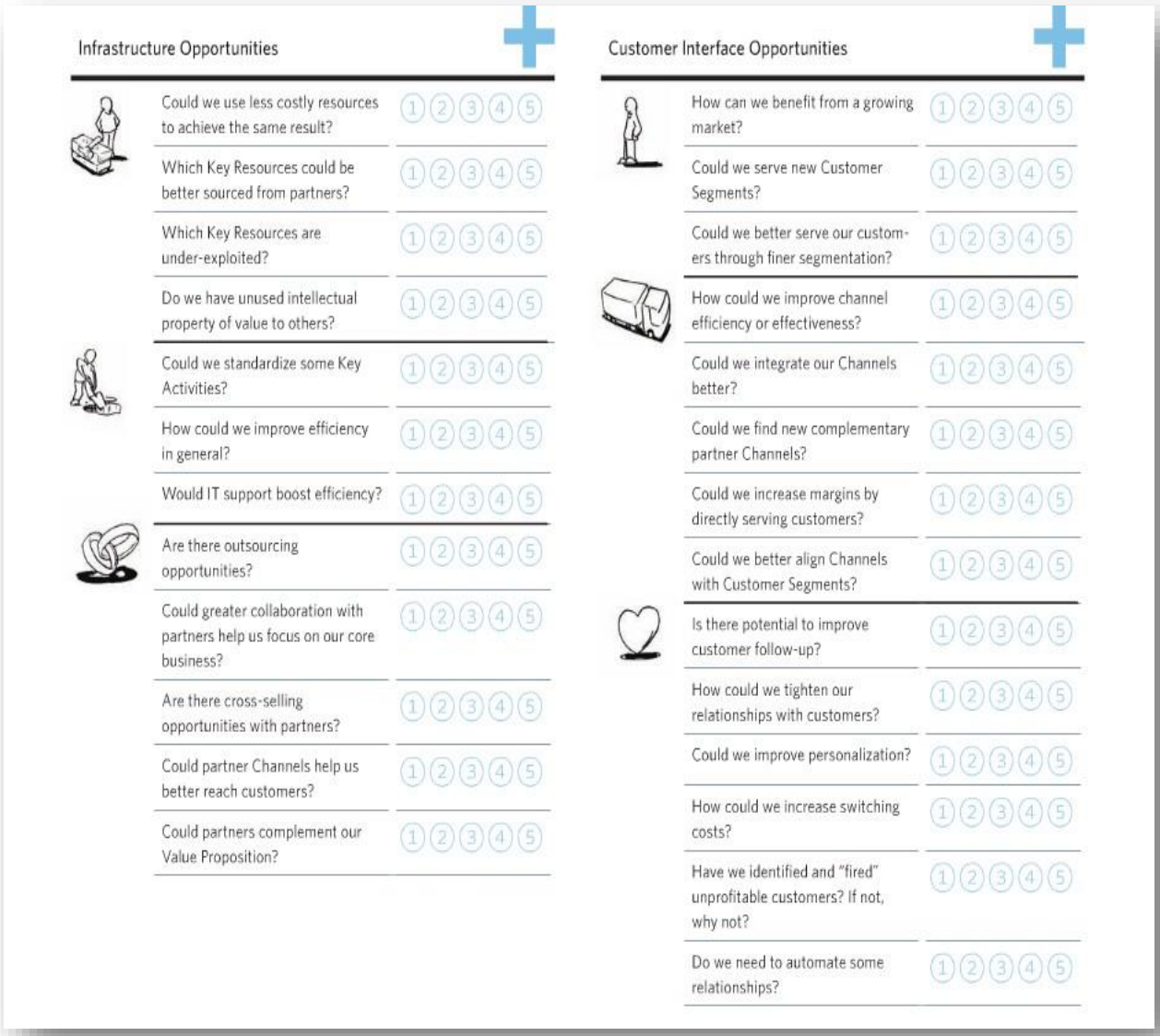


Value Proposition Opportunities

Could we generate recurring revenues by converting products into services?	1 2 3 4 5
Could we better integrate our products or services?	1 2 3 4 5
Which additional customer needs could we satisfy?	1 2 3 4 5
What complements to or extensions of our Value Proposition are possible?	1 2 3 4 5
What other jobs could we do on behalf of customers?	1 2 3 4 5

