

Automatic Lawnmowers  
Research of the marketing  
potential in Sweden

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DISSERTATION

*International Project Management*  
CHALMERS UNIVERSITY OF TECHNOLOGY  
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My special thanks go to my father Ahmad Fetyan and my mother Fathie Saadi for their constant encouragement and enormous support. I will never become better than you.

## **Dedication**

To my sister, Amani

that she be better than her brother

## **Summary**

The aim of this dissertation is to give an insight in the several research methods when investigating the possibility to market a product on the Swedish market. The product, an automatic lawnmower, already exists on the Swedish market but to a high price. Therefore, the purpose is to investigate the possibility to gain success in marketing the product to a less expensive price. To visualise the opportunities of making some profit from this project it is important to carry out three processes: market research, competitor analysis and financial calculations.

The market research is carried out to find out if there is a need for an automatic lawnmower. It is also aimed to find out how much people are ready to pay for such a machine. The secondary purpose of the market research is to gain information regarding people's opinions on the environmental issues.

The purpose of the competitor analysis is to find out the prices and value increasing functions on the competitors' products.

To find out if there is a possibility to make some turnover the financial analysis is carried out. To find the amount of interested customers within the area this project aims to market in, a combination of the outcomes from the market research and information gained from the Swedish Central Bureau of Statistics (SCB), have been used.

The methodologies of these methods have been accessed from literature and are presented in the review of related literature chapter of this study.

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## **1.1 Background**

Last summer I had to mow the lawn up to two times a week. When I had mowed the large lawn a couple of times I started to think about if it could be done in another easier way. I had heard about automatic lawnmowers, but I had also heard they were very expensive. To find out what products there were on the Swedish market and to find out the price for such products, a small research on the internet was carried through. The result of this research showed a limited variety of automatic lawnmowers and the prices varied between 7000 and 27 000 Swedish kronor (Skr), one English pound is approximately 13.5 Skr. I found these prices too high and the cheaper models were not worth the price. With these facts in mind, I started thinking about an alternative, less expensive, imported lawnmower which could sell on the Swedish market. I also thought about developing an automatic lawnmower, in case an appropriate product is not found.

## **1.2 Introduction**

A research of the need for such a machine on the Swedish market is necessary. This research will also highlight the viable price level. On the light of the outcome of the research a business plan would be carried out. The purpose of the business plan is to visualise the budget and to simplify the pricing process. This study will present these two processes of investigating the possibility of making this project end in success.

## **1.3 Hypothesis**

Considering the trends of today, where most people have less time and more work, the hypothesis of this study is that there is a market for an automatic lawnmower. The price of these mowers is, according to the author's opinion, too high and therefore, a less expensive product should have a potential to gain success on the market.



## **1.4 Purpose**

This study is a part of my MSc in International Project Management and will exam whether there is a market for a less expensive automatic lawn mower on the Swedish market or not. One purpose of this study is to visualise the benefits of the numerous theoretical methods used when researching a market, the competitors and setting the price on products. Another purpose is to carry through a research on the need of an automatic lawnmower on the Swedish market and on the accepted price-level. The purpose is also to research the competitors' products and visualise their advantages and disadvantages. However, the main purpose is to exam the possibility of making profit out of this project.

## **1.5 Limitations**

This study will show the procedures of researching the market and the financial possibilities which make this project end in success. However, it will not include the procedures of finding or developing the product.

## **1.6 Analysis of the Present Situation**

This part of the study will highlight the expected problems that may occur along the way. In this phase it is of great importance to document ones thought and observations. This will make it easier to understand the nature of the eventual problems; especially if a beforehand defined structure is missing.

If the customers find the idea of an automatic lawnmower attractive and interesting but consider it too expensive, I will be forced to either find a less expensive way to develop or import the product or not proceed with this project. Carlsson et al (2001) et al. lists some important issues to think through when conducting a problem analysis. Some of these issues are:

- How is the goal defined?
- What are the most important elements that influence the goal?
- What is the variety of acting alternatives?
- What factors are difficult to study?

These issues seem to be of great help and have been considered, the results are presented in the following part of this study.

*How is the goal defined?*

The goal is to offer house owners with a relatively large lawn an alternative to mow the lawn by hand or by hiring a gardener. The idea is to offer an automatic way to mow the lawn. Due to the expensive existing alternatives, I aim to either develop a simple automatic lawn mower, or to find a less expensive alternative on the overseas market.

*What are the most important elements that influence the goal?*

The most important element is the need of the product on the market. The need will be researched by a market research. If the result of the research shows that there is no need for such a product I will consider the possibility of creating a need. This study will not include any studies considering the creation of needs due to the limited time. The second most important element is to find a cheap product satisfying my specifications. If this product is not found on the international market, I will consider developing it on my own. Before this is done I will have to make a financial study to be able to predict the cost of the eventual product.

*What is the variety of acting alternatives?*

The variety of acting alternatives is the prices on the products and as mentioned above: import or develop an automatic lawn mower.

*What factors are difficult to study?*

The amount of houses in Sweden should not be hard to find, but the exact amount of houses with a lawn larger than 300 m<sup>2</sup> could be difficult to come upon.

## **1.7 Conclusion of Problem Analysis**

The result of this analysis shows that a market research is necessary to find out if the product will sell on the Swedish market. It also shows that the existing problems are possible to solve if necessary. With this result in mind it is time to consider a review of related literature to procure knowledge regarding research methods and competitor analysis etc.

## **2 Review of Related Literature**

### **2.1 Business Idea**

According to Andersson (1997) a business idea should make clear who the customers are, and what this group's needs the company should pay due attention to. Thereafter, the company should develop an assortment of products that satisfy the customers' needs and desires. The benefit of formulating a business idea engenders reflection and thinking ahead. And according to Andersson, it also stimulates one to really try to understand the customers' needs and to connect these to the company's resources. When the business idea is formulated it is easier to communicate the idea with the organization, both inwards (the colleagues) and outwards (the stakeholders).

A formulated business should according to Andersson (1997) specify the need, whose the need is, and how to satisfy it. A very important part of the business idea is how to satisfy the need i.e. the shape of the product.

### **2.2 The customers' needs**

It is important to convince the customers that your company offers a better solution than the competitors. If this is not accomplished, the customers will choose another supplier. According to Andersson (1997), marketing is exceedingly about satisfying the customers' needs better than the competitors. And what restrains success on the market is the customers' apprehension of what the best is. Andersson (1997) also argue that putting the customers in focus does not always mean getting dominated by them, but rather to understand them.

### **2.3 Evaluation of Business Idea**

In this study the greater deal of effort will be put to research the needs of the customers, the demand and the accepted price-level. It is also of great importance to obtain the eventual customers' attitude to the automatic lawnmower. If the customers do not find the

idea of an automatic lawnmower attractive or interesting, the whole project will be rejected.

## 2.4 Starting the project?

According to Ian Murdoch, it is of great importance to consider and answer the following questions before starting the analysis. The business idea should be rejected if the answer to any of these question is no.

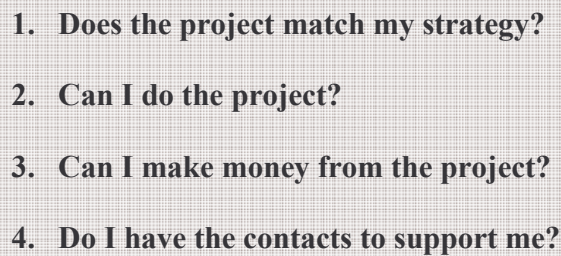
- 
1. Does the project match my strategy?
  2. Can I do the project?
  3. Can I make money from the project?
  4. Do I have the contacts to support me?

Figure 2.1. *Four questions to consider before starting a project. Ian Murdoch's lecture no.9.*

## 2.5 Proceed?

If the answer to all the question is yes it will be a good idea to make a small research to find out if it is a good idea to proceed. McKinsey (2001) suggests a checklist to consider before proceeding with a business idea.

Does the business idea give clear answers to the following questions?

- What exactly is the innovation in your business idea?
- In what extent is your business idea unique?
- Who are your potential costumers?

- Why should the costumers buy your product? What problems does it solve and what needs does it fulfil?
- Why is your product better than comparable alternatives?
- What are the competitive advantages of your business idea and what prevents the competitors from copying these advantages?
- Is your idea feasible? How much work of development remains?
- How will you reach the costumers (with the product)?
- How will you make money out of the product?
- How big is the potential market?
- What are the expenses and what price will be set?

These questions will be considered continuously during the process of this study.

McKinsey (2001) also presents three questions for consideration when a business idea is generated.

1. *What are the costumer's benefits, what problems does the product solve?* The key to success is, according to McKinsey (2001), satisfied customers, not fantastic products. The customer is looking for a solution to a problem or satisfying a need – i.e. an easier way of working, wellbeing, self-esteem etc. Also According to McKinsey (2001) the first principle for a successful business is to clearly show what needs to satisfy and how to satisfy them. When describing the costumer benefits of a product or service, McKinsey (2001) suggests to formulate what is new or better compared to the competitors' products and also compared to alternative solutions.
2. *Which is the market?* A business idea has, according to McKinsey (2001), commercial value only if it can gain success on a market. A successful business idea should therefore visualise the size of the market for the offered solution, what target groups it is intended for and in what extent the solution is better than the competitors'.

3. *How is it possible to make money out of the business idea?* According to McKinsey (2001) a business idea has to be profitable in long term. A successful business idea must present how much money it is possible to make and how to make it.

Carlsson et al (2001), on the other hand, suggests four points to consider when evaluating a business idea. These four points are presented below:

1. *Estimate your market.* What is the size of the market within the geographical area you are planning to market your product in the first year?
2. *Estimate your competitors*
  - a) Who are the competitors to your business? From whom do your future costumers buy today?
  - b) From your future costumers point of view; what are the strengths and weakness of your three main competitors? Will there emerge any new competitors?
  - c) How big share of the market does your business estimate to capture the firs year?
3. *Who is your customer?* Describe your "typical customer".
  - Age
  - Sex (only women, only men, both women and men)
  - Civil status
  - Family situation (number of children)
  - Profession
  - Education
  - Interests
  - Eventual memberships in certain association

4. *How does the customer purchase?*

- a) *Who in the household takes the purchase decisions?*
- b) *How often is the purchase made?*
- c) *How much is bought at every occasion?*

These questions will be considered and compared throughout the evaluation stage of this project.

## 2.6 Market research

A market research is of great importance to get the information needed before investing money into a business idea. According to Andersson (1997) a market research is an easy way to reduce the risks of making wrong decisions and thereby get spared from spending money on expensive mistakes.

To be able to know if the automatic lawnmower will sell or not, an analysis of the need on the market has to be carried out. This analysis will be carried out through research of the market. Andersson, Carlsson, Christensen and Haglund (1997) argue that before a market analysis is carried out, one should devote time to think about if a market analysis is necessary. They also argue that even if it is hard to predict the costs of a research one should not let it exceed the value of the decision one may make with the information available before the research.

$$\text{Value (after research)} - \text{Value (before research)} > \text{Cost of research}$$

Carlsson et al (2001) lists some situations when a market research should be avoided.

These situations are:

- When the cost of the research exceeds the value of the information.
- When the information already is available.



- When resources to carry out the research are missing.
- When resources to carry out eventual measures are missing.
- When the expected results can not be used.
- When the decision already is made (pseudo-researches).
- When the purpose of the research is not clear.

