Evaluation of a business idea
Analysis of the business chance of success regarding market demand and profitability

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Abstract

This study is a test of tools for analyzing a business idea's chance of success. The case company idea under evaluation is a project management consulting company operating in the field of construction and renovation. The choice of field is due to the author’s background in construction engineering and prior work experience in the construction industry. The goal of the study is to investigate if there is a market demand for the company's services and if the company will be profitable. The study has an inductive reasoning using empiric research data. The methods used in the study were introduced to the author in the master program Project Management and Operational Development.

Main part of the study will focus on selecting the analysis tools for assembling a general method for evaluation of business ideas. This part is later referred to as finding a “systematic approach” for business evaluation. The study will lead to the final conclusion of the validity of the analysis tools and the case company’s success chances.

The investigation is performed by using Quality function deployment (QFD) for the service/market analysis and Monte Carlo (MC) simulations for making probability estimations. The findings will be interpreted and transformed into strategic development of the business idea and hence enhance the chance of success.

The qualitative data for making the market analysis is gathered through client interviews and questionnaires. The input data to the simulations is based in the company's one year budget, containing statistical distributions and estimations. The purpose is to investigate the customer demand for the provided services and the probability of economic success after the first year of business.

The circumstances for each company are different and the aim for this study is to thoroughly evaluate the success factors for this specific company on the current market.

Keywords: Market analysis, Quality Function Deployment (QFD), Monte Carlo (MC), @Risk.
Foreword

Writing this thesis has been an interesting and educative experience. I have gained new knowledge and I have managed to perform the study within the planned time frame.

I wish to thank my supervisor Mr Roland Langhé for sharing his knowledge and supporting my work. I would also like to thank my former colleague Mr Oscar Andersson for stimulating discussions and his motivating energy.

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Introduction

In this study a test of tools for an analysing of a business idea's chance of success will be performed. The investigation can be described as a case study of a business idea. The case company idea under evaluation is a project management consulting company operating in the field of construction and renovation. The focus of the study is to test the tools for investigating if there is a market demand for the company's services and if the company will be profitable.

The entire study uses inductive reasoning based on empiric premises. The study will lead to the final conclusion of the validity of the analysis tools and if the case company's will be successful or not chances.

Main part of the study will focus on selecting the analysis tools finding for assembling a general an appropriate general method for evaluation of business ideas. This part is later referred to as finding a "systematic approach" for business evaluation.
Background

When starting a new business one is bound to want to try to predict the outcome of the project. Why do some companies fail and others succeed? A lot of information about the requirements for successfully starting a business can be found with supporting organizations, such as state-funded verksam.se and the financial partner ALMI. There are also various essays on the area, most of them with financial focus and others investigating the market for one specific industry (Swedish University Essays, 2010). Neither of these two fields can be applied on the selected problem area.

The available information (ALMI, 2012) and the amount of essays on the subject (Uppsatse.se, 2012) all point towards the fact that the answers to the question why some fail and others succeed is an extremely complex interaction between market, timing, financial resources, innovation, management and even luck. There is no quick fix for starting a successful business, but there are some key factors that will guide the company in the right direction.

“A number of studies have tried to identify key elements of both successful and failed products and projects. Many of them pinpoint failures in product definition and management as major causes. Pinto and Kharbanda (1996) identified major causes of project failures, including ignoring the project environment and stakeholders, not understanding project trade-offs, and blaming the most visible when problems occur. Up-front homework really does pay off, not only in terms of high profitabilities and success rates, but also saves time.” (Hunt&Killen, 2004)

According to the quote above and other sources such as ALMI, the chance of success increases with performing certain preparations. For ALMI to even consider investing in a new business they demand a well-developed business plan containing organisation structure, core activities, strategy, budget, market etc. Unfortunately not even the most prepared business plan will tell if the company will succeed or not, neither does it tell how profitable it will be. If we could get answers to these questions, a simple yes or no would not do much good. To have any kind of relevancy the answers would need to be probability predictions and/or numerical answers in intervals. To get the right answers you need to ask the right questions. In this case the key questions to ask are “what is the probability that the business will be financially profitable the first year” and “what factors affect the outcome”.

With this reasoning the primary motivation of the study is defined. The study will be an evaluation of a new business chance of success. The circumstances for each company are different and the idea in this study is to thoroughly evaluate the success factors for this specific company on the current market.

The business of choice is a consulting company named Andersson&Franck Management (AFM). The target group for the solution is the founders and the investors of the chosen company. The expected result is a solid decision base for the target group’s resolution on starting the company or not. The results should as clearly
as possible describe what the chance of success is, if any strategic changes can increase the probability of success and how much the profit is likely to be.

The idea and aim of the study is also to, through the AFM case study, define a simple and systematic approach for evaluating new businesses. Preferably this approach could be used for evaluating other businesses than AFM. If this succeeds a second target group of venture capital investors and entrepreneurs can be identified as stakeholders for the part of the result which is the systematic approach.

Goals
Primary goal

The primary goal of the study is finding ways to provide the stakeholders with information enabling a proper assessment of the risk/chance connected to starting up the new business, AFM. The analysis will address the circumstances surrounding the chance of success and profitability of the business and provide the founders of AFM with a solid decision base to determine whether or not to invest in the company.

In each step of the process the following sub-goals can be identified:

- The goal for the market analysis is to reliably and objectively evaluate and define the customer requirements, the company characteristics and the relationship between them using Quality Function Deployment (QFD).
- The goal for the profitability estimations is to accurately estimate the company's year budget, which will be the input to the Monte Carlo simulation. The aim is to achieve a truthful picture including all factors effecting the outcome and base the estimations on real data.
- The goal for the strategic evaluation part is to further develop and improve AFM's strategic tools; vision, mission and strategy. The improvements will be based on the result of the earlier steps and enhance the business chance of success. The primary benefit is that the useful strategic tools will be well defined, if the decision is to start the company. If this study leads to suggesting any major strategic changes the benefit is to enable change in the company's planning phase instead of operating phase.

Tools to reach the Secondary goals

Developing a systematic approach for evaluating similar business idea's chances of success is the way to reach the secondary goal of the study. The aim focus of the study will be on fulfilling the primary goal and in the process of doing so the systematic approach will develop and analysis tools evaluated hence the secondary goal achieved. Sub-goals within the systematic approach are defined as follows:

- The sub-goal for this section regarding market analysis will be to learn the different applications of Quality Function Deployment (QFD). More
specificity the aim is to master the QFD matrix to the extent that it can be used in other similar situations to evaluate market, customer and competition.

- The sub-goal of the profitability estimations is to expand the author’s knowledge about Monte Carlo simulations and the practical benefits of the method when performing financial calculations.

- For the strategic improvement part, the goal is to learn how to evaluate and alter the vision, mission and strategy based on the result of the of QFD and MC- simulations. The implementation of the strategic improvements is aimed to increase the chance of success for the business in the early idea stage. This is before the business is established and less susceptible to change.

**Scope**

The scope of the study is to perform a market analysis and profitability estimations to evaluate the chance of success for a case company. The selected case company is the new business idea of AFM. In the process the company’s strategic vision, mission and strategy will be further developed and improved according to the result of the analysis.