Cost/Revenue Opportunities

Can we replace one-time transaction revenues with recurring revenues?	1 2 3 4 5
What other elements would customers be willing to pay for?	1 2 3 4 5
Do we have cross-selling opportunities either internally or with partners?	1 2 3 4 5
What other Revenue Streams could we add or create?	1 2 3 4 5
Can we increase prices?	1 2 3 4 5
Where can we reduce costs?	1 2 3 4 5



Infrastructure Opportunities	
Could we use less costly resources to achieve the same result?	1 2 3 4 5
Which Key Resources could be better sourced from partners?	1 2 3 4 5
Which Key Resources are under-exploited?	1 2 3 4 5
Do we have unused intellectual property of value to others?	1 2 3 4 5
Could we standardize some Key Activities?	1 2 3 4 5
How could we improve efficiency in general?	1 2 3 4 5
Would IT support boost efficiency?	1 2 3 4 5
Are there outsourcing opportunities?	1 2 3 4 5
Could greater collaboration with partners help us focus on our core business?	1 2 3 4 5
Are there cross-selling opportunities with partners?	1 2 3 4 5
Could partner Channels help us better reach customers?	1 2 3 4 5
Could partners complement our Value Proposition?	1 2 3 4 5

Customer Interface Opportunities	
How can we benefit from a growing market?	1 2 3 4 5
Could we serve new Customer Segments?	1 2 3 4 5
Could we better serve our customers through finer segmentation?	1 2 3 4 5
How could we improve channel efficiency or effectiveness?	1 2 3 4 5
Could we integrate our Channels better?	1 2 3 4 5
Could we find new complementary partner Channels?	1 2 3 4 5
Could we increase margins by directly serving customers?	1 2 3 4 5
Could we better align Channels with Customer Segments?	1 2 3 4 5
Is there potential to improve customer follow-up?	1 2 3 4 5
How could we tighten our relationships with customers?	1 2 3 4 5
Could we improve personalization?	1 2 3 4 5
How could we increase switching costs?	1 2 3 4 5
Have we identified and "fired" unprofitable customers? If not, why not?	1 2 3 4 5
Do we need to automate some relationships?	1 2 3 4 5

Appendix K: Business Model Canvas SWOT Evaluation Opportunity Assessment Checklist

Appendix L: Business Model Canvas SWOT Evaluation Strength and Weakness Assessment Checklist Results

Cost/Revenue Strength and Weakness Assessment					
Block	**Checklist Question (+1 to +5)**	**Model A Value**	**Model B Value**	**Model C Value**	**Checklist Question (-5 to -1)**
Revenue Streams	*We benefit from strong margins*	3	1	4	*Our margins are poor*
	We revenues are predictable	3	1	2	*Our revenues are unpredictable*
	We have recurring Revenue Streams and frequent repeat purchases.	4	4	4	*Our revenues are transactional with few repeat purchases*
	Our Revenue Streams are diversified	-3	1	2	*We depend on a single Revenue*
	Our Revenue Streams are sustainable	3	-1	4	*Our revenue sustainability is questional*
	We collect revenues before we incur expenses	-3	-3	-3	*We incur high costs before we collect revenues*
	We charge for what customers are really willing to pay for	0	0	0	*We fail to charge for things customers are willing to pay for*
	Our pricing mechanisms capture full willingness to pay	0	0	0	*Our pricing mechanisms leave money on the table*
Revenue Streams Sub-total Average		1	0	2	
Cost Structure	*Costs are predictable*	4	1	3	*Costs are unpredictable*
	Cost Structure is correctly matched to the business model	4	4	4	*Cost Structure and business model are poorly matched*
	Operations are cost-efficient	0	0	0	*Operations are cost-inefficient*
	We benefit from economies of scale	3	1	3	*We enjoy no economies of scale*
Cost Structure Sub-total Average		3	2	3	
Cost/Revenue Strength and Weakness Total Average		2	1	2	