Carlsson et al (2001) suggests that a market research always should aim to represent relevant and useful information on the market. And if a less expensive alternative method can be used to visualise the costumers' needs and the market, this method is to prefer.

According to Kotler (2003) effective marketing research involves the six steps shown in figure 2.

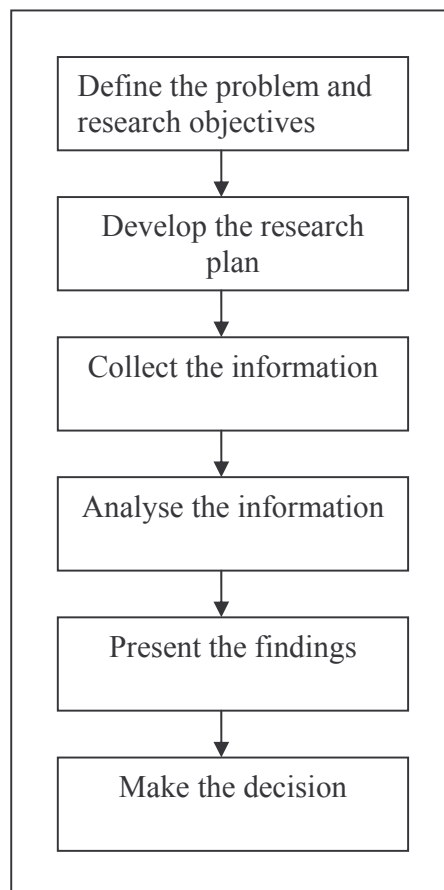


Figure 2.2. *Kotler's Marketing Research Process*

Kotler (2003) describes the six steps as follows:

**Step 1: Define the problem, the decision alternatives and the research objectives**

The researcher must be careful not to define the problem too broadly or too narrowly. Otherwise the researcher will end up with too much or too little information which both lead to unnecessary expenses.

**Step 2: Develop the research plan**

The second stage of marketing research calls for developing the most efficient plan for gathering the needed information. The marketing manager needs to know the cost of the research plan before approving it.

**Step 3: Collect the information**

The data collection phase of marketing research is generally the most expensive and the most prone to error. In the case of surveys, four major problems arise. Some respondents will not be at home and must be recontacted or replaced. Other respondents will refuse to cooperate. Still other will give bias or dishonest answers. Finally, some interviewers will be biased or dishonest.

**Step 4: Analyse the information**

The next-to-last step in the marketing research process is to extract findings from the collected data. The researcher tabulates the data and develops frequency distributions. Averages and measures of dispersion are computed for the major variables.

**Step 5: Present the findings**

As the last step, the researcher presents the findings. The researcher should present findings that are relevant to the major marketing decisions facing management.

### **Step 6: Make the decision**

In this part Kotler (2003) refers to an example from his book, therefore the significant implications of this stage will be presented. The commissioners of the research need to weigh the evidence. They know that the findings could suffer from a variety of errors.

If the confidence in the findings is low, one should decide against the idea or decide to study the issue further and do more research. If one decides to launch the idea, the findings will support the inclination. These steps seem to be of great help when researching a market and the author of this study will consider them when completing the research.

Carlsson et al (2001) present some problems that may occur when carrying out a research or an analysis on markets. One of these problems is the development and the speed it may have, sometimes the development is slow but there is however always some kind of development. And it is rarely static but dynamic and might sometimes make small steps, sometimes big steps. This will get obvious when implementing researches on a market during a longer period. There are no guaranties that a market which has been researched or analysed will look the same in the future, next month or even next day. Peoples' needs, demands and expectations change continuously, and new products enter the market all the time. These facts do not make it unnecessary to carry out researches and analyses when needed. Due to the changes mentioned above there will always be a great need for a detailed and specific research. Carlsson et al (2001). argues that the greater part of the market researches made, focuses on the customers and their needs. Some of the common areas to be researched are listed below.

Common research-areas to  
research:

- quality
- loyalty
- price
- relations
- segment
- satisfaction
- substitution of brand or
- deliverer
- demand
- consumption behaviour
- purchase behaviour
- image

## **2.7 Who are the Customers**

To make a business profitable it is important to know who your customers are and what they need. According to Andersson (1997); a company has to get to know their customers to be able to develop products which satisfy their needs. It is also important to know what opinion the customers have about the company and its products. Due to the competition on the market, it is important as well to know what opinion the customers have about the competitors and their products.

It is usually not possible to develop a unique product to each individual, according to Andersson (1997), the company has to find a compromise. This compromise is based on dividing the market into segments, and developing products satisfying the needs of each segment. The outcome of the segmentation will hopefully be fewer competitors, higher satisfaction and more profit.

## **2.8 How to Segment**

To be able to segment a market it is of great importance to know it very well. One has to find the factors of great importance to the different demands and which will be the base of the segmentation. Andersson (1997) and Holm (2002) presents four segmentation-factors to use when segmenting the consumer market.

- **Geographical** - nation, region, big cities, countryside, climate etc.

- **Demographical** – age, family-size, type of housing, sex, economy, profession, religion, nationality etc.
- **Psychographical** – culture-pattern, subculture, type of personality etc.
- **Lifestyle/behaviour** – extent of regularity, valuation of exchange, (utility, pleasure, adventure), loyalty, attitude etc.

Segmenting a market may be carried out considering one or several of the factors mentioned above. Due to the dependency of customers having a large lawn, will the demographical factor be considered when the segment of this project is determined.

## 2.9 Methods of market research

According to Nielsen (1995) it is of great importance to know who the customers are, what they need and how much they are prepared to pay for the products, before the business idea is executed. Nielsen (1995) also argues that the information gathered through a market research should be used to give the finishing touch to the business idea, estimate the magnitude of the market and to get to know one's customers and competitors. The market research will in this study be divided into two parts. One part managing the customers and one part managing the competitors. The part managing the customers will be executed by some kind of interview with potential customers, while the part managing the competitors will be executed by a research on the internet, in lawnmower stores and in journals to visualise the existing products on the market. Carlsson et al. and Nielsen (1995) describe the information in the first part as primary information. The information in the second part is described as secondary information.

Primary information/data are, according to Kotler (2003), data freshly gathered for a specific purpose or for a specific research project. Secondary information/data are, according to Kotler (2003) and Nielsen (1995), data that were collected for another purpose and already exist somewhere. Examples of secondary information are statistics, investigations and information in magazines and articles. Kotler (2003) argues that "researchers usually start their investigation by examining secondary data to see whether the problem can be partly or wholly solved without collecting costly primary data. When the needed data do not exist or are dated, inaccurate, incomplete,

or unreliable, the researcher will have to collect primary data. The normal procedure is to interview some people individually or in groups, to get a sense of how people feel about the topic in question, and then develop a formal research instrument, debug it, and carry it into the field".

### 2.9.1 Personal interviews

Personal interviews are carried out by visiting the selected persons and asking them predestined questions. This method has according to Carlsson et al (2001). a very high reply frequency and a reply rate of 90-100 percent is not unusual. Kotler (2003) describes personal interviews as the most versatile method. Carlsson et al., Kotler (2003) and Nielsen (1995), all argue that the advantage of this method is that the interviewer has the ability to show examples and explain eventual obscurities around the questions. According to Nielsen (1995) the disadvantage of this method is that the interviewed might not be as honest as you wish. The reason is that he/she is timorous about hurting your feelings. Nielsen (1995) recommends this method in the beginning of a market research, due to the uncertainty of what to ask. The interviewer will after a while, be able to distinguish the important questions from the less important.

<b>Advantages</b>	<b>Disadvantages</b>
+ High reply frequency	- Bias by dishonest answers
+ Possibility to make uncertainties clear	- Ineffective when including sensitive questions
+ Great control of the interview-situation	- Requires a lot of time and money
+ Possibility to show pictures	- The respondent will not be as anonymous as with other interview methods

Figure 2.3. *The advantages and disadvantages of personal interviews*

### 2.9.2 Interviews by telephone

This method is very similar to personal interviews, but is carried out by telephone. The reply frequency might be vaguely lower due to the lack of personal presence, and therefore, Nielsen (1995) does recommend the interviewer to formulate the questions more understandably. The ability to explain uncertainties is as known smaller than personal interviews, but on the other hand this method does not require as much time. Compared to personal interviews this method might give more honest replies to sensitive questions. Information regarding salary, diseases and investments are examples of sensitive questions. Telephone interviewing is, according to Kotler (2003), the best method for gathering information quickly; the interviewer is also able to clarify questions if respondents do not understand them.

<b>Advantages</b>	<b>Disadvantages</b>
+ Relatively high reply frequency	- Not possible to include pictures
+ Possibility to make uncertainties clear	- Questions must be formulated more understandable
+ Don't require as much time and money as other interview methods	- Less questions might be included compared to other interview methods
+ Relatively good control of interview situation	

Figure 2.4. *The advantages and disadvantages of telephone interviews*

### 2.9.3 Questionnaires by mail

Sending questionnaires by mail to individuals you want to include in the research, is according to Nielsen (1995) an easy way to reach to a big geographical area. But it is not easy to carry out, and there are a lot of things to consider. To get as many replies as possible it is according to Carlsson tremendously important to make the questionnaire easy to read and to fill in. Carlsson also highlights the importance of including the following information into the introduction of the questionnaire:

- who you are
- where you got the receivers address
- instructions of how to fill the questionnaire
- last date of reply
- eventual gift or compensation

When using this method it is of great importance to make the questions as specified as possible and to inform how and where the receiver can contact you to ask questions regarding uncertainties. This method is according to Kotler (2003) the best way to reach people who would not give personal interviews or whose responses biased or distorted by interviewers. There are according to Carlsson et al (2001). some advantages and disadvantages to this method. Some of these are presented in figure 2.5.

<b>Advantages</b>	<b>Disadvantages</b>
+ Low cost/respondent	- Requires a lot of time
+ Possibility to include pictures	- Relatively low reply frequency
+ Effective when including sensitive questions	- No control of the interview-situation
+ More questions might be included compared to other interview methods	- No possibility to make uncertainties clear
+ The respondent has the ability to answer the question when he/she has time	- Requires a lot of time to collect
+ The respondent is anonymous	

Figure 2.5. *The advantages and disadvantages of questionnaires by mail.*



Carlsson et al (2001). presents a study made on 300 dissertations regarding market research in Karlstad, Gothenburg and Oslo. Figure 2.6 shows the average reply frequency of the different research methods.

Method	Reply frequency
Questionnaire by mail	56%
Interviews by phone	77%
Personal interviews	80%

Figure 2.6. *Variety in replay frequencies*

## 2.10 Questionnaire Design

A questionnaire consists, according to Kotler (2003), of a set of questions presented to respondents. Because of its flexibility, Kotler (2003) continues, the questionnaire is by far the most common instrument used to collect primary data. Questionnaires need to be developed, tested, and debugged before they are administrated on a large scale. There are according to Hague (2001), four purposes of questionnaires." Their first and primary role is to draw accurate information from respondents. Secondly, they provide structure to interviewees. In any survey of more than just a few people it is important that all respondents are asked the same questions in the same way. Without this structure it would be impossible to build an overall picture. The third purpose of questionnaires is to provide a standard form on which facts, comments and attitudes can be written down. A recorded interview is essential as, without it, points would be forgotten or distorted. Finally, questionnaires facilitate data processing. Answers are recorded in a common place on each questionnaire so that simple counts can be made of how many people said what. Without a questionnaire, a survey of 500 people would produce 500 jottings or free ranging interviews which would be impossible to process".

There are, according to Kotler (2003), different types of questions; these types of questions are presented on below.