The secondary primary result of executing the study will be the development of a systematic approach for evaluating business ideas' chances of success. This part of the result will be an approach on how to combine the chosen tools in order to make an analysis of the success chance. The tools used in the analysis are already existing tools, methods and in this study they are merely combined to suit the scope of the study. The general purpose of the investigation is to study the chosen tools, methods and their suitability for application on this business case and similar cases.

The study has multiple delimitations and the primary constraints are the limited time and resources. The study is carried out by one person and corresponds to 10 weeks of study time.

The systematic approach will only be applicable on small companies with a graspable organisation and a limited budget.

The study will not focus on marketing issues or consider important, but complex factors, like fluctuations in the world economy.

The scarce availability of data for the simulations and the market analysis limits the study considerably.

The company budget has been limited by a simplified use of financial requirements, e.g. interest, depreciation, tax and VAT.
Methodology

The methodology chosen for this study is an inductive reasoning and the study can be defined as a case study of the business idea of AFM. The theory and choice of methods is based on literature review and further studies on methods known to the author.

The study will empirically research the factors surrounding the business case study. The data and the premises for this particular case will then be analysed and further developed with the selected tools. The conclusion will be a hypothesis stating the induced outcome of the company.

The inductive reasoning allows for generalizations based on the specific and individual data and premises for the case study. The “systematic approach” for evaluating business ideas will also be analyses and presented as a statement if the method full fills its purpose or not. The conclusions of the study are of an inductive character and are therefore the suggested truth, but not an ensured truth.

The most problematic part of the methodology is not the methods and tools themselves. The selected methods and tools listed below are well acknowledged and supported by vast studies. In this specific case the main problem is getting enough and correct input data. The author has no access to statistical data over time for companies succeeding and failing. That type of statistical data would have enabled a more probabilistic approach, which would have increased the study’s credibility.

To be able to perform the investigation with the chosen tools, there is a need for more data and premises than the interviews will provide. The “relationships” in the QFD matrix is an example of data needed to be defined to get a result from the matrix. The relationship lacking data was in this case estimated provided by the author. To increase the validity of the assumed relationships, the relationship data was reviewed and elaborated by a second source, the business partner. The relationships are hence assumptions based on the partners’ comprehension and experience of the problem area. These types of assumed data will have a large effect on the result of the investigation and is also deeply connected to the credibility of the study. Therefore an effort to strengthen the credibility objectivity and validity has been made through a co-joined review of all premises that are not supported by facts. These premises will be motivated and explained. The ambition of the study is to have a holistic view on the investigation area, embracing the many interlinked factors affecting a company and its market.

Methods

The methodological procedure for performing the investigations is defined as a systematic three step approach combing existing tools. The tools used in each step of the process are:

1. Quality function deployment
Quality function deployment (QFD) is the method of choice for service/market analysis of AFM. It is a visual tool in matrix form for customer focused quality planning containing guidelines and tools for strategic improvement. The QDF matrix has several functions and can be expanded and cascaded, depending on the level of investigations. For the study of AFM the basic matrix (A1), with defined steps for evaluating customer requirements and needs, is deemed sufficient. The choice of QFD for evaluating AFM is supported by the fact that the whole business idea arose from former customers requesting the company's services. QFD is known as a powerful tool for including market demand and customer needs in the development of the products, or in this case services, and hence securing the business success. That the method can effectively be applied on designing and improving services, not only products, is described by Bergman & Klefsjö(2001).

2. Monte Carlo simulation

Monte Carlo (MC) simulation is the chosen method for making probability estimations. The input data to the simulations will consist of the company's one year budget. The budget is a cost plan based on known financial data. It will contain statistical distributions to make spread the risk of miscalculations and hence make it more reliable than a standard cost plan. The purpose is to investigate the probability of economic success after the first year of business. The expected result is a probability distribution that will serve as input to drawing the final conclusions about the company's chance of success. The program @Risk is the tool that will be used.

3. Strategic development

In order to draw conclusions from the prior steps and transform them into strategic development for AFM, different systems for strategic improvement where reviewed. To mention a few, QFD (Mizuno, Akao, 1994), the Balanced Scorecard (Niven, 2002), SWOT analysis (Albert Humphrey) and Improving Performance (Rummler, Brache, 1995). When finally deciding on a method for strategic planning and development the conceptualization method was selected, deriving from J. Scott Armstrong (1982). This method focuses on elaborating a company’s key concepts; vision, mission, values and strategies. In this case study the method was combined with the author's specific knowledge about the construction industry and the market.
Fact gathering

Getting enough and correct input data to perform QFD and MC simulations is the most difficult step in the process of performing the study. The author has no access to statistical data over time for companies succeeding and failing. Due to limitations in time and resources the amount of data from the performed investigations is very limited.

1. Quality function deployment

For the qualitative part of the research, evaluating the market and the customer needs through QFD, the data is gathered by the author through interviews. The customer requirements defined for the QFD matrix are a compilation of the independent answers from the three clients. These three clients have defined their requirements for choosing AFM as their project management consultants. These requirements are individual and extremely dependent on the type of building project the customer is performing. In this study there isn't room to elaborate this perspective more, but it is still important to consider that the defined requirements aren't “facts”. It is unclear if the interview results are representative for all possible AFM customers, but that had to be assumed to make able for a continuation of the study. The fact that only three clients participated in the interviews for customer requirements also affects the validity of the result (Appendix D).

Where data could not be found through interviews, e.g. relationship between customer needs and AFM services, the author and the AFM partner defined the needed values (See figure 3). The relationships are hence assumed values based on the author and the partners’ comprehension and experience of the problem area.

Research tools used to collect data for QFD:

- Three independent client interviews for defining customer needs.
- Client questionnaires for numerical ranking of importance for the needs.
- Interview with the founders of AFM to define the provided services.
- Definition of relationships by author and AFM partner.
- Internet research to provide a conception of competitors and their services.

2. Monte Carlo simulation

To perform the study there is also a need for quantitative data for the profitability estimations. First software for cost planning was studied and the framework for the budget was setup including the cost categories. There is scarce existing available numerical data to be used in the budget without first being interpreted and adjusted by the author. The numerical data that can be based on proven facts is, e.g. percentage for social-security contribution (verksamt.se), VAT and tax (skatteverket.se). Some data is considered generally “known” costs, e.g. laptops, printers. This type of data was researched on the internet to make sure the costs were up to date with the 2011 price levels (Appendix E).
For an estimate of AFM’s probable allocation time the author had access to a survey on 125-167 consultants working in the construction industry during 9 months. The consultants are architects, design managers and structural engineers and the survey gives their allocation time from October 2010 to June 2011 (Appendix E).

Research tools used to collect data for MC:

- Independent studies of cost planning software for setting up the budget. (Cost planning software, 2011)
- Internet research for up to date cost levels for generally know costs as laptops, printers, office rent etc.
- Literature review for numerical values of financial requirements i.e. tax and VAT.
- Allocation time estimation based on survey of allocation time for consultants during 9 months.

3. Strategic development

In this part of the study the primary input data is the result from the prior steps, the QFD matrix and the MC simulations. This section is mainly about interpretation of the result and transforming it into strategic development for the company. The conceptualization method (Armstrong, 1982) is the selected methodology. Strategic development is no exact science, so the author’s knowledge and prior experience will definitely taint the reasoning. All reasoning and conclusions are motivated and traceable in the Strategic development section.