Value Proposition Strength and Weakness Assessment					
Block	**Checklist Question (+1 to +5)**	**Model A Value**	**Model B Value**	**Model C Value**	**Checklist Question (-5 to -1)**
Value Propositions	*Value Propositions are well aligned with customer needs*	4	4	4	*Value Propositions and customer needs are misaligned*
	Value Propositions have strong network effects	3	1	2	*Value Propositions have no network effects*
	There are strong synergies between products and services	3	3	3	*There are no synergies between products and services*
	Our customers are very satisfied	0	0	0	*We have frequent complaints*
Value Proposition Strength and Weakness Total Average		3	2	2	

Infrastructure Strength and Weakness Assessment					
Block	**Checklist Question (+1 to +5)**	**Model A Value**	**Model B Value**	**Model C Value**	**Checklist Question (-5 to -1)**
Key Resources	*Key Resources are difficult for competitors to replicate*	2	4	3	*Key Resources are easily replicated*
	Resource needs are predictable	4	1	3	*Resource needs are unpredictable*
	We deploy Key Resources in the right amount at the right time	0	0	0	*We have trouble deploying the right resource at the right time*
Key Resources Sub-total Average		2	2	2	
Key Activities	*We efficiently execute Key Activities*	0	0	0	*Key Activity execution is inefficient*
	Our Key Activities are difficult to copy	2	4	3	*Our Key Activities are easily copied*
	Execution quality is high	4	2	3	*Execution quality is low*
	Balance of in-house versus outsourced execution is ideal	2	0	1	*We execute too many or too few activities ourselves*
Key Activities Sub-total Average		2	2	2	
Key Partners	*We are focused and work with partners when necessary*	2	4	4	*We are unfocused and fail to work sufficiently with partners*
	We enjoy good working relationships with Key Partners	2	4	4	*Working relationships with Key Partners are conflict-ridden*
Key Partners Sub-total Average		2	4	4	
Infrastructure Strength and Weakness Total Average		2	2	3	

Customer Interface Strength and Weakness Assessment					
Block	**Checklist Question (+1 to +5)**	**Model A Value**	**Model B Value**	**Model C Value**	**Checklist Question (-5 to -1)**
Customer Segments	*Customer churn rates are low*	3	1	2	*Customer churn rates are high*
	Customer base is well segmented	-3	-3	4	*Customer base is unsegmented*
	We are continuously acquiring new customers	1	2	2	*We are failing to acquire new customers*
Customer Segments Sub-total Average		0	0	3	
Channels	*Our Channels are very efficient*	0	0	0	*Our Channels are inefficient*
	Our Channels are very effective	0	0	0	*Our Channels are ineffective*
	Channel reach is strong among customers	3	2	3	*Channel reach among prospects is weak*
	Customers can easily see our Channels	1	-1	1	*Prospects fail to notice our channels*
	Channels are strongly integrated	2	1	3	*Channels are poorly integrated*
	Channels provide economies of scope	3	1	3	*Channels provide no economies of scope*
	Channels are well matched to Customer Segments	3	2	3	*Channels are poorly matched to Customer Segments*
Channels Sub-total Average		2	1	2	
Customer Relationships	*Strong Customer Relationships*	2	4	3	*Weak Customer Relationships*
	Relationship quality correctly matches customer Segments	2	3	3	*Relationship quality is poorly matched to customer Segments*
	Relationships bind customers through high switching costs	1	4	3	*Customers switching costs are low*
	Our brand is strong	0	0	0	*Our brand is weak*
Customer Relationships Sub-total Average		1	3	2	
Customer Interface Strength and Weakness Total Average		1	1	2	

Appendix L: Business Model Canvas SWOT Evaluation Strength and Weakness Assessment Checklist Results