### **A. Closed-end Questions**

<b>Name</b>	<b>Description</b>
Dichotomous:	A question with two possible answers.
Multiple choice:	A question with three or more answers.
Likert scale:	A scale with which the respondent shows the amount of agreement/disagreement.
Semantic differential:	A scale connecting two bipolar words. The respondent selects the point that represents his or her opinion.
Importance scale: attribute.	A scale that rates the importance from some attribute.
Rating scale:	A scale that rates some attribute from "poor" to "excellent".
Intention-to-buy scale:	A scale that rates some attribute the respondent's intention to buy.

### **B. Open-end Questions**

Completely unstructured:	A question that the respondent can answer in an almost unlimited number of ways.
Word association:	Words are presented, one at a time, and respondents mention the first word that comes on their mind.
Sentence completion:	An incomplete sentence is presented and the respondents complete the sentence.
Story completion:	An incomplete story and respondents are asked to complete it.
Picture:	A picture of two characters is presented, with one making a statement. Respondents are asked to identify with the other and fill in the empty balloon.

## Thematic

Apperception Test (TAT): A picture is presented and respondents are asked to make up a story about what they think is happening or what may happen in the picture

The form of the question asked can influence the response according to Kotler (2003). Hague (2001) distinguishes between open-end and closed-end questions. The open-end questions are according to Hague (2001), badly answered in postal surveys. Hague (2001) also lists things to beware when designing questionnaires. Below are Hague (2001)'s tips on what to do and what to not do when designing questionnaires presented:

- *Ensure that questions are without bias.* Questions should not be worded in such a way as to lead the respondent into the answer.
- *Make the question as simple as possible.* Questions should not only be short, they should also be simple. Those which include multiple ideas or two questions in one will confuse and be misunderstood.
- *Make the questions very specific.* Notwithstanding the importance of brevity and simplicity, there are occasions when it is to lengthen the question by adding memory cues. For example, it is good to be specific by time periods.
- *Avoid jargon and shorthand.* It cannot be assumed that respondents will understand words commonly used by researchers. Trade jargons, acronyms and initials should be avoided unless they are in everyday use.
- *Steer clear of sophisticated or uncommon words.* A questionnaire is not a place to score literary points so only use words in common speech.
- *Avoid ambiguous words.* Words as 'usually' and 'frequently' have no specific meaning and need qualifying.
- *Avoid questions with a negative in them.* Questions are more difficult to understand if they are asked in a negative sense. It is better to ask 'Do you ever....?', opposed to 'Do you never...?'.

- *Avoid hypothetical questions.* It is difficult to answer questions on imaginary situations. Answers may be given but they cannot necessarily be trusted.
- *Do not use words which could be misheard.* This is especially important when the interview is administrated over the telephone.
- *Desensitise questions by using response bands.* For questions which ask people their age or companies their turnover it is best to offer a range of response bands. This softens the question by indicating that a broad answer is acceptable. Since the data will almost certainly be grouped into bands at the analysis stage, it may as well be collected in this way.
- *Ensure that fixed responses do not overlap.* The categories that are used in fixed response questions should be sequential and not overlap otherwise some answers will be caught on the cusp.
- *Allow for 'others' in fixed response questions.* Pre-coded questions should always allow for a response other than those listed.

## 2.11 Selection

Due to the economical and time aspects, when a market research is carried out, it is of great importance to make a selection of the individuals involved in the research. When the segment is chosen a selection should be done. Holmström (1993) argues that an interview is representative if the selected interviewees have been chosen according to statistical selection methods so they together represent a "miniature picture" of the segment. Holmström (1993) also suggests three questions to consider when the segment is determined:

1. How does the segment look like?
2. How many has to be interviewed?
3. How do I select the interviewees?

When deciding how to select the interviewees there is according to Holmström (1993) two courses of action; **random selection** and **quota selection**.

### 2.11.1 Random selection

Holmström (1993) argues that by the random selection method, the probability to get selected to an interview should be equal for every individual within the segment. One way to achieve this is to draw names from a list, by using drawing of lots.

### 2.11.2 Quota selection

Instead of using the random selection method, the interviewer may get a quota to fulfil. The quota contains an amount of individuals within the selected segment. This method makes it easier to compare the results from the research to results from other researches.

## 2.12 Pricing

When introducing a new product or service on the market it is tremendously important to set the price at the correct level. Hague (2001) argues that the price of a new product is likely to have as much effect on its success as its design. If the product or service is too expensive it will not sell and if the price is too low, there will be a risk of not making enough profit, which could lead to making a loss. According to Nielsen (1995) and Andersson (1997) there are three methods to set the price on a product or service; **the price is set according to the customers' opinions (price sensitivity)**, **the price is related to the competitors'** or **the price is based on the expenses**. But often the price is set by an assortment of all three methods.

The following example is taken from Andersson (1997):

"How do businessmen set the price? Imagine yourself a rainy afternoon, standing outside your hotel with three suitcases in central Athens. You are on your way home from a vacation. You wave for a taxi, the driver stops, and you ask him about the price to the airport. After some discussions you agree about the price. But how did the driver set the price? Let's see how he could have reasoned.

- He looks at you, your suitcases and your relieved expression. You are a tourist! He makes a **price sensitivity analysis**.

- The driver take a quick look around, is there any other taxis available? What choices do you have? He makes an **analysis of the competitors**.
- How much does it cost to drive to the airport? He makes a **cost-analysis**."

### **Price sensitivity analysis (Price is set according to the customers' opinions)**

When this method is used it is important to get an idea of how much the customers are prepared to pay for the product. By making a research it is according to Nielsen (1995) relatively easy to find the level of the lowest accepted price and the highest accepted price. Thereafter the price can be set depending on the volumes the company aims to sell. If selling high volumes is the goal, the price should be set near the lowest accepted level, but if the goal is to sell fewer products and make more profit per product, the price should be set near the highest accepted level. This could depend on the ability to produce in a certain rate.

### **The price is related to the competitors'**

This method includes a research of the competitors' pricing and setting the price on a competitive level. Nielsen (1995) argues that this could result in keeping the company in trim and forcing it to decrease all the expenses to keep up with the competitors. But the disadvantage of this method is that the company will get forced to follow the competitors' pricing. If the competitors decrease the price the company has to decrease the price on its' product and try to make profit if possible.

### **Pricing Based on Expenses**

When using this method, all the expenses are calculated and then the profit is added. This method could make it difficult to set the fixed costs due to the fact that the amount of products is unknown. The advantage of using this method is according to Nielsen (1995) that it is easy to calculate the brake even point. The disadvantage is that the customers do not take any consideration to the company's expenses. If they consider the price too expensive they will not buy. Another disadvantage is that if the product sells, it is difficult to know if the price could have been set at a higher level. Andersson (1997) argues that a low price does not excuse low quality; the customers will get dissatisfied despite the low price.

## 2.13 SWOT-Analysis

SWOT is an analysis of Strengths, Weaknesses, Opportunities and Threats. This method is powerful when the objective is an overall picture of a business-idea, and it will help to focus on the strengths, minimise the weaknesses and take advantage of the opportunities. When this kind of analysis is carried out it is important to think through the four elements separately. Another important aspect is to look at the elements, both from your own point of view, and from your eventual customers' point of view. This method will help you to find out what you are doing well and what you should improve. The website, Mind Tools, presents some questions to consider and try to answer when a SWOT-analysis is carried out. These questions are presented in figure 2.7

<p><b><i>Strengths:</i></b></p> <ul style="list-style-type: none"> <li>• What advantages do you have?</li> <li>• What do you do well?</li> <li>• What relevant resources do you have access to?</li> <li>• What do other people see as your strengths?</li> </ul>	<p><b><i>Opportunities:</i></b></p> <ul style="list-style-type: none"> <li>• Where are the good opportunities facing you?</li> <li>• What are the interesting trends you are aware of?</li> </ul>
<p><b><i>Weaknesses:</i></b></p> <ul style="list-style-type: none"> <li>• What could you improve?</li> <li>• What do you do badly?</li> <li>• What should you avoid?</li> </ul> <p>Useful opportunities can come from such things as:</p> <ul style="list-style-type: none"> <li>• Changes in technology and markets on both a broad and narrow scale</li> <li>• Changes in government policy related to your field</li> <li>• Changes in social patterns, population profiles, lifestyle changes, etc.</li> </ul>	<p><b><i>Threats:</i></b></p> <ul style="list-style-type: none"> <li>• What obstacles do you face?</li> <li>• What is your competition doing?</li> <li>• Are the required specifications for your job, products or services changing?</li> <li>• Is changing technology threatening your position?</li> <li>• Do you have bad debt or cash-flow problems?</li> <li>• Could any of your weaknesses seriously threaten your business?</li> </ul>

Figure 2.7 Questions to consider when a SWOT-analysis is carried out. (Mind Tools 2006)

It is important to be realistic when a SWOT-analysis is carried out. If any difficulties appear when trying to answer the questions regarding opportunities, Mind Tools recommends looking at the strengths and asking whether these open up any opportunities. Mind Tools also recommends applying a SWOT-analysis on the competitors to find out where one should compete against them.

## 2.14 Product lifecycle

Most of the products have a limited lifecycle. The length of the lifecycle depends on the dynamic of the market, i.e. changes on the market forcing old products leave the market and new products enter. Andersson (1997) argues that the new products on the market often satisfy the needs in a similar way, with similar technology, but in a better way. Due to this the companies have to constantly improve their products in order to hold market shares, even if the products are selling well in the present situation. According to Andersson (1997) and Holmström (1993) it is also important for a company to know where in the lifecycle their product is, even if it is often hard to predict the length of each product's lifecycle. Some lifecycles could last for one year while other could last for decades. The product needs different kinds of support depending on where it is in the lifecycle.

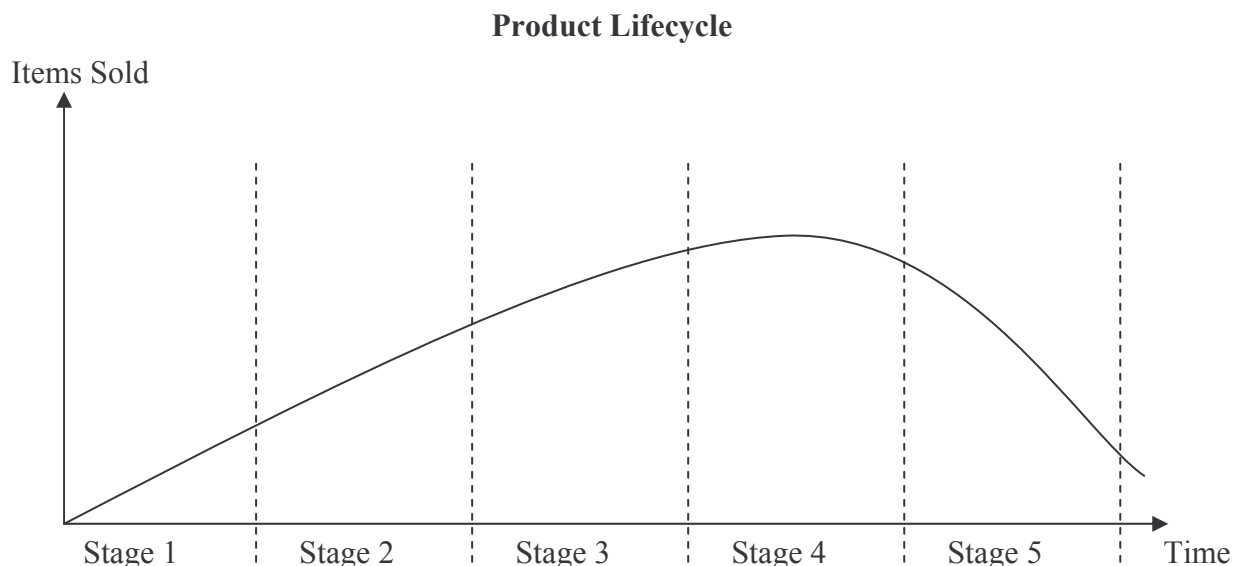


Figure 2.8 *The five stages of the product lifecycle.*



Stage 1. ***The introduction stage:*** At this stage the product is introduced to the market and it is relatively unknown to most customers. To make the market aware of the product, the company has to put a great deal of resources to inform about the product, and according to Andersson (1997), it is only the first enthusiasts who dare to buy the product. Due to the high manufacturing and launching costs, the price of the product is high at this stage.