Research tools used to collect data for strategic development:

- Primary input data is the result from QFD matrix and MC simulation.
- Review of AFM business plan in Swedish.
- Literature review for definition of methods for strategic improvement.
- Literature review for selection of strategic tools useful for the company, i.e. vision, mission and strategy.

All the above mentioned data can be found in:

Appendix A - AFM Swedish business plan. ALMI template
Appendix B - Quality function deployment template for AFM
Appendix C - Budget worksheet for @Risk simulations
Appendix D - Client data and histograms
Appendix E - Result from consultant survey
Present situation

The present situation is that I, the author, have worked in construction management since 2005. My academic background is in construction engineering and now complemented by a one year master in Project Management and Operational Development. I have realised recently that there is a gap in the available services in construction project management due to the growing market of clients, consisting of private individuals and tenant-owners associations. My perception of the need for certain services has led me and my colleague to develop a business idea. Before starting up the business and making investments I wish to examine if the business will carry itself and if my idea of the present situation is reliable. Here follows an explanatory text of the original business idea. The business plan in Swedish is found in Appendix A.

The Business idea

The idea is to start a consulting business operation in the field of managing construction projects. The clients would consist of persons and tenant-owner's association, not primarily companies. I and my partner have construction project management backgrounds and we believe there is a need for our services. In the start-up phase the company will consist of two people with the right experience and good networks within the field. We will be able to market our services through prior customers, architects and entrepreneurs we have worked with and through family and friends.

We want to provide good and trustworthy services to the defined clientele and leave the big projects and companies to the larger consulting firms. An example of our typical customer is one of all the young families following the trend of redoing or redecorating their homes. Or a newly formed tenant-owner's association without knowledge on what building maintenance needs to be done on their house.

We want to communicate well and correctly with our clients, contrary to some of the firms operating on the market today (http://www.tv4.se/fuskbyggarna). We want to state in a visible and representative way what we believe in, how we work, what the clients can expect from us.

We believe there is a need for this due to today's focus on shoddy builders, for example TV series “Fuskbyggarna” (http://www.tv4.se/fuskbyggarna), and all the existing unsatisfied customers on the market.

My colleague and co-founder has previously had several smaller companies and had the position of CEO. He has a lot of experience on how to run a company which will be very useful for our business.
Theoretical reflection of the problem area

The theoretical reflection of the problem area is in elements mentioned in prior chapters. To clarify, there is no existing overall theory or research applicable on this particular scope of study. All parts of the problem area have been researched before, for example there are several market analyses for other markets and industries (Uppsatser.se, 2012). There are also investigations within the construction industry, but the results are not directly applicable on this study (Uppsatser.se, 2012).

The theory for the problem area is a combination of existing theories. Primarily the theory of a free market economy is a prerequisite for the study. “Free market capitalism consists of a free-price system where supply and demand are allowed to reach their point of equilibrium without intervention by the government” (Wikipedia, 2012).

An elaboration of that leads to the theory of the study, that there is a need (Demand) for the services which AFM provides (Supply) and that there are stakeholder in the shape of customers, employees and founders. According to Murray N. Rothbard there is an opportunity to be considered “The free market gives the largest possible scope to entrepreneurs, who risk capital to allocate resources so as to satisfy the future desires of the mass of consumers as efficiently as possible.”

The scope is to investigate if the Supply-Demand theory for AFM is correct, elaborate on the subject and strategically improve the business idea. While doing so a systematic approach for evaluating similar new business ideas will be defined.

The choice of strategically improving the business is supported by vast research material and there are multiple methods for organisational strategic planning (Balanced Scorecard (Niven, 2002), SWOT analysis (Albert Humphrey), Improving Performance (Rummler, Brache, 1995), Strategic Planning (Armstrong, 1982)). These methods all state the same theory in different ways; that improving and aligning an organisation will lead to better use of the company’s resources and hence minimize waste and maximize profit.

The author’s conception is that the study is dependent on a number of variables and factors which are interlinked in complex relationships. To mention a few there is the current building market in Stockholm, the world economy, the marketing skills to get customers and the financial situation of the company founders. The relationships between the factors are all considered important, but to make the realisation of the investigation possible some variables had to be excluded. Factors like fluctuation in the world economy cannot be considered. Neither has any focus been pointed to
marketing issues, i.e. getting the customers, even though these variables clearly effect the outcome of the investigation.
There is also the uncertain factor of estimations and biases of the author that need to be remembered. This factor should definitely be highlighted since the most problematic part of the study is getting enough and correct input data and therefore some assumptions and estimations are made. Estimations are hardly ever correct and the author is bound to have preconceived notions, even if they are of a very general nature.
Description of the systematic approach

Step 1 - Market analysis

Background of Quality function deployment

The QFD matrix, sometimes called the House of Quality, is a diagram in Quality function deployment (QFD), which is based on the idea of capturing the voice of the customer. QFD was first seen in Japan in the 1960s and is an example of customer-focused quality planning (QFD Institute, 2011). The A1 section of the QFD matrix, containing the basic functions, will be used for the evaluation.

QFD is described by its creator Dr. Yoji Akao as a “method to transform user demands into design quality, to deploy the functions forming quality, and to deploy methods for achieving the design quality into subsystems and component parts, and ultimately to specific elements of the manufacturing process.” (Mizuno, Akao, 1994)

QFD was originally developed for improving the design of products but as stated by Bergman & Klefsjö (2001), the methods and tools for offensive quality development are basically the same, irrespective of the product being a product, a service or a combination of both. In the case study the QFD matrix will be applied on the services provided by AFM.

Step 2 - Profitability estimations

Background of Monte Carlo simulations

Monte Carlo is a method that uses random sampling to determine the properties of a phenomenon. The MC method uses stochastic elements in order to perform simulations or calculations. The purpose is to foresee the future outcome in different situations based on the knowledge of the current conditions and the input data and estimations for that simulation.

One of the first and still the most famous implementation of Monte Carlo simulation is the Manhattan project. The project developed the first atomic bombs in the US carried out during World War 2.

Monte Carlo simulation is an appreciated and widely used methodology within studies of risk and probability analysis in a variety of fields, such as management, physical
science, engineering, gaming, marketing and finance. It serves as a decision tool when it comes to taking or not taking risks in uncertain areas.

The Computing in Science and Engineering (a joint publication of the American Institute of Physics and the IEEE Computer Society) acknowledged the MC method’s Metropolis algorithm as one of the “10 algorithms with the greatest influence on the development and practice of science and engineering on the 20th century.” (Fishman, 2006). Monte Carlo simulation methodology can be done by calculations on written paper using tables of random numbers, just like it was done during the Manhattan project. In this study the software @Risk, which is an add-in to Excel will be used.

In the case study the Monte Carlo simulation will be based on the company's first year budget. The purpose is to investigate the probability of economic success after the first year of business.

**Step 3 - Strategic development**

**Improve mission, vision and strategy**

In order to improve the chances of success based on step 1 and step 2 the results need to be evaluated and transferred into the company’s strategy. This step is called the strategic development and refers to elaborating and interlinked the conclusions from the QFD market analysis and the profitability estimations. The result should be coordinated with the company’s mission, vision and strategy.

The strategic plans should be further developed and improved as an effect of the customer focus in Quality Function Deployment. Customer focus is a major driving force when striving to excel as a company. According to Hunt & Killen (2005) *QFD principles insist that business strategy must be firmly based on an effective customer strategy. Experts in strategic planning agree that “current and future customer requirements are the driving force behind the creation of strategic direction for best-in-class organisations”* (US Federal Benchmarking Consortium, 1997).