Appendix M: Business Model Canvas SWOT Evaluation Threat Assessment Checklist Results

Value Proposition Threats Assessment				
Block	**Checklist Question (-5 to -1)**	**Model A Value**	**Model B Value**	**Model C Value**
Value Propositions	*Are substitute products and services available?* *-5 = 40+ (# of substitute products and services)* *-4 = 30-39* *-3 = 20-29* *-2 = 10-19* *-1 = 1-9*	-4	-1	-2
	Are competitors threatening to offer better pricing or value? *-5 = Yes -4 = Very likely* *-3 = Likely* *-2 = Not Likely* *-1 = Very unlikely*	-4	-1	-3
Value Proposition Threats Total Average		-4	-1	-3

Cost/Revenue Threats Assessment				
Block	**Checklist Question (-5 to -1)**	**Model A Value**	**Model B Value**	**Model C Value**
Revenue Streams	*Are our margins threatened by competitors? By technology?*	-3	-1	-2
	Do we depend excessively on one or more Revenue Streams?	-5	-2	-3
	Which Revenue Streams are likely to disappear in the future?	-1	-3	-2
Revenue Streams Sub-total Average		-3	-2	-2
Cost Structure	*Which costs threaten to become unpredictable?*	-2	-4	-3
	Which costs threaten to grow more quickly than the revenues they support?	-2	-3	-3
Cost Structure Sub-total Average		-2	-4	-3
Cost/Revenue Threats Total Average		-3	-3	-3

Infrastructure Threats Assessment				
Block	**Checklist Question (-5 to -1)**	**Model A Value**	**Model B Value**	**Model C Value**
Key Resources	*Could we face disruption in the supply of certain resources?*	-2	-3	-2
	Is the quality of our resources threatened in any way?	-1	-2	-1
Key Resources Sub-total Average		-2	-3	-2
Key Activities	*What Key Activities might be disrupted?*	-2	-4	-3
	Is the quality of our activities threatened in any way?	-2	3	-3
Key Activities Sub-total Average		-2	-1	-3
Key Partners	*Are we in danger of losing any partners?*	-2	-4	-3
	Might our partners collaborate with competitors?	-4	-4	-4
	Are we too dependent on certain partners?	-3	-4	-3
Key Partners Sub-total Average		-3	-4	-3
Infrastructure Threats Total Average		-2	-2	-3

Customer Interface Threats Assessment				
Block	**Checklist Question (-5 to -1)**	**Model A Value**	**Model B Value**	**Model C Value**
Customer Segments	*Could our market be saturated soon?*	-4	-2	-3
	Are competitors threatening our market share?	-3	-1	-2
	How likely are customers to defect?	-3	-4	-3
	How quickly will competition in our market intensify?	-4	-2	-3
Customer Segments Sub-total Average		-4	-2	-3
Channels	*Do competitors threaten our Channels?*	-2	-2	-2
	Are our Channels in danger of becoming irrelevant to customers?	-3	-2	-3
Channels Sub-total Average		-3	-2	-3
Customer Relationships	*Are any of our Customer Relationships in danger of deteriorating?*	-2	-3	-2
Customer Relationships Sub-total Average		-2	-3	-2
Customer Interface Threats Total Average		-3	-2	-2

Appendix M: Business Model Canvas SWOT Evaluation Threat Assessment Checklist Results

Appendix N: Business Model Canvas SWOT Evaluation Opportunity Assessment Checklist Results

Value Proposition Opportunity Assessment				
Block	**Checklist Question (+1 to +5)**	**Model A Value**	**Model B Value**	**Model C Value**
Value Propositions	*Could we generate recurring revenues by converting products into services?*	3	4	3
	Could we better integrate our products or services?	1	2	2
	Which additional customer needs could we satisfy?	1	1	1
	What compliments to or extensions of our Value Proposition are possible?	3	2	3
	What other jobs could we do on behalf of our customers?	1	4	2
Value Proposition Opportunity Total Average		2	3	2