Stage 2. ***The growth stage:*** The product is known to a greater amount of customers, and the amount of sold items is increasing. Andersson (1997) argues that at this stage, the demand is bigger than the supply, and the manufacturing may occur in greater series, and the profitability is therefore often good at this stage.

Stage 3. ***The maturing stage:*** At this stage, the sales are still increasing, but in a decreasing rate. It is notable that the competition between companies begins at this stage. Andersson (1997) recommends marketing the product by stressing the benefits of it and to attract new customers by decreasing the price. At this stage the profitability is still good.

Stage 4. ***The stagnation stage:*** The sales are not increasing at this stage and the product is sold to mainly old customers. Andersson (1997) argues that the competitors will respond to every marketing strategy to get market shares. The margins are at this stage very pressed and the profitability is therefore very low.

Stage 5. ***The reduction stage:*** At this stage the sales are decreasing and new products have taken over the market. According to Andersson (1997), the lifecycle could be extended by changing the appearance or shape of the product, but it is important to observe that the profitability is decreasing at this stage.

## Continuous product development

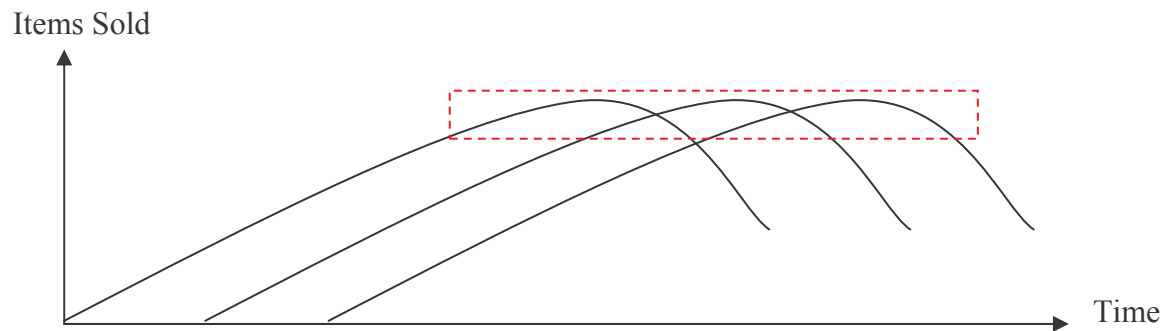


Figure 2.9. *By developing products continuously the company could avoid ending up in a profitability depression, but remain within the red-marked area.*

### 2.15 What kind of information does a company need?

The kind of questions, the type and the amount of information wanted may vary a lot depending on where in the product-lifecycle the product is. Andersson (1997) suggests following the product's development in its lifecycle to find out what type of questions and thereby which information that is important when making decisions in the different stages.

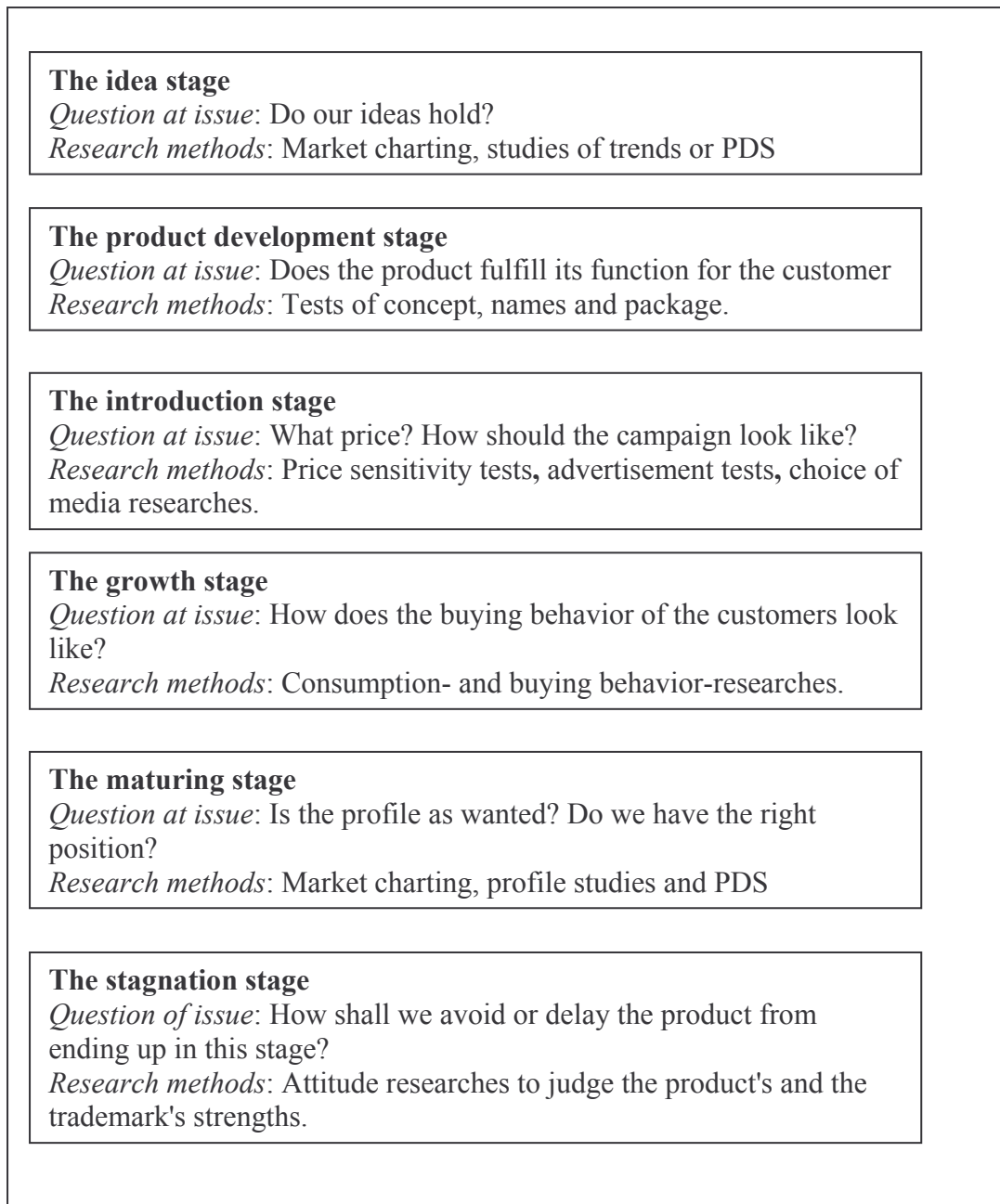


Figure 2.10. *Different questions at different stages presented by Andersson.*

## 2.16 PDS (problem-dedication-studies)

PDS is according to Andersson (1997) based on the fact that people often are better in finding errors than in finding constructive solutions. Together with some customers, selected in beforehand, the company tries to find hundreds of possible errors of the product and lists them. Then the company puts together a big group of individuals to

judge how essential the problems are for each of them. By doing so, the company gets an order of precedence-list, which is tremendously useful in the development work.

## 2.17 Boston Matrix

According to Holmström (1993), the Boston Matrix was developed by Boston Consulting Group in the early 1960. It may be considered as a further development of the thoughts behind the product lifecycle. It shows what market the company is acting within and the dependency of the competitors' actions. The products are classified considering the markets' annual sales-growth and market share'.

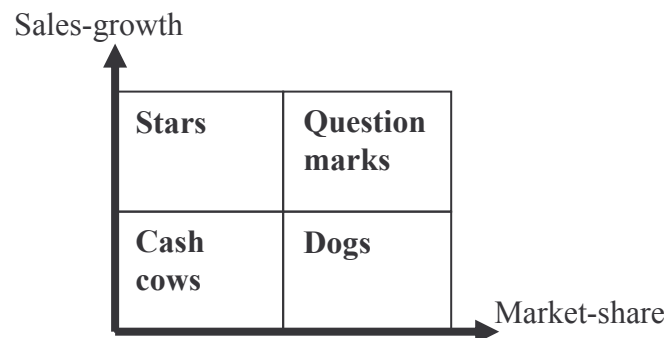


Figure 2.11. *The Boston Matrix, a further development of the product lifecycle presented by Holmström (1993)*

Holmström (1993) describes the four cells as:

**Stars** – high selling-growth and big market share. These products/services will be the company's most profitable; the company should invest sufficiently to keep the big market share.

**Question marks** – high selling-growth but a small market share. These products/services need additional support to increase the market share, before the selling-growth decreases. A company does not afford having several products of this kind.

*Cash cows* – low selling-growth but a big market share. These products/services are making the greatest benefits for the company. The company should invest sufficiently to maintain this cash flow but nothing more.

*Dogs* – low selling-growth and small market share. These products/services are ready to be rejected, any further investments are unnecessary.

## 2.18 Competition and the Competitors

According to Andersson (1997) the basic principle in marketing is to satisfy the customers better than your competitors. But it is as well important to know what the competitors' strategies are. If one is not aware the company could be put out of business in very short time. Andersson (1997) also compares the tennis player who delineates his opponent before an important game, to how companies delineate their competitors to neutralise their strengths and exploit their weaknesses. By knowing ones competitors the company has the ability to develop affective competition strategies. To delineate ones competitors a **competitor-analysis** may be carried through. The purpose of a competitor-analysis is according to Holmström (1993) to visualize the competitors on one's market, their products, their business-idea, their customer-process, pricing, reduction, time of delivery etc. Andersson (1997) suggests four questions to consider and try to answer when a competitor-analysis is carried through:

1. Where are the competitors?
2. What resources do the competitors have? (What competence, economy, and technology do they have?)
3. How are they apprehended by the customers?
4. What pattern of reaction do they have?

To find information about the competitors and to accomplish success in answering the questions mentioned above, Andersson (1997) suggests the following checklist:

- 
- Talk to costumers
  - Talk to suppliers
  - Read magazines
  - Go trough databases
  - Study situations wanted advertisements
  - Read official branch-analyses
  - Visit fairs, shows, seminars and branch- meetings
  - Buy and try the competitors' products
  - Make researches

Figure 2.12 Andersson's check list to how to find information about the competitors.

With this valuable information the competitor analysis will be carried through and presented in the following chapter.

### 3 The competitors

To be able to be competitive on a market and to satisfy the customers better than the competitors, it is of great importance to know one's competitors. Therefore, this chapter will visualise the three largest competitors, their products and prices. To be able to make the visualisation of the competitors as credible as possible, a competitor analysis will be carried through. According to Holmström (1993), the purpose of a competitor analysis is to visualise the **competitors' products, pricing, reduction, time of delivery**, etc. Andersson (1997) recommends considering the following four questions when carrying through a competitor analysis:

5. Where are the competitors?
6. What resources do the competitors have? (What competence, economy, and technology do they have?)
7. How are they apprehended by the customers?
8. What pattern of reaction do they have?