There are several acknowledged tools and methods suitable for strategic development and improving performance. In the book “Strategic Development: Methods and Models” by Dyson & O’Brien (1998) the following methods and tools are mentioned; “balanced scorecard, visioning, the TOWS matrix, cognitive mapping, scenario development, systems dynamics modelling, transformation methods such as reengineering, strategic investment appraisal and real option theory”.

For the strategic development for the case study of AFM some parts of several tools will be used, but no method will be completely applied. Most reasoning derives from the conceptualization method for strategic planning (J. Scott Armstrong, 1982). This method focuses on elaborating a company’s key concepts; vision, mission, values and strategies. Focus is put on dealing with and improving the three key questions within strategic planning "What do we do, for whom do we do it and how do we excel?" (Armstrong, 1986).
A complete analysis with for example the Balanced Scorecard would need the company to be up and running and the researcher have access to data from the four perspectives; “Financial, Customer, Internal Business Processes and Learning and Growth” (Niven, 2002).
Case study analysis

Step 1 - Market analysis

Analysis of AFM with QFD matrix

As described in the introduction to the QFD and the QFD matrix, there is a possibility to put in values in several sections of the matrix. In the QFD template used for the evaluation of AFM the researcher has chosen to exclude some sections that are not significant or applicable on evaluating a service company. The excluded sections don't affect the final result of the relative weight, which is the result of interest in this specific evaluation. The excluded sections are targets values, difficulty and the correlation matrix.

The competition section is not excluded, but only one generalized ranking is made. The researcher has made estimations on the larger consulting company’s abilities to meet the customer requirements. The purpose is simply to visualise any abnormalities in the competition situation and no focus will be put on this aspect in the final evaluation.

The sections in focus are:

- Customer requirements
- Importance rankings of the customer requirements
- Provided services by AFM
- Relationship matrix between requirements and services/characteristics
- Relative weight of the values from importance ranking and relationship

Customer requirements

The analysis of AFM using the QFD matrix started with the researcher defining customer requirements. The defined requirements are based on interviews with three clients and the industry specific the experience of author.

The requirements for choosing AFM as project management consultants for the client’s specific building project are divided into sub groups and described below.

Core requirements

- Good communication – Client demand for the ability to communicate well regarding prerequisites, changes, responsibilities etc.
- Timeliness – Client demand for the consultant keeping agreed deadlines.
- Guarantees – Client demand for receiving guarantees for the services the consultant will provide.
- Availability – Client demand for being able to finding and make initial contact with the company. Also the company ability to make time for the project when the client wishes.
- Professionalism – Client demand for a professional first encounter.
Economy
- Cost of service – The cost of service is defined to 730-850sek. This is in the lower/medium range compared to other companies. The client will rank the importance of variation in the defined interval.
- Economize project – Demand for the consultant to be able to economize the clients project trough interaction in all project stages.
- Energy efficient design measures – Demand for the consultant performing energy efficient design measures in planning phase.
- Correct budget/time planning – Client demand for the consultant correctly estimating the cost and time of the entrepreneurs performing the actual construction and installation work.

Knowledge
- Tax reductions – Client demand that the consultant have knowledge in the current tax reductions and upcoming changes that might affect the client.
- Regulations - Client demand that the consultant have knowledge in the current building regulations and upcoming changes that might affect the client.
- Current building market - Client demand that the consultant is up to date with the current building market and e.g. seasonal fluctuations linked to the availability of entrepreneurs.
- Installations – Client demand on the project manager also having knowledge on installations of electricity, plumbing and ventilation.
- Green building – Client demand on the consultant’s knowledge about different materials and their effect on the environment.

Personal
- Trust – Client demand on the consultant’s ability to seem trustworthy.
- Right “feel” - Client demand on the consultant giving the right “feel” when encountering the first times.
- Trends&news awareness – Client demand on the consultant’s awareness and ability to make recommendations according to the latest trends and news.

Ranking of importance
After the requirements being defined three independent clients have ranked the importance of every requirement on a scale from 1-5 (1=low 5=high). The effect of the three rankings on the relative weight of the services is shown in the diagram below. The diagram is shown to demonstrate that a specific client’s importance ranking has a minor effect on the overall result. It is obvious that the bars more or less follow the same pattern. The conclusion is that the relationships matrix affects the outcome more than the importance ranking. Due to this fact it is acceptable to use the result for the median importance ranking in the final analysis.
The diagram shows the relative weight for the 14 provided services of AFM. Each bar is the result of the importance ranking of a client and the result from the median of the three values.

**Definition of characteristics and services provided by AFM**

In cooperation with the co-founder of AFM the following characteristics and abilities have been defined in the company:

1. **Leadership** – Well defined leadership split between the two employees. The roles and responsibilities are defined for each person.

2. **Teamwork** – The employees have worked together previously. They work together well and complement each other’s knowledge areas, abilities and disadvantages.

3. **HR-resources (staff)** – The competence and personalities of the staff are the major advantages of the company.

4. **Financial resources** – The financial resources are scarce. A simplified liquidity budget supports the assumption that the start-up investment of 100000sek will be enough.

5. **Marketing skills** – The company has some, but limited marketing skills. Existing marketing skills are connected to one of the employee’s background in product design and marketing.

6. **Systems for work structure & administration** – From previous experiences the employees have acquired knowledge about how to set up the work structure and the administrative tasks.

7. **Project management skills** – The company possess very good project management skills due to the staff’s prior experience and education.
8. Time & cost management skills - The company has good time and cost management skills through the experience and education of the staff. Managing time and cost in construction projects is very hard to master because often it depends on a set of independent factors (clients making changes, choice of entrepreneurs etc.). Communicating this conception to the client is very important.

9. Risk management skills – Risk management in AFM projects mainly refers to risks concerning work environment. The company has knowledge about regulations for work environment in construction projects and can guarantee that these will be followed.

10. Core experience & references – The employees of AFM has a lot of experience of managing construction projects. Excellent references from prior projects.

11. Certificates – The company have certified employees to take Quality responsibility (KA) demanded by the municipality building committee. The employees of the company are also certified to take Work environment responsibility in planning and execution phase (BAS-P & BAS-U).

12. Flexible organisation – With only two employees and initially no office the company is considered very flexible concerning work demand and location.

13. Innovative organisation – The employees have good problem solving skills and have in the past been able to come up with innovative solutions.

14. Strategy – The company has a well-defined strategy. The mission and vision of the company are defined and agreed upon.

**Relationship matrix for requirements and characteristics**

Defining the relationship matrix is the following step in performing the QFD evaluation. The relationship matrix is also the section which has the most effect on the outcome i.e. the relative weight. In this case the existing relationships have been identified by the author and the partner of AFM. The relationships between requirements and characteristics are graded strong, moderate and weak. In a made-up scenario every characteristic could probably be related to any requirement, but this possibility is not considered in the analysis. Instead a more generalized approach is used, where the obvious relationships for a general customer project is defined. The process for defining the relationship was as follows. For every characteristic the author and the co-founder of AFM freely defined their belief of the relationships, based on their experience and their conception of the scenario. The two views where then discussed, motivated and finally joined in to one relationship matrix, which is the one used in the evaluation. Here follows an example of the reasoning surrounding AFM having sufficient “Financial resources”.