Cost/Revenue Opportunity Assessment				
Block	**Checklist Question (+1 to +5)**	**Model A Value**	**Model B Value**	**Model C Value**
Revenue Streams	*Can we replace one-time transaction revenues with recurring revenues?*	1	3	2
	What other elements would customers be willing to pay for?	1	3	2
	Do we have cross-selling opportunities either internally or with partners?	3	3	3
	What other Revenue Streams could we add or create?	4	4	1
	Can we increase prices?	2	1	2
Revenue Streams Sub-total Average		2	3	2
Cost Structure	*Where can we reduce costs?*	3	2	3
Cost Structure Sub-total Average		3	2	3
Cost/Revenue Opportunity Total Average		3	2	3

Infrastructure Opportunity Assessment				
Block	**Checklist Question (+1 to +5)**	**Model A Value**	**Model B Value**	**Model C Value**
Key Resources	*Could we use less costly resources to achieve the same result?*	1	4	3
	Which Key Resource could be better sourced from partners?	4	2	3
	Which Key Resources are underexploited?	1	3	2
	Do we have unused intellectual property of value to others?	1	2	2
Key Resources Sub-total Average		2	3	3
Key Activities	*Could we standardise some Key Activities?*	4	2	3
	How could we improve efficiency in general?	4	2	3
	Would IT support boost efficiency?	3	2	3
Key Activities Sub-total Average		4	2	3
Key Partners	*Are there outsourcing opportunities?*	4	2	3
	Could greater collaboration with partners help us focus on our core business?	4	2	3
	Are there cross-selling opportunities with partners?	4	2	3
	Could partner Channels help us better reach customers?	3	1	3
	Could partners complement our Value Proposition?	3	2	3
Key Partners Sub-total Average		4	2	3
Infrastructure Opportunity Total Average		3	2	3

Customer Interface Opportunity Assessment				
Block	**Checklist Question (+1 to +5)**	**Model A Value**	**Model B Value**	**Model C Value**
Customer Segments	*How can we benefit from a growing market?*	4	4	4
	Could we serve new Customer Segments?	4	4	2
	Could we better serve our customers through finer segmentation?	2	2	5
Customer Segments Sub-total Average		3	3	4
Channels	*How could we improve channel efficiency or effectiveness?*	4	3	4
	Could we integrate our Channels better?	3	2	3
	Could we find new complementary partner Channels?	3	2	3
	Could we increase margins by directly serving customers?	4	2	3
	Could we better align Channels with Customer Segments?	2	2	4
Channels Sub-total Average		3	2	3
Customer Relationships	*Is there potential to improve customer follow-up?*	3	4	3
	How could we tighten our relationships with customers?	2	4	3
	Could we improve personalisation?	4	1	3
	How could we increase switching costs?	2	4	3
	Have we identified and "fired" unprofitable customers?If not, why not?	2	3	3
	Do we need to automate some relationships?	3	3	3
Customer Relationships Sub-total Average		3	3	3
Customer Interface Opportunity Total Average		3	3	3

Appendix N: Business Model Canvas SWOT Evaluation Opportunity Assessment Checklist Results

Appendix O: Business Model Canvas SWOT Evaluation Overall Results

Final Weights For Srength & Weakness Assessment Section (Out of 5)	
Business Model A	1.85
Business Model B	1.62
Business Model C	2.29

Final Weights For Threats Assessment Section (Out of -5)	
Business Model A	-2.83
Business Model B	-2.13
Business Model C	-2.55

Final Weights For Opportunity Assessment Section (Out of 5)	
Business Model A	2.62
Business Model B	2.52
Business Model C	2.72

Overall Relative Weights for S, W, T & O Sections			
Business Model	*Score*	*Percentage*	*Relative Weight*
Model A	1.64	54.59%	26.78%
Model B	2.02	67.20%	32.97%
Model C	2.46	82.07%	40.26%
			100.00%

Appendix O: Business Model Canvas SWOT Evaluation Overall Weights Results

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