The three largest competitors found are; Friendly Robotics<sup>®</sup>, MowBot and Husqvarna, these will be analysed separately with the mentioned questions in consideration but the crucial factors will be these competitors' products and prices.

#### 3.1 Friendly Robotics<sup>®</sup>

Friendly Robotics<sup>®</sup> developed the first automatic lawnmower in 1995. It is a rather large company, selling four models of automatic lawnmowers; Robomow<sup>®</sup> - RL350, -RL550, -RL850 and -RL1000. These four models look very similar but the functionality varies from model to model. The RL350 is the most simple and the RL1000 is the most advanced. The price of these varies from 7000 Skr to 15 000 Skr.

The basic model, **RL350**, is aimed for smooth-surfaced lawns up to 400 m<sup>2</sup> and can cover an average area of up to 200 m<sup>2</sup> on a single charge at the work time of 1.5-2 hours. The RL350 has no theft guard and only an automatic mowing mode.

The second model is the **RL550**; this model is aimed for smooth-surfaced lawn up to 600 m<sup>2</sup> but has a coverage area of up to 300 m<sup>2</sup> on a single charge at a working time of up to 2-2.5 hours. The RL550 does not have a theft guard but it can be operated in two modes; automatic- and manual-mode.

The **RL850** is aimed for smooth-surfaced lawns, sloping areas and bumpy ground for lawns up to 1000 m<sup>2</sup>. This model can cover an average area of up to 500 m<sup>2</sup> at a working time of up to 2.5-3 hours. The RL850 can be operated in the same two modes as the RL550 but it has a user controlled theft protection and disabling system.

The **RL1000** is the flagship of Friendly Robotics<sup>®</sup> and it is aimed for the same type of surfaces as the RL850, but for lawns up to 2000 m<sup>2</sup>. The theft guard, average work time and coverage area is also similar to the RL850. The RL1000 can be operated manually, automatically and be set to an automatic departure mode according to a weekly program.

Each model of Friendly Robotics<sup>®</sup> is operated by 24 Volt 17Ah lead batteries, has 3x 150 W motors and a guaranteed noise level below 90dB. The batteries have a charging time of approximately 20 hours. All the models of Robomow<sup>®</sup> have a mulching system which makes it unnecessary to gather the grass after the Robomow<sup>®</sup> has mowed the lawn. Some of the safety features on the automatic lawnmowers are:

- Child guard – help prevent children from operating the mower.
- Lift sensors – stops rotating the blades immediately when the mower is lifted.
- Touch sensitive bumpers around the mower.

According to Friendly Robotics<sup>®</sup> the Robomow<sup>®</sup> navigates with a navigation system called Roboscan<sup>®</sup>, which combines information from a built-in compass, the wheels and demarcation wire. The demarcation wire is meant to prevent the lawnmower from cutting outside the defined lawn. The mower mows sporadically on the lawn, when it bumps into an obstacle it stops, changes direction and continues mowing.

Friendly Robotics<sup>®</sup> seems to be a technologically advanced company which has spent the last decade on developing automatic lawnmowers. The fact that they have sold



more than 40.000 pieces around the world of the latest model of Robomow<sup>®</sup> makes them a financially strong competitor. Friendly Robotics seems to have new software upgrades each year which gives the image of continuous improvements. The weakness of Friendly Robotics<sup>®</sup>, compared to this project, could be that it is not introduced on the Swedish market but on the internet. The nearest country selling Robomow<sup>®</sup> is Denmark, and when ordered on the internet, Friendly Robotics<sup>®</sup> claims it is delivered within a week. The information regarding the products of Friendly Robotics<sup>®</sup> is gained at Friendly Robotics' web site.



Figure 3.1. Two of Friendly Robotics<sup>®</sup> mowers Robomow<sup>®</sup> RL850 and RL1000.

## 3.2 Mower Magic

### Mowbot Automatic Lawnmowers

The second competitor to be analysed is Mower Magic with its five automatic lawnmowers. The five mowers are MowBot- Professional 04, Deluxe 04, Professional 05, Deluxe 05 and Evolution 05, which vary in appearance, functionality and price.

All the models of the MowBot have cutting discs with four blades, a cutting speed of 20 meter per minute, a cutting height of 20-70 mm and a cutting width of 30 cm. The maximum coverage area is 3000m<sup>2</sup> and the average coverage area per hour is 125m<sup>2</sup>. The working time is 3-4 hours for Evolution 05 and 2-3 hours for the other four models. The Evolution 05 does also have new silent motors and new automatic programming which means it can be programmed to mow the lawn at a specific day and time. There are small differences between the other four models which can be found in [appendix XX](#). The prices for the different models are according to Mower magic's web site:

**Professional 04:** 15 000 Skr, **Deluxe 04:** 16 500 Skr, **Professional 05:** 17 900 Skr,  
**Deluxe 05:** 19 900 Skr and **Evolution 05:** 27 500 Skr

Before the MowBot is set of to mow the lawn a border wire has to be laid to prevent the mower to mow outside the defined area. If the MowBot is lifted, the blades will stop rotating immediately and if it bumps in to anything it will change direction. Collecting the grass cuttings will not be necessary due to the mulching system of the MowBot which cut and re-cut the grass cuttings and blow it into the grass-roots. All the models are theft protected by a pin cod which makes the mower useless if not entered correctly.



MowBot Evolution 05



MowBot Deluxe 05

Figure 3.2 Pictures of MowBot Evolution 05 and Deluxe 05 found on mower magic's web site.

### 3.3 Husqvarna/Electrolux

The third and final competitor to be analysed is Husqvarna which is owned by the gigantic electrical devise manufacturer Electrolux. Husqvarna's automatic lawnmower is named Automower™ and is recommended for lawn up to 1800 m<sup>2</sup>. It was rather difficult to find relevant information about this model but when the author of this report asked a local dealer about it, he answered that there have been a lot of problems with it. One problem was that the mower several times had "escaped" from the garden it was mentioned to mow. The dealer said the problem was due to the fact that the receiver had lost contact with the border transmitter cable. He also said it was not yet

introduced on the Swedish market and he did not recommend it. The information gathered on the internet is presented below:

The Automower (Abbey garden sale 2006):

- is possible to program to mow the lawn on a specific day and time
- operates below 63 dB
- is theft protected by a pin code and an alarm
- changes direction when it bumps into any obstacle
- can be programmed to work in team with other Automowers
- mulches the grass cuttings and puts it into the grassroots
- has a weigh of 8,6 kg
- costs approximately 20 500 Skr



Figure 3.3. *Automower from Husqvarna.*  
<http://www.automower.co.uk/node179.asp>

### **3.4 Conclusion of the Competitor Analysis**

The main conclusion from this analysis is that there is only one automatic mower within the accepted price level of this project, the RL350. This mower is rather simple and does not have the features one may expect from a mower at a price of 7000 Skr. When the information was gathered and analysed some ideas and functionalities to add to the final product of this project was generated. These two products are presented in the section of product description.

## 4 Methodology

This chapter will highlight the procedures and methods used when determining a business idea, researching the market, analysing the results and setting the price.

### 4.1 The Business Idea

In Sweden, house-owners have to mow their lawns approximately two times a week during the summer period. Most of the house-owners value their spare time very high during the summer and are therefore not very fond of spending time mowing the lawn. The automatic lawnmowers available in the Swedish market lawnmowers are very expensive; therefore, the idea is to offer the house-owners an automatic lawnmower for a price lower than the competitors and to a higher value. The price of the product will be set a little bit higher than the price of a regular lawnmower. This will be accomplished by developing or importing a simple automatic lawnmower with several designs that attract the different segments within the house-owners segment.

### 4.2 Evaluation stage

The evaluating process will highlight the possible advantages and disadvantages of the business idea. The first step is to make clear if it is a good idea to start the project and the second step is to find out if there is a need to proceed with the project.

The four questions recommended by Ian Murdoch seem to be very helpful when deciding if a project should be started or not. Therefore, they will be considered and answered in this stage of the study.

1. **Does this project match my strategy?** My strategy is to either develop or import an automatic lawn mower and sell it on the Swedish market to a lower price than the competitors'. Considering the high prices on the existing automatic lawnmowers, I think this project does match my strategy.
2. **Can I do this project?** Considering my BSc in Mechatronics I should be able to develop an automatic lawnmower if necessary. And the MSc in

International Project Management will hopefully be a great help when researching the market's needs and the products on the Swedish market.

3. **Can I make money from the project?** This will be answered in the financial part which will be carried out when the market research is accomplished. I have chosen to follow this order due to the importance of the potential costumers' opinion regarding price.
4. **Do I have the contacts to support me?** When I was studying in Newcastle I got many contacts from several countries, among these China. I have been in touch with some of these contacts and discussed this idea. Therefore I do think I have the contacts required.

Since the answers to all the questions are yes, this project will be started and an evaluation to find out if proceeding is recommended to be carried out. The checklist presented by McKinsey (2001) and the five points presented by Carlsson are very similar and both are aimed to give the same answer to the question: should this project proceed?

McKinsey's (2001) checklist and three questions are interesting and show a well organized way to evaluate the business idea. Carlsson's five points also show a well organised way to evaluate the business idea but are also all-embracing. Therefore these five points will be considered and answered in this part of the study.

1. *Estimate your market.* What is the size of the market within the geographical area you are planning to market your product in the first year?

The prospective geographical area to market the automatic lawnmower in, are the three biggest municipalities in Sweden. These municipalities are: Gothenburg, Stockholm and Malmö. According to the Swedish central agency of statistics, Statistiska Central Byrån, there are 121 700 small houses in these municipalities together, 52 700 in Gothenburg, 43 500 in Stockholm and 25 500 in Malmö. If we assume that 30% of all the houses within these municipalities have lawns greater than 300 m<sup>2</sup> there still be 40 000 houses left only in these three municipalities. Due to the results of the market research, showing that 54% of the interviewees are interested in buying an automatic lawnmower, there will be approximately 21 500 interested customers. As a safety measure, the financial will calculations only include half of

these interested customers during a period of four years. During the first year this project is estimated to sell 1650 units, which is approximately 8% of the 21 500 interested customers. Considering the product life cycle, this number will increase during the following two years and finally decrease during the fourth year. The amount of sold units each year will be: year one 1650, year two 2500, year three 3300 and year four 2500. During these four years 10 000 units will hopefully be sold.

## *2. Estimate your competitors*

The competitors are estimated and analysed in the competitor analysis part of this study.

## *3. Who is your customer?*

The typical customer of the automatic lawnmower is the young and middle aged couples having a lawn greater than 300 m<sup>2</sup>. They probably have some children, making their spare time more valuable.

## *4 How does the customer purchase?*

- a. Who in the household takes the purchase decisions?*
- b. How often is the purchase made?*
- c. How much is bought at every occasion?*

Due to the type of product this project is aiming to market these questions are relatively easy to answer. If the automatic lawnmower is compared to a regular lawnmower considering the purchase process, the purchase decision is probably an agreed decision within the household. Considering the recurrence and amount of purchase made, the estimate would be as many and as often as for a regular lawnmower, one machine each five or six years.