“Financial resources” is defined as interrelated with;

Guarantees – Weak. Providing the client with guarantees cost a small amount of money, hence the connection to financial resources.
Availability – Moderate. If there weren't any financial resources there wouldn't be any available services from AFM. As an explanation for why availability was graded moderate the reasoning was that in comparison to the characteristics of Teamwork, HR-Resources, Marketing skills and Time&cost management skills, which were all graded strong, the connection between financial resources and availability was less strong.

Cost of service – Moderate. How much AFM is forced to charge for their services is connected to the financial resources.

The final relationship matrix and symbols are shown below.

Θ - Strong
Ο - Moderate
▲ - Weak

![Relationship matrix for requirements and characteristics](image)

Figure 3. Relationship matrix for requirements and characteristics

Relative importance weight for AFM characteristics

In the last step in the QFD the numerical values of the requirements and the relationship matrix are transformed into the requested outcome of relative weight for each characteristic. The relative weight will then be evaluated and possible improvements identified. The result of using the QFD matrix is shown below as a histogram of the relative importance weight for each characteristic. The relative importance weight is calculated through multiplying the relative importance ranking for the requirements with the relationship values. These values are summarized down for every column and the relative importance weight is finally calculated for each
characteristic. The deduction can be made that the characteristics with most defined relationships also have the most effect on the result.

When analysing the result the characteristics/services have been sorted by the author in three attention groups depending on their value. There are three characteristics standing out, with relative values over 10. These are in decreasing order; HR-resources (staff), Time&cost management skills and Project management skills.

Second attention group contains characteristics with values from 10-5. In decreasing order they are; Teamwork, Marketing skills, Risk Management skills and Core experience & references.

The seven remaining characteristics have values under 5 and are therefore sorted in a group which will not receive any attention.

![Relative weight median](image)

**Figure 4. Final result for relative importance weight**

**Strategic evaluation of the result from QFD matrix**

Since AFM is a consulting company providing services in project management, the result of the QFD matrix is not surprising. The most important factor to be able to meet the customer requirements is the human resource i.e. the staff. This is closely followed by the ability to successfully manage projects, time and cost.

The conclusion drawn from the result is that the success of the company is dependent on the specific planned staff actually starting the company. If one member of the staff decides to drop out, it would affect the company very negatively. The company strategy should hence be complemented with actions for securing the participation and long term commitment of the employees.

The second conclusion drawn is that project, time and cost management skills need to be preserved and preferably improved. In the initial budget there is not a lot of
financial room for education and this should be changed. The company strategy should be complemented with actions for securing the management skills by stimulating learning progress and plan for further education for the employees.

The characteristics of the second attention group should also be considered when elaborating the strategy. Most of the characteristics are skill based and therefore the strategy should include measures to preserve and improve these skills.

To give an example, marketing skills is earlier described as “The company has some, but limited marketing skills”. This ability is relatively important with a value of 8,6 and therefore this ability should preferably receive more focus in the strategic planning.

The entire QFD template is found in Appendix B.

**Conclusion QFD as analysis tool**

QFD was originally developed to “transform user demands into design quality, to deploy the functions forming quality, and to deploy methods for achieving the design quality into subsystems and component parts, and ultimately to specific elements of the manufacturing process.” (Mizuno, Akao, 1994)

The key issue is concluding the tools suitability for the purpose set for this study. The main difference is in the product the tool is applied to, is it an actual product or is it a service. QFD was design for application on product manufacturing and within that area the testing of redesigned products is easier to measure quantitatively. To give an example; a chair is analysed with QFD to capture the voice of the customer. The outcome will be a mock-up of a redesigned chair which can be tested by the customer again within a reasonable amount of time and without extensive rework within the organisation and the production line. The result is then analysed with QFD and the product development continues.

Due to the statement of Bergman & Klefsjö (2001) that the method a can be applied “irrespective of the product being a product, a service or a combination of both”, QFD was selected as analysis tool.

The conclusion after performing the case study is that QFD is not as efficient on services as on products. This is because the testing of the redesign of a service is more time- and human resource consuming. The testing might include changes in work procedures and in the whole organisation while as redesign of a product, in the first step, is just the creation of a mock-up. The time factor of redesigning processes is mentioned in Improving Performance by Rummler & Brache (1995).

When the service is first designed QFD concludes to be a proficient tool for capturing the voice of the customer. So the purpose being designing the services of the case company the tools is deemed very efficient. For the following step in the systematic approach the conclusion is that the QFD analysis has a minor contribution to the
improvement of the service and the strategic values. The improvements are addressed in the Strategic Development chapter.
Step 2 - Profitability estimations

Simulation – input data, estimations and result

Input data
The result of a statistical simulation will only be as good and reliable as the data that was put into it. In this specific case the input data to the simulations will consist of the company’s one year budget. The budget is a cost plan based on known financial data. It will contain statistical distributions to make spread the risk of miscalculations and hence make it more reliable than a standard cost plan. The purpose is to investigate the probability of economic success after the first year of business. The result will be a probability distribution that will serve as input to drawing the final conclusions about the company's chance of success.

Regarding the robustness of the model it’s the author’s conception that the real situation, which the model should aim to mirror, is dependent on a number of variables and factors which are interlinked in complex relationships. All of these variables and factors cannot be covered in a study and model of this size. To mention a few excluded factors there is the current building market, the world economy and the marketing skills of the business partners.

Given the facts that these important factors have been excluded the model will represent a very simplified version of the true possible outcome. The input data is fact based but very scarce which also contributes to the feebleness of the model.

The conclusion regarding the model is that it is robust and reliable given the limitations of the study. It is much better information for performing the business evaluation than what is normally required, which is a standard cost plan. But remembering the excluded factors the result of the simulation should be interpreted as a guideline and not a true picture of what could be the outcome.

Estimations

The first step towards finding out the probability of profit for AFM is defining the costs. To make reliable estimations the author researched the information on the web for making small company budgets. In the templates for budgeting examples of standard cost categories were found and percentages for social fees defined. When making the cost estimations the author set up the AFM yearly cost plan according to budget programs. The numerical values are either generally known (laptops, printers etc), researched on the internet, found in literature (tax and VAT) or from the allocation time survey. Numerical values for salaries and other industry specific numbers are based on the co-founder of AFM’s previous experience of running small construction companies.

The PERT distribution is chosen over Triangular for estimating costs, due to its characteristics to shape the result of the simulation around the mean value.
The cost input for the final simulation consists of monthly mean value cost estimations. The uncertain values are spread out with PERT distribution, while as the fixed values (e.g. salary and social fees) remain single value data. Below follows a more detailed explanation of how the costs and the income were estimated. The budget worksheet with input for @Risk simulations is found in Appendix C.

**Fixed costs**

The fixed costs were defined as fixed salary for two persons. The salary was decided to be 29000sek per person per month, and to this a percentage of social fees, retirement savings and insurance were added. The total sum for the fixed costs adds up to 995280sek for one year.

