Developing a support tool for business model performance management in roll out and market phase - an online investment research company case study

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ABSTRACT
Every business needs a viable business model. Strangely most literature is focused on business model design, whereas there is almost no attention for validation and implementation of business models. The goal of the research as described in this paper is to develop a business model engineering tool for supporting business model management as a continuous design, implementation and validation cycle. The tool is developed for an online investment research boutique in roll out and market phase. This paper describes the research as performed in a case study setting by focusing on the design, implementation and evaluation of the business model engineering tool.

Keywords
Business models, action design research, case study, business model engineering tool, business model dynamics.

1. INTRODUCTION
For a long time, people and businesses make use of business models. One of the first known business model innovations in the late nineteenth century. The president of American Express was on a holiday in Europe, and found it hard to obtain cash, even though he had good letters of credit [10]. American Express then created the travelers check, and from that innovation a robust business model was derived.

A more recent definition of a business model comes from the seventies. At that time, business models mostly were used to design and analyze information, communication and processes within an organization. Nowadays, business models are more strongly focused on aspects like value network structures and revenue models, but the definition from the seventies still partly fits with how we use business models nowadays.

Although there are a lot of publications about business models, most researchers consider business models as static and describe them mostly qualitatively. Almost none of them considers that business models constantly (need to) change, and thus need to be managed actively, e.g. because of changing market or technological environments [9]. With this research we strive for finding a way to monitor a business model in a more structured and active way.

By developing a business model engineering tool and more actively managing business models, the failure rate of new businesses or technologies may be lowered [11, 17]. This is because the real strength of an organization may be strongly related to the quality of its underlying business model. Or as the much cited Henry Chesbrough stated: “A mediocre technology pursued with a great business model may be more valuable than a great technology exploited via a mediocre business model”. [4]

2. RESEARCH OBJECTIVE AND CASE DESCRIPTION
The objective of this business model engineering case study with action design characteristics [6, 16] was to build a business model engineering tool for an online investment research boutique.

An investment research boutique is a company that evaluates investment opportunities related to investing in shares of companies listed on stock markets and sells related analyses to their clients. The investment research boutique for this research uses a so called freemium business model [2]. The company offers people who subscribed to their mailing list via their website a free weekly investing column. Paying members also get a monthly analysis of three stocks that look interesting from a value investing perspective [14, 7]. The companies behind these stocks typically have a high profitability because of a strong competitive position and a sensible business model, good management and a below average market valuation.

The investment research company already has a business model. This business model is developed in the time the company started, with use of the STOF-method, which will be described in section 4.2 [9, 3]. Since the company moved from