## **4.3 Market Research**

To find out if the automatic lawnmower is attractive on the Swedish market, a market research is considered. Before it is carried through, the value of the information

available was compared to the value of the information to be available after the research. Due to the lack of relevant information regarding the need of an automatic lawnmower on the Swedish market, a research seems to be necessary. To carry through a market research, the type of the research has to be set, the segment has to be determined and the questionnaire has to be designed.

#### **4.4 Type of Research**

When the literature was reviewed, the author of this report chose to carry out the research by using questionnaires by mail. The main reason to this choice is the simplicity to reach the interviewees. Instead of obtaining the address to each interviewee, the author found the houses within the wanted segment. Another reason to this choice is the low cost. Chalmers University contributed with 300 regular envelopes, 300 reply envelopes and the freight charge of these. Compared to other research methods the reply frequency would probably be higher but if it is in accordance with the literature should be sufficient.

#### **4.5 The Segment**

In this particular project, the segment of the research is every house-owner who has a rather large lawn (greater than 300 m<sup>2</sup>). Kotler (2003) argues that "large samples give more reliable results than small samples. However, it is not necessary to sample the entire target population or even a substantial portion to achieve reliable results. Samples less than 1 percent of a population can often provide good reliability, with a credible sampling procedure". Considering Kotler's (2003) thoughts, the recommendations from Chalmers University and due to the lack of time and financial resources, the number of interviewees was set to 300. A questionnaire and a reply envelope were put into the chosen house owners' mailboxes.

#### **4.6 Selection**

Scientific researchers prefer, according to Holmström (1993), the random selection method but market researchers usually use the quota selection method. In this market research I will use a compromise of both the quota selection method and the random

selection method. I will randomly pick the interviewees in neighbourhoods with rather large lawns. The quota to fill will be as mentioned before 300.

#### **4.7 Questionnaire Design**

The questionnaire was designed to include the two main issues; the need and accepted price level. And it was designed with the theoretical aspects and tips in mind. The questionnaire includes five questions in Swedish, however, a translated version is attached in the appendixes. To find out if the need of an automatic lawnmower was related to the size of the lawn, the first question had to be of the completely unstructured, open-end type. This question simply asked the interviewee to fill in the estimated time spent on mowing the lawn each week.

The purpose of the second question was to make the interviewee relate to, and consider the eventual inconvenience of mowing the lawn in the traditional way. This question was of the dichotomous closed-end type.

To find out the size of the potential market the third question was also of the dichotomous closed-end type. This question asked the interviewee to consider if he/she could let an automatic lawnmower to mow his/her lawn.

To find out if the potential costumers valued the environmental benefits of the product, the fourth question asked the interviewee to rate the importance of an environmental friendly lawnmower. This question was of the importance-scale, closed-end type.

The fifth and final question was designed to find out how much the potential costumers were prepared to pay for the eventual product. To make it possible for the respondent to fill in an amount as a complement to the given multiple choices, this question had to be a variation of the multiple choice closed-end type and the completely unstructured open-end type.



When the questionnaire was designed, it was tested on family members and friends to find out if there were any uncertainties. As all of the test pilots found the questionnaire easy to follow and understand it was used to make the market research.

#### 4.8 Analysis of the Research Information

When the last date of reply, which was set to the 17<sup>th</sup> of February, was pasted the reply frequency was 52 %. According to the theory, this reply frequency is almost as expected. The information obtained from the research was analysed and the results are presented below.

The average time spend on mowing the lawn for all the interviewees is 1.82 hours a week.

As shown in diagram 4.1, 54% of the respondents said they could imagine an automatic lawnmower mowing their lawn. The average time spent on mowing the lawn for this group is 1.87 hours a week. The 46% who said they could not imagine an automatic lawnmower mowing their lawn had an average of 1.57 hours a week on mowing the lawn see diagram 4.2. This means the respondents who said yes spend 18 minutes more a week on mowing their lawn.

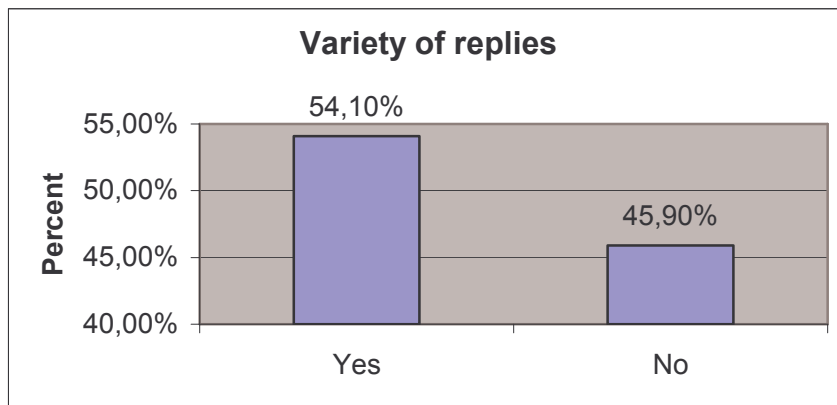


Diagram 4.1 A diagram showing the variety of replies.

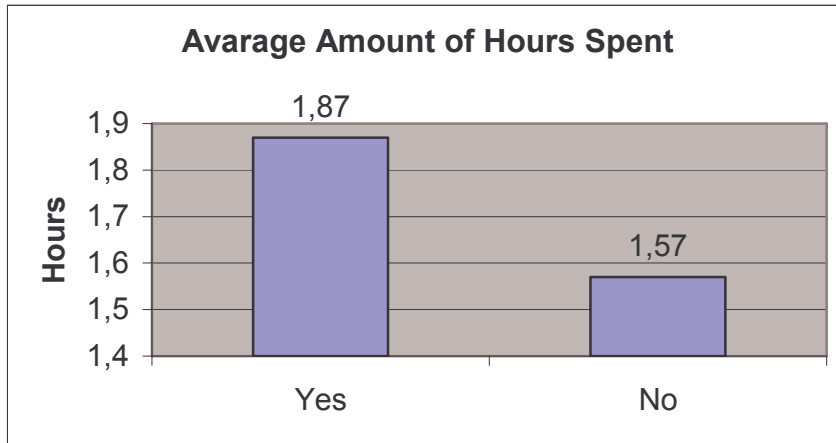


Diagram 4.2 A diagram showing the difference in time spent on mowing the lawn

These facts show that people spending more time on mowing their lawn, are in larger extent prepared to buy an automatic lawnmower. But does the size of the lawn effect the price-level as well? To answer this question, an analysis of the accepted price-levels is necessary.

#### 4.9 Accepted Price-Levels

As diagram 4.3 shows, there is a demand for the product at three different levels of price; less than 4000 Skr, 4-6000 Skr and 6-8000 Skr. 29% of all the interested costumers answered they could think of purchasing an automatic lawnmower if the cost of it does not exceed 4000 Skr. The average amount of hours spent on mowing the lawn for this group is 1.6 hour a week.

The second price-level, 4-6000 Swedish kronor (Skr), includes the largest amount of potential buyers. In fact, 38% of all the interested customers answered they could think of purchasing the product at this level of price, see diagram 4.3. As shown in diagram 4.4 this segment spends in average 1.63 hours a week on mowing the lawn.

The third price-level, 6-8000 Skr, includes 25% (see diagram 4.3) of all the interested customers. An important aspect to consider is the average time, spent on mowing the

lawn for this segment of 2.46 hours see diagram 4.4. This is approximately 51% or 50 minutes more a week than the previous two groups.

The research also shows a small demand for the product at a price-level of 8-10 000 Skr (4.5%) and an even smaller demand at 10-12 000 Skr (3.5%). The average time spent on mowing the lawn for these two segments are 1.5 hours, 2.16 hours respectively, see diagram 4.4.

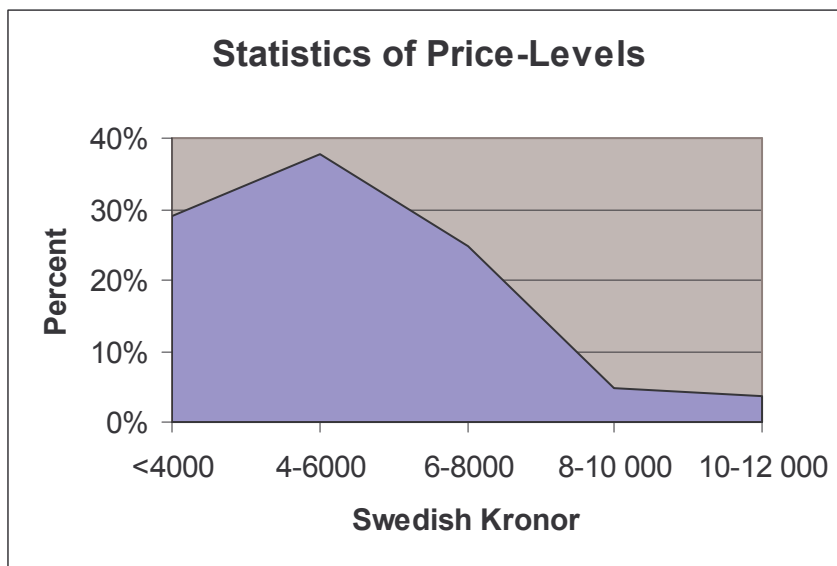


Diagram 4.3 *Statistics of price-levels for the potential customers*

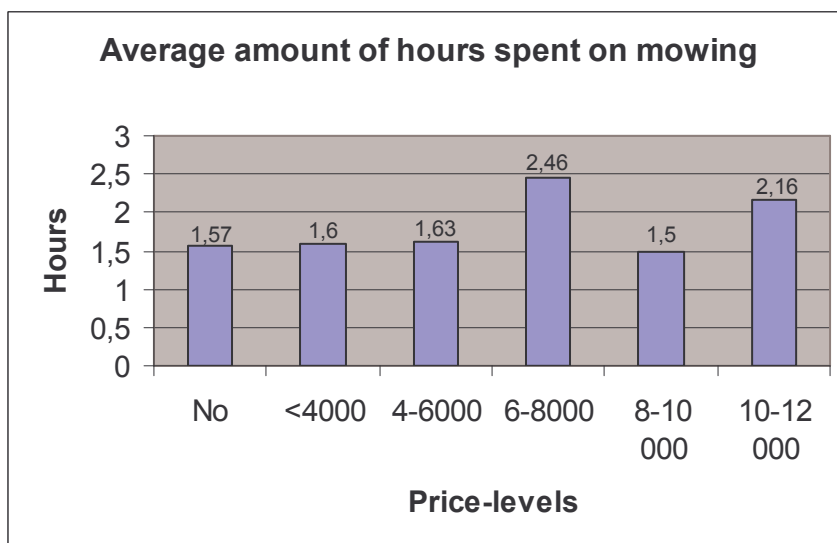


Diagram 4.4 *The average amount of hours spent on mowing the lawn for the different segments.*

## 4.10 Importance of environmental aspects

As mentioned before, the fourth question asked the respondents to grade the importance of an environmental friendly automatic lawnmower from one to five. The result of this question is presented in diagram 4.5. The author of this report found it relatively surprising that 41% of the potential customers graded the environmental importance to a five. The average grade was calculated to 3.93 and the median to 4.