**Varying costs**

The varying costs were estimated monthly for categories like travel expenses, office rent, accounting fees, phone bills, leasing and other expenses etc. The expenses were summarized monthly (mean) and a minimum and maximum were estimated from the mean value. The max was on purpose estimated to differ more from the mean than the minimum. That costs tend to increase more often than they decrease is motivated by generally know facts like indexation of prices and yearly salary increases. In the last step the values were added together to yearly mean, min and max costs which were used in a PERT distribution. The values used in the simulation are in sek MEAN 252200, MIN 220200, MAX 294200(Cost plan AFM, Appendix C). The values are the summary of the cost parameters for each month.

**Total costs**

The yearly PERT distribution plus the fixed costs make up the total cost which has a MEAN of 1249146sek.

**Income**

The next step is defining the income. The income is dependent on two factors; the hourly charge of service (sek) and an estimation of the yearly allocation time (yearhour). The hourly charge varies with a uniform distribution between the decided hourly rate 730-850sek, UNIFORM MIN 730, MAX 850.

The yearly allocation time has a large effect on the outcome of the simulation. For the estimate of a probable allocation time a survey of 125-167 consultants working in the construction industry during 9 months was studied. The consultants are architects, design managers and structural engineers and the survey gives their allocation time from October 2010 to June 2011. (Appendix E). The survey led to the estimated mean value of 60% allocation time for the AFM employees. The consultant survey also gave the boundaries of min 20% and max 100%. There are several consultants with full allocation time, 100%, and the ones working the least had an allocation time of approximately 20%.
For AFM the total amount of working hours for two persons during a year is 4080h with no reduction made for vacation due to the partners’ agreement to focus full time on the company during the first year. The possible work hours are then multiplied with the estimated allocation time and this is the input for the simulation. The year hours are distributed with a PERT distribution for MEAN 2448, MIN 816, MAX 4080.

The UNIFORM multiplied with the PERT make up the total income in sek.

**Final result**

The final result includes the income minus the costs and also adjustments for a third item consisting of costs of VAT and social fees. The adjustment for this item is calculated to be a reduction of income with a certain percentage. The costs of VAT and social fees could not be included in the original cost estimation since there are complex interdependencies between what parts of the costs to pay social fees on and what parts to pay VAT for. The reduction for VAT and social fees was calculated to be 15.44% for the mean value. This reduction was then applied to the whole distribution. Any possible variation of the size of the reduction was disregarded.

The income reduced by the percentage and minus the costs, together gives the final result of profit for AFM as a probability distribution.

- **COSTS**: PERT (costs) + Fixed costs
- **INCOME**: UNIFORM (rate) x PERT (yearhours)
- **YEARLY RESULT**: INCOME x 0.8456 - COSTS

The graph shows the result (-290000)-1080000sek with confidence interval 90%.

*Figure 5. Probability distribution for yearly result (CI 90%)*
Analysis of simulation result

The values of interest for AFM are primarily the risk of losing money and the possibility of earnings. The founders of AFM are private individuals and they are certainly concerned with the risk of losing their personal investments in the company. According to the simulation result the risk brake even is at 20/80. The risk of losing money is ~20% and the chance of making money is ~80%.

Making over 200000sek is another interesting value for the founders of AFM. This would mean that the pay-back on their initial investment of 100000sek would be doubled in one year. The confidence interval for making more than 200000sek is ~65%.

Figure 6. Probability distribution for yearly result (CI x=200000sek)

Figure 7. Probability distribution for yearly result (CI x=0sek)
The risk of ending up below zero is a very interesting number for the investors in the company. The result shows the risk of not making any profit being 20% (Figure 7). The probable loss for CI 90% is -290 000sek (Figure 5). How to deal with this risk of losing money is a strategic choice made by the AFM partners. If the company is going in that direction there will be measure taken to avoid loss of investments. The AFM partners will agree to change the circumstances surrounding the company in case of that scenario. Since such a large part of the result is made up by fixed costs, which are primarily made up by salaries, the logical solution to insufficient allocation time will be cutting costs by cutting salaries. So the risk of losing money is still ~20%, but how much would actually be lost is not correctly represented in the distribution. The actual loss could be lessened by measurements to cut costs based on the decisions of the founders. The strategic choices are addressed again in the strategic development section.

How the measures taken if it goes to losses would effect the result of the simulation would have to be investigated in a different model. This is eventuality is not further investigated in this study since the result shows a 80% chance of profit and only a 20% risk of loss.

A simplified liquidity calculation was made with the budget to secure the payment capacity for each month. The planned investment of 100000sek is sufficient to sustain the monthly liquidity of AFM.

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Figure 7. Probability distribution for yearly result (CI x=0sek)
Step 3 - Strategic development

Improve mission, vision and strategy

**Linking analysis results to strategic values**

In order to improve the chances of success based on step 1 and step 2 the results need to be evaluated and transferred into the company’s strategy. This step is called the strategic development and refers to elaborating and interlinked the conclusions from the QFD market analysis and the profitability estimations. The selected method for strategic planning and development is the conceptualization, deriving from J. Scott Armstrong (1982). This method focuses on elaborating a company’s key concepts: vision, mission, values and strategies. In this case study the method was combined with the author’s specific knowledge about the construction industry and the market.

The aim is to align and elaborate the key concepts and hence improve the company’s chance of success. This is done by dealing with and improving the three key questions within strategic planning “What do we do, for whom do we do it and how do we excel?” (Armstrong, 1986). Quality Function Deployment supports the idea of strategic improvement as an effect of customer focus. Customer focus is a major driving force when striving to excel as a company. According to Hunt & Killen (2005) QFD principles insist that business strategy must be firmly based on an effective customer strategy. Experts in strategic planning agree that “current and future customer requirements are the driving force behind the creation of strategic direction for best-in-class organisations” (US Federal Benchmarking Consortium, 1997).

In the initial Swedish business plan of AFM there are paragraphs stating the original mission, vision and strategy of the company. In this chapter the original statements will be elaborated and interlinked with the result of the QFD market analysis and MC profitability estimations.

**Mission**

The mission should comprehensively formulate what the company's core purpose is. Why does the company exist? Once this is defined the next step is to make sure that the whole company is aligned with the purpose and that the employees work towards the mission. Having the mission well defined and approved will aid in decision making when evaluating new activities. Activities, new and old, that don't comply with the mission should be reduced.

The mission of AFM is:

Andersson&Franck Management will provide project management on consulting basis in the field of construction and renovation.
**Vision**

The vision should define what the company will become in the future. It should concretely illustrate the desired state to reach in the next 5-15 years (Niven, 2002). The vision is a set of future aimed business activities and they are closely connected to stakeholders like customers and employees. The vision for AFM is based on a few important opinions and statements of the partners. They are:

- Having the right HR-resources is an important asset for the company. This opinion is supported by the result of the QFD matrix, where HR-resources are ranked the most important characteristic. To raise the motivation and engagement of the employees, everyone working in the company should own a small part of the business. This decision is based on studies on the area supporting that co-ownership will help in achieving the desired effect (Uppsatser.se, 2011).

One of AFM strong sides is its flexibility, sensibility to trends and dynamic leadership. This is something that should be embraced also in the vision of the company.

The founders of AFM believe that the key to making larger profits is buying small pieces of land and building well designed villas. The larger construction companies aren't interested in the small pieces of land that is of interests to AFM. To be able to make the investment needed, the company will have a few years active only in consulting before having saved up to the investment and achieved the financial status acquired by banks. The houses will be designed by one of the architects cooperating with AFM and its purpose is to be easy and cheap to build, but still specially designed just for that piece of land and for that customer.

Based on these opinions the 5year vision for AFM is stated below.

- Andersson & Franck Management should have a few but competent partners who all own a small part of the company.
- The company will be flexible and have dynamic leadership.
- The main services performed will be consulting as project managers in the construction business.
- The companies competence, in management as well as in trend and market analysis, should also be used in AFMs own concept construction projects.
- The concept is to invest the earnings of the company in acquisitions of land pieces where the aim is to construct villas designed by a cooperating architect.
- The villas will be designed according to our concept, “easy to build and modest prizing, but still specially designed for that piece of land and the needs of the customer. Everyone can afford a house designed by an architect, just let Andersson & Franck Management build it.”

**Strategy**

The strategy is a set of actions or plans, ensuring the accomplishment of the mission and leading towards and ensuring the company its desired future, the vision (Niven, 2002). The core principle of formulating a strategy is to choose activities that make the
company different from the competitors. The basic strategic choices could be differentiation of services, geography, customers, prizing, competence or defining what not to do according to the mission. The strategy should with continuity describe basic issues like how the company want to offer customer value.

“According to Porter (1996), the essence of strategy is the creation of a unique and valuable position that leads to sustainable competitive advantage. The challenge is to realign the company’s activities based on the market position and to carefully position the organisation to achieve the corporate vision. A successful positioning strategy or “value proposition” must differentiate the organisation’s products and services from those of the competition.” (Hunt, Killen 2005)

The strategy is normally formulated in general sentences describing the core activities of the company. When wanting to proceed, elaborate and monitor the strategy, it would first have to be broken down into concrete measurements and targets. The further development of the strategy will not be performed in this study due to the limited time and resources.

For AFM there is a simplified 1-5 year strategy in the original Swedish business plan. In this chapter the strategy will be more thoroughly elaborated and interlinked with the results of the QFD and MC profitability estimations.

For AFM the strategic choices are:

- Geographically AFM will operate in Stockholm and its surroundings. This is because the building market is expanding in Stockholm and the employee’s networks are local. Travelling expenses will also be minimized through reduced dependability on company cars and other transportation.
- Customer attention will be towards two groups, private individual and tenant-owners associations. No attention will be aimed towards larger companies as a result of focusing the company in the right direction towards the vision.
- The planned staff, with the right experience and backgrounds in construction project management is secured for the start-up of AFM. The HR-resources is an important factor according to the result of the QFD.
- The timing for the start of the company is as soon as possible during 2011. Knowledge of the construction business market indicates that the need for AFM services is increasing. This is an effect of the still low interests, tax reductions and the end of the financial crisis.
- The differentiation of services is provided by AFM getting involved in the projects in the planning phase and following through and supporting the client all the way to the completion. This service is interlinked to the AFM ability to manage projects, time and cost, which are important factors according to QFD.
- Another differentiation of services is the flexible, customized and personal service, which will aid in building trust and confidence from the clients. There is a great need for clients feeling confident about AFM services due to recent media attention on shoddy builders committing quality and financial fraud in construction projects.
- The price per hour for AFM services is in the lower/middle range compared to other consulting companies. This price range is acceptable in the views of the customer, according to the result of the QFD.
- Marketing and information distribution will be performed primarily through the partners existing network, consisting of former clients, architects, entrepreneurs, family and friends. Availability is an important customer requirement and therefore more focus will be put on information, e.g. producing an informative web-page, than originally planned.
- The company will embrace its flexible side and operate without an office until the need of one is substantiated. This is a strategic choice to slim the company's costs and remove non-value adding activities.
- Due to the result of the MC profitability estimations and the risk of loss being 20% the company’s strategy is to cut fixed costs. The fixed costs are primarily made up by salaries and the AFM partners have agreed to this measure to avoid loss of investments.
- If the company is not profitable within one year the AFM partners has agreed to the strategic measure of terminating the company to avoid loss of investments.

The use of the QFD matrix as a strategic tool is suitable for fast changing environments and therefore a good choice for AFM and the customer controlled consulting market. The strategic improvement process could be continued, but due to the limitations of the study this is not done here. The opportunity to further develop now resides with AFM and if done it will according to Hunt & Killen (2005) provide a deep understanding of the different customers and stakeholders, identify previously unknown segments, and target the critical opportunities. Strategic QFD also generates innovative strategies to achieve the organisation’s vision and leads directly to policy deployment for implementation and performance management.
Conclusion

Systematic approach

The primary result of executing the study was to develop a systematic approach for evaluating business ideas’ chance of success and market demand. The three-step approach used in this study appears to be a suitable method for evaluating small businesses. The approach, which is a combination of existing tools and methods, turned out to be systematic and easy to follow. There is no proof or validation of the approach actually fulfilling its purpose. The approach would have to be validated by a follow-up case study, e.g., comparing the AFM actual result after one year in business with the result and conclusion of this study.

Step 1 – Market analysis using QFD

There is still an uncertainty about QFD being the most suitable tool for this type of investigative market analysis. To truly test and validate the market analysis step, there would be a need for substantially more input data and multiple tries in different scenarios.

The conclusion after analysing the case company with QFD is that it’s not as efficient on services as on products. This is because the testing of the redesign of a service is more time- and human resource consuming.

When the service is first designed, QFD concludes to be a proficient tool for capturing the voice of the customer. So when the purpose is designing and defining the services of a company, the tools is deemed very efficient. When it comes to providing input for the last step in the systematic approach, the conclusion is that the QFD analysis will have varying contribution to the improvement on the company’s strategic values, depending on how aligned the strategic values and the services already are. The improvement effect of the input that is given is hard to measure due to the limited possibilities to test the improved service and strategic values.

Step 2 – Profitability simulations using MC

MC simulations are concluded to be a very appropriate method for profitability estimations. In future studies even a broader picture of possible outcomes and scenarios could be achieved through doing more simulations with different variables, and evaluating the variation in the simulation results.

The robustness of the model could always be improved depending on the time spent on investigation data and variables. But the aim of the study was to develop a systematic and easy approach, so in future studies it’s the author’s conception that complex variables should be excluded, i.e., market fluctuation, etc. These types of variables and factors cannot be covered in a study and model of this size.

Given the facts that these important factors have been excluded, the model will represent a very simplified version of the true possible outcome. The aim should always be to create a model as robust and reliable as possible, given the limitations of
the study. An MC simulation will provide much better information for performing the business evaluation than the standard cost plan, which is normally at hand.

**Step 3 - Strategic development**

The step of strategic development is extremely important for improving the company’s chance of success. How useful and effective this can be done is very dependent on what stage the company is in, much data the researcher has access to and how aligned the company’s strategic values are with its services. In the idea stage of a company it’s the authors conclusion that it’s sufficient to improve the strategic values; mission, vision and strategy. There is an opportunity to use other strategic improvement measures but most of them are created to improve businesses in the operation stage, not in the idea stage. To give an example, it would be hard to perform a full balanced scorecard evaluation on a company which is only in the idea stage. Disregarding of the phase the company is in, the strategic development should function as improvement and a tollgate for making a decision whether or not to invest in the business.