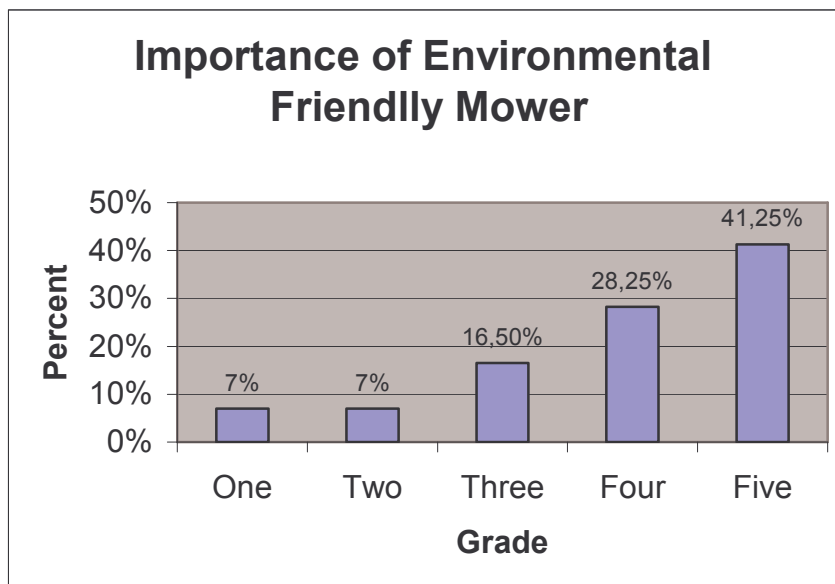


Diagram 4.5 *Grade of environmental importance*

## 4.11 Results of Analysis

When the information from the research was processed and analysed, three main issues are considered to be of great importance; the accepted price-levels, the environmental importance and the need on the market.

### 4.11.1 Accepted Price-Levels

As a result of this research it is found that there are three general segments to consider. These three segments are; the groups prepared to purchase the product to a cost of less than 4000 Skr, 4-6000 Skr and 6-8000 Skr. These segments are considerable due to the percentage of need presented in diagram XX. Due to the small size of the demand within the two segments, 8-10 000 Skr and 10-12 000 Skr, a total of seven replies, no further efforts will be put into researching any sale-possibilities

within these segments. If the results from these two groups are ignored, it is easy to see a relation between the time spent on mowing and the accepted price-level. Even if the difference in time is relatively small is the accepted price-level increasing. For instance, is the time spent on mowing the lawn for the segment prepared to purchase the product to a cost of 6-8000 Skr in average 50 minutes more a week than the segment prepared to pay 4-6000 Skr?

#### **4.11.2 The Environmental Importance**

Could an environmental friendly product lead to a greater market or higher value? When the results of the environmental importance are studied it is easy to see a great demand for an environmental product on the Swedish market. The fact that the automatic lawn mower is intended to be operated by a battery makes it easy to fulfill the demand. To increase the value of a possible luxurious model of the automatic lawnmower, it could be operated by solar cells. The fact is that the regular lawnmowers usually are operated by petrol which makes the battery driven automatic lawnmowers of this project more environmentally friendly. There are also regular lawnmowers driven by electricity, but these are in general inconvenient to use on middle- sized to large lawns due to the inaccessible cable.

#### **4.11.3 The Need on the Market**

The fact that 54% said they were prepared to let the lawn be mowed automatically by an automatic lawnmower makes it worthy to investigate the possibility to make profit out of this project. To find out if there is a potential opportunity to make profit by selling automatic lawnmowers, a financial calculation is necessary. The financial calculation will consider the total amount of potential customers on the Swedish market and the two price-levels; 4-6000 Skr and 6-8000Skr. The price level, less than 4000 Skr, will not be included in the calculations due to the small expected revenue possibility.

## **4.12 SWOT-Analysis**

To give a broad understanding of the current market situation which this project operates in, will the Strengths, Opportunities, Weaknesses and Threats of this project be analysed.

### **4.12.1 Strengths**

The major strength of this project is the idea of selling the same product as other manufacturers, but to a much lower price. As mentioned before, the other manufacturers sell the automatic lawnmowers at an expensive and a lot of people do not afford to buy one. The market research presented in this report, shows a great need on the Swedish market for the product but not at the prices of the competitors. It is also important to point out the connections in China as strength due to the very low prices when the products are produced there. Another strength is the low cost of importing this particular product from China. According to the Swedish customs department, Tullverket, there is no taxes on importing such a machine.

### **4.12.2 Weaknesses**

Both the Swedish and Chinese lawnmower market is relatively unknown to the author of this report. This is a major weakness of this project due to this the author will have to rely on other people especially when dealing with Chinese deliverers. Another weakness is the economical aspect; it is very costly to start a company from scratch, especially a company dependent on importing products from overseas markets. Due to the high investment cost the author will have to find some kind of financier to be able to carry through this project.

### **4.12.3 Opportunities**

Due to the short summer period in Sweden, the Swedish people in general value their spare time highly. Mowing the law is not what every Swedish man or woman is very fond of doing on a sunny afternoon. And as the market research shows there is a need for a machine mowing their lawn automatically. The trend in these days is to let the machines take care of the things we not are too fond of doing. Therefore is the idea of

an automatic lawnmower right in time. The problem with the existing automatic lawnmowers is the price. If the author of this report finds the product on the overseas market, to a price which makes it possible to sell within, according to the market research, the accepted price levels, a great opportunity to make high profit will be facing this project.

#### **4.12.4 Threats**

There are three major threats to this project;

1. The existing competitors decrease their prices to try to capture market shares.
2. New competitors enter the lawnmower market and copy the idea of this project to capture market shares.
3. The European governments change the existing custom regulations, making it expensive to import lawnmowers from outside the EU.

## **5 The products**

### **5.1 Value analysis**

To make the automatic lawnmower interesting to the customers some additional functionalities may be added. It is, of course possible to find functionalities on the competitors' products which may add value to this project's products, but also functionalities not existing on prior automatic lawnmowers could be found. One interesting function could be a manual, not-mowing mode which means the lawnmower could be operated manually without mowing the lawn. This mode could be of great help when transporting the mower short distances.

### **5.2 Product description**

To satisfy the need on the market and to offer a better solution than the competitors, this project will include two models of an automatic lawnmower. The first model is intended to reach the segment which is interested in the product at a cost of 4-6000

Skr and the second model is intended to reach the segment which is interested in the product at a cost of 6-8000 Skr.

The first model has to be able to mow at least  $125\text{m}^2$  per hour and be able to operate at least in 3 hours i.e.  $375\text{ m}^2$  on a single charge. It must operate below 63 dB, be able to be operated manually by a remote control and has an alarm and pin code protection against theft. The manual operation must have two modes: one to mow the lawn manually and one to move the mower from one place to another. The grass cuttings must be mulched and put deep into the grass roots. The safety features of this model are supposed to be:

- the blades must stop rotating immediately if the mower is lifted or turned over
- the mower must know, by a wire, where to mow and where not to mow
- bumpers which make the mower change direction when it bumps into an obstacle is a must

The second model must have the same functionalities and safety features but must be able to mow at least  $500\text{m}^2$  on a single charge meaning that it must be able to operate at least in 4 hours. This model must also be able to be programmed to mow the lawn on a specific time at a specific day. To add value to this model it must be able to recognise when its battery is becoming empty and at this stage seek up the charger and recharge its battery.

## **6 Business Plan**

To find out if the idea of an automatic lawnmower could make a turnover and be of economical interest a business plan has been carried out. All the calculations have been made in a program called Alingsaser which has been provided by the supervisor of this study, Sven-Åke Eriksson. This chapter will describe the vital figures used when carrying through the business plan and all the calculations are found in Appendixes. The general intention of the business plan is to visualise the possibilities to make this project end up in economical success with estimated direct material



costs. These costs will then be searched for on the overseas market. The costs may, of course, be adjusted if needed.

The automatic lawnmower is, according to the Boston matrix, probably a question mark the first year. The second year will hopefully be a star and transfer to a cash cow. Finally it will probably become a dog at the end of the fourth year and should therefore be rejected. These factors have been considered when estimating the market.

To be able to meet the accepted price levels obtained from the market research and to be able to make a profit the prices of the two products must not exceed 1500 respectively 1900 Skr. In addition there is the cost of freight, stock and administration. There are also the additional costs of investments, labour, interest on bank loans etc. The retailer will get a commission of 1000 Skr respectively 1500 Skr on each sold unit. All the figures are presented in the appendixes

## **6.1 Results from Business Plan**

As can be seen in appendixes this project will end up in great success if the volumes, costs and prices are in accordance with the estimated. The business plan shows a contribution of between 50 and 54%, a total operating income of 13 444 000 Skr and a total net income of 10 108 000 Skr in four years. This is a good result and if this project is carried through, it will be of great importance to find new products to market before the end of year three. Due to the high profit possibilities, one alternative is to enter the remaining Nordic markets: Norway, Denmark and Finland during the second year.

## 7. Conclusion

This dissertation has given me the possibility to procure particulars about three research methods; literature, internet and market research. It has also given me the knowledge of how to estimate a specific market and to carry out (financial calculations) a business plan.

The outcome of the market research shows a need and interest for an automatic lawnmower. As a matter of fact, 54% of the interviewees said they could imagine letting their lawn be mowed automatically. 38% said they would pay 4-6 000 Skr for such a machine and 25% said 6-8 000 Skr.

The calculations made on the estimated volumes, 10 000 units, and material costs, 1500 Skr respective 1900 Skr, shows a possibility to make a net income of 10 108 000 Skr to a contribution between 50 and 54% during the next four years. It is of great importance to highlight the fact that the estimated volumes are based on the amount of interested customers within the municipalities of Gothenburg, Stockholm and Malmö. The estimated material costs are meant to be a guideline when searching for the products on the overseas market or when calculating the costs of developing the automatic lawnmowers.

The result of the competitor analysis showed a large gap in price, between the accepted price levels and the price of the competitors' products. This is interpreted as a possibility to succeed in marketing a less expensive automatic lawnmower on the Swedish market. But before starting this project there are some recommendations to consider.

## **7.1 Recommendation**

To make sure the results of the research are in accordance with the reality, it could be important to make a larger market research. This research could be carried out in Stockholm and Malmö and include 1000 interviewees. To ensure the success of this project, the second recommendation is, to make sure the product is available on the overseas market at the estimated price or less. This could be done by having some of the contacts abroad look for the product and thereafter visit the current country.

## Appendixes

### The questions asked when the market research was carried through:

1. How many hours do you approximately spend on mowing your lawn?

.....hour(s).

2. Do you find it hard or unmotivated to mow your lawn?

Yes

No

3. Could you think of letting an automatic lawnmower mow your lawn?

Yes

No

4. How important is it according to you that such machine is environmentally friendly, for example driven by a battery? Tick one of the following boxes, where 1 means low importance and 5 means great importance.

1

2

3

4

5

5. If you answered yes on question three: how much would you be prepared to pay for such a machine?

< 4000 kr

4-6 000 kr

6-8 000 kr

8-10 000 kr

10-12 000kr

> 12 000kr

Other amount.....Skr.

Hej!

Jag är en student på Chalmers som just nu utför mitt examensarbete inom mastersprogrammet IPM (International Project Management). Detta examensarbete går ut på att undersöka marknaden för en automatisk gräsklippare och jag skulle uppskatta om Ni fyller i denna blankett. Blanketten består av 5 stycken frågor och den beräknade tiden för att fylla i den är mindre än 5 minuter. Vid eventuella frågor om utbildningen nås programansvarig Bert Luvö på 031-772 26 57.