**Case study**

The evaluation of the AFM business idea has been performed in three steps; market analysis, profitability estimations and strategic development. The primary aim was to analyse the market demand and the business’s chance of success. The overall conclusion after performing the three steps points to the fact that the business idea in its refined form has a high chance of succeeding. The definition of success in this case is the brake even between income and cost. With that definition AFM has an 80% chance of success according to the profitability estimations. A second and elevated success definition is described as; the chance of the founders doubling their investments in one year. The chance of achieving that is 65%.

The result of the profitability estimations is dependent on several estimations and factors. The result is not a definite and sure answer, but merely the result of the assumptions and estimations of the author. When elaborating the simulation structure one factor with large impact on the outcome was singled out. The factor is the yearly allocation time and the fact that the variation in mean value effects the result notably needs to be addressed. A rather small deviation between estimation and reality would change the probability of success. To be able to perform the simulation this divergence was disregarded and the simulation performed based on the most probable estimation. The yearly allocation time is important to the outcome and the factor itself is effectively interlinked and dependent on the market and the customer. This naturally leads back to the first step in the evaluation, the market analysis and customer demand.

Meeting customer needs is an important factor for AFM overall success and the QFD evaluation clarifies how to achieve that. The evaluation of AFM services with a QFD tool indicates that the characteristics of AFM suit the demand of the customer quite well. All the defined characteristics were related to at least one customer requirement, which implies that none of the characteristics are superfluous. The result of applying a QFD perspective on the business idea points out that the most important factor to be
able to meet the customer requirements is the human resource i.e. the staff, closely followed by the ability to successfully manage projects, time and cost. The conclusion drawn from the QFD evaluation is that meeting customer needs is primarily dependent on the staff and the skills in project, time and cost management.

To secure that AFM meets the customer demands and excels at the specified characteristics the company strategy should be complemented with actions fulfilling that purpose. This leads on to the third part of the evaluation, the strategic development.

The original mission, vision and strategy of AFM were fairly aligned with the result of the QFD matrix. There were no counter activities that needed to be removed, but there was clearly a need to improve and clarify the strategy.

The main elaborations made on the company strategy are as follows:

- the definition of actions for securing the participation and long term commitment of the employees
- improvement of management skills by stimulating learning progress and plan for education for the employees
- project, time and cost management skills need to be preserved and improved

Further on, the characteristics of the secondary attention group were considered when elaborating the strategy and since most of the characteristics were skill based, the strategic actions were to include measures to preserve and improve these skills.

### Systematic approach

The secondary scope of executing the study was to develop a systematic approach for evaluating business ideas, chance of success and market demand. The three-step approach used in this study appears to be a suitable method for evaluating small businesses. The approach, which is a combination of existing tools and methods, turned out to be systematic and easy to follow. There is no proof or validation of the approach actually fulfilling its purpose. The approach would have to be validated by a real case study, e.g. comparing the AFM actual result after one year in business with the result and conclusion of this study.

There is still a little uncertainty about QFD being the most suitable tool for this type of investigative market analysis. To truly test and validate the market analysis step, there would be a need for substantially more input data and multiple tries in different scenarios.

MC simulations are concluded to be a very appropriate method for profitability estimations. In future studies even a broader picture of possible outcomes and scenarios could be achieved through doing more simulations with different variables and evaluating the variation in the simulation results.

The step of strategic development is extremely important for improving the company's chance of success. How useful and effective this can be done is very dependent on what stage the company is in and how much data the researcher has access to. As
mentioned before it would be hard to perform a full balanced scorecard evaluation on a company which is only in the idea stage. Disregarding of the phase the company is in, the strategic development should function as improvement and a tollgate for making a decision whether or not to invest in the business.
Recommendations

Systematic approach

Regarding the systematic approach for evaluating business ideas, the author's conclusion is to recommend the approach for similar analyses. The possible stakeholders are entrepreneurs and venture capital investors wanting to try out the risks and chances of a new business idea. The approach is applicable on various business or project ideas, and the main advantage is that the findings are actually used to enhance the business chance of success in the last step of the process, the strategic development.

The tools used in the steps of the systematic approach could be altered depending on the business under evaluation. To mention another scenario, the strategic development step could have been done using the Balanced Scorecard. The authors finding is that the step containing the MC simulation is crucial to arriving at a conclusion and should not be replaced with another method. Monte Carlo is found to be an extremely useful tool with high influence on the final result. It is the authors recommendation that MC simulations be used in this kind of analysis, conditioned that the user is familiar with the methods limitations and advantages.

Case study

The recommendations to the stakeholders of this study, aka the founders of AFM, are to start the company and make the needed investments in the business. The overall success probability is 80%, which is regarded a fairly safe investment. The 20% risk of failure is considered to be an acceptable risk for the equal 20% chance of earning 750000sek.

The business needs to be started in its refined form and with the planned HR-resources. This is a prerequisite for the success rate mentioned above.

Supporting the recommendations to start the company is the reasoning surrounding the actual amount lost if ending up in the 20% below zero. As described in the simulation chapter the logical solution to an insufficient allocation time would be cutting costs. This can quite easily be made due to AFM being a small flexible company with very few fixed costs, accept for salaries. In a scenario where the company notices an inadequate number of customers the founders could always take measures to cut salaries in order to keep the business running and limit the financial loss. This reasoning very much supports the recommendations to start up the company since it undermines the stakeholder’s primary constraint, the fear of losing their personal investments.
Systematic approach

Regarding the systematic approach for evaluating business ideas, the author's conclusion is to recommend the approach for similar analyses. The possible stakeholders are entrepreneurs and venture capital investors wanting to try out the risks and chances of a new business idea. The approach is applicable on various business or project ideas, and the main advantage is that the findings are actually used to enhance the business chance of success in the last step of the process, the strategic development.

The tools used in the steps of the systematic approach could be altered depending on the business under evaluation. To mention another scenario, the strategic development step could have been done using the Balanced Scorecard. The authors' finding is that the step containing the MC simulation is crucial to arriving at a conclusion and should not be replaced with another method. Monte Carlo is found to be an extremely useful tool with high influence on the final result. It is the authors' recommendation that MC simulations be used in this kind of analysis, conditioned that the user is familiar with the method's limitations and advantages.
References


George S. Fishman, 2006. A First Course in Monte Carlo.


Hunt, Robert A (Editor); Killen, Ms Catherine P (Editor), 2005. Best Practice Quality Function Deployment (QFD) Part II: Strategy and Regional QFD. Bradford, GBR: Emerald Group Publishing Ltd.


Langhé, Roland, 2008. Guidelines for degree projects in Master of Science(1y). KTH School of Industrial Technology and Management.


List of web sources
Swedish University Essays, 2011-05-07; http://www.essays.se/about/市场+分析/
ALMI, 2012-01-07; http://foretagarskolan.se/artiklar/Test/
Uppsatser.se;http://www.uppsatser.se/om/framgångsfaktorer+företag/?startrecord=1 (2012-01-07)
Uppsatser.se, 2011-05-15; http://www.uppsatser.se/om/motivation+del%C3%A4gare/
Albert Humphrey; http://en.wikipedia.org/wiki/Albert_S_Humphrey (2012-01-08)
http://www.verksamt.se/portal/web/guest/home (2012-01-08)
http://www.skatteverket.se/ (2012-01-08)
http://www.tv4.se/fuskbyggarna (2012-01-08)
http://www.qfdi.org/what_is_qfd/faqs_about_qfd.html#Who%20are%20the%20founders%20of%20QFD (2011-05-04)
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