1. Ungefär hur många timmar i veckan ägnar Ni Er åt att klippa gräsmattan under högsäsongen?

.....timmar/vecka

2. Upplever Ni att det är påfrestande eller inte motiverande att klippa gräsmattan under högsäsongen?

Ja

Nej

3. Skulle Ni kunna tänka Er att låta en automatisk gräsklippare sköta jobbet åt Er?

Ja

Nej

4. Av hur stor betydelse är det för Er att en sådan maskin är miljövänlig, t.ex. drivs av ett uppladdningsbart batteri? Kryssa för en av följande rutor, där 1 motsvarar liten betydelse och 5 motsvarar stor betydelse.

1      2      3      4      5

5. Om Ni svarat ja på fråga tre: vilket pris skulle ni vara beredda att betala för en automatisk gräsklippare som gör att ni slipper detta arbete? Välj en av följande.

< 4000 kr      4-6 000 kr      6-8 000 kr      8-10 000 kr      10-12 000kr      > 12 000kr

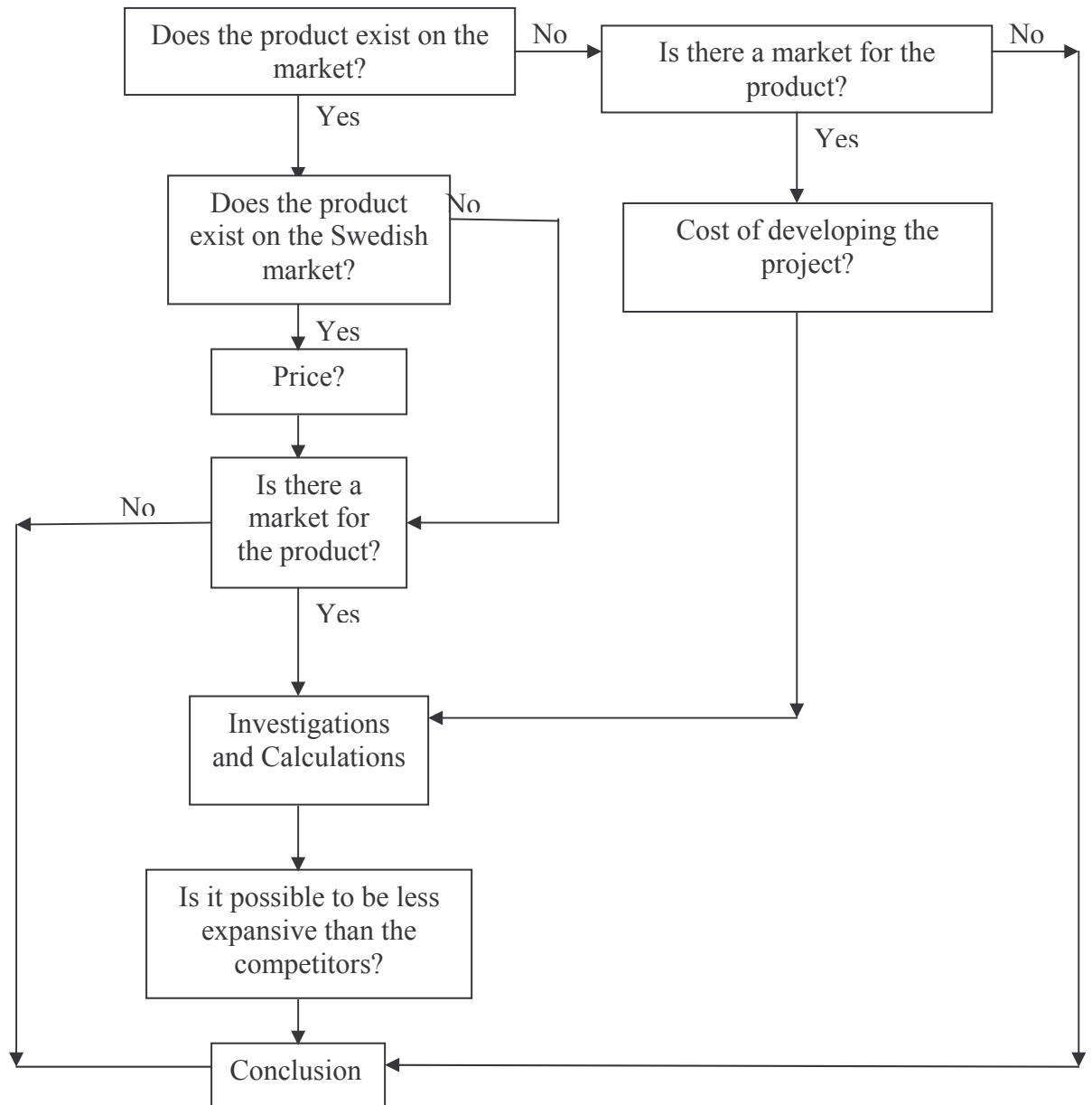
Annat belopp: .....kr.

Var vänlig skicka denna enkät i bifogat kuvert senast den 17 februari 2006. Din medverkan är av mycket stor betydelse för mig som student. Vid eventuella frågor till mig nås jag enklast på min e-mailadress: [mk1fefa@chl.chalmers.se](mailto:mk1fefa@chl.chalmers.se)

TACK PÅ FÖRHAND!



## Scheme of Flow



The Alingsaser 8 Ltd

KEY RATIOS

Key ratios

PLAN FOR THE YEARS:

KSEK	2 007	2 008	2 009	2 010	2 011	2 012	SUM
Volume, Budget	1 000	1 500	2 000	1 500	-	-	6 000
Volume, Deluxe	650	1 000	1 300	1 000	-	-	3 950
Volume, -	-	-	-	-	-	-	-
Volume, -	-	-	-	-	-	-	-
Volume, -	-	-	-	-	-	-	-
Volume, -	-	-	-	-	-	-	-
<b>Total revenues</b>	6 985	10 600	13 970	10 600	-	-	<b>42 155</b>
<b>Total direct mtrl and personnel costs</b>	2776	4213	5553	4213	0	0	<b>16 754</b>
% of revenues	39,7%	39,7%	39,7%	39,7%	#####	#####	<b>39,7%</b>
<b>Total other direct costs</b>	574	783	975	831	164	0	<b>3 327</b>
% of revenues	8,2%	7,4%	7,0%	7,8%	#####	#####	<b>7,9%</b>
<b>Contribution 2</b>	3635	5604	7443	5557	-164	0	<b>22 075</b>
<b>Contribution 2-%</b>	52,0%	52,9%	53,3%	52,4%	#####	#####	<b>52,4%</b>
<b>Product development costs</b>	60	60	60	60	0	0	<b>240</b>
% of revenues	0,9%	0,6%	0,4%	0,6%	#####	#####	<b>0,6%</b>
<b>Contribution 3</b>	3575	5544	7383	5497	-164	0	<b>21 835</b>
<b>Contribution 3-%</b>	51,2%	52,3%	52,8%	51,9%	#####	#####	<b>51,8%</b>
<b>Overhead costs</b>	2087	2091	2098	2096	18	0	<b>8 391</b>
% of revenues	29,9%	19,7%	15,0%	19,8%	#####	#####	<b>19,9%</b>
<b>Operating income</b>	1487	3453	5285	3400	-182	0	<b>13 444</b>
% of revenues	21,3%	32,6%	37,8%	32,1%	#####	#####	<b>31,9%</b>
<b>Income before taxes</b>	1474	3483	5385	3564	1	131	<b>14 039</b>
% of revenues	21,1%	32,9%	38,5%	33,6%	#####	#####	<b>33,3%</b>
<b>Corporate tax</b>	413	975	1508	998	0	37	<b>3 931</b>
% of revenues	5,9%	9,2%	10,8%	9,4%	#####	#####	<b>9,3%</b>
<b>Net income</b>	1061	2508	3877	2566	1	95	<b>10 108</b>
% of revenues	15,2%	23,7%	27,8%	24,2%	#####	#####	<b>24,0%</b>
<b>Cash flow from operations</b>	1188	2677	4081	2789	183	95	<b>11 012</b>
% of revenues	17,0%	25,3%	29,2%	26,3%	#####	#####	<b>26,1%</b>
<b>Total personnel costs</b>	825	825	828	825	0	0	<b>3 303</b>
% of revenues	11,8%	7,8%	5,9%	7,8%	#####	#####	<b>7,8%</b>
<b>Fixed assets</b>	390	347	278	182	-	-	
<b>Liquidity</b>	1 492	3 643	6 488	7 451	6 133	5 228	
<b>Borrowings</b>	400	300	200	-	-	-	
<b>Untaxed reserves</b>	-	-	-	-	-	-	
<b>Total equity</b>	1 481	1 481	3 689	6 566	6 133	5 228	
<b>Adjusted equity</b>	1 481	1 481	3 689	6 566	6 133	5 228	
<b>Balance turnover</b>	2 090	2 090	4 189	6 978	7 882	6 333	6 200
<b>Capital employed</b>	390	390	347	278	182	-	-
<b>Working capital</b>	-	-	-	-	-	-	-

## Key ratios, Income and Return

Direct costs, (%)	48,0%	47,1%	46,7%	47,6%	#####	#####	
Operating margin, (%)	21,3%	32,6%	37,8%	32,1%	#####	#####	
Profit margin, (%)	15,2%	23,7%	27,8%	24,2%	#####	#####	
Return on equity, ROE (%)	71,6%	97,0%	75,6%	36,1%	0,0%	1,7%	
Return on total capital, RT (%)	73,3%	113,3%	98,2%	48,8%	0,0%	2,9%	
Return on capital employed, (%)	381,7%	938,1%	1692,4%	1478,4%	-200,0%	#####	
Dividends	0	300	1000	1500	1500	1000	<b>5 300</b>
Dividends accumulated	0	300	1300	2800	4300	5300	
Net present value factor, 8%	0,9259	0,8573	0,7938	0,735	0,6806	0,6302	
Net present value factor, 10%	0,9091	0,8264	0,7513	0,683	0,6209	0,5645	
Net present value factor, 15%	0,8696	0,7561	0,6575	0,5718	0,4972	0,4323	
Net present value factor, 20%	0,8333	0,6944	0,5787	0,4823	0,4019	0,3349	
Net present value, Dividends 8%	0	257	794	1103	1021	630	<b>3 805</b>
Net present value, Dividends 10%	0	248	751	1025	931	565	<b>3 520</b>
Net present value, Dividends 15%	0	227	658	858	746	432	<b>2 920</b>
Net present value, Dividends 20%	0	208	579	723	603	335	<b>2 448</b>

## Key ratios, liquidity

Current liquidity, ratio	8,50	18,50	33,50	38,50	31,00	31,00
Liquidity+current/revenues (%)	24,3%	34,9%	48,0%	72,6%	#####	#####

## Key ratios, Balance

Solidity (%)	70,9%	88,1%	94,1%	96,8%	96,8%	84,3%
Net loans/Balance turnover (%)	-52,2%	-79,8%	-90,1%	-94,5%	-96,8%	-84,3%
Debt/Equity ratio	0,41	0,10	0,06	0,03	0,01	0,19
Working capital, change	0	0	0	0	0	0

## Key ratios, Efficiency

Customer recievables/revenues (%)	0,0%	0,0%	0,0%	0,0%	#####	#####
Inventories/revenues (%)	0,0%	0,0%	0,0%	0,0%	#####	#####
Trade payables/revenues (%)	0,0%	0,0%	0,0%	0,0%	#####	#####
Working capoitall/revenues (%)	0,0%	0,0%	0,0%	0,0%	#####	#####
Revenues(KSEK)/employed	4 989	7 571	9 979	7 571	#####	#####
Capital turnover speed	3,34	2,53	2,00	1,34	0,00	0,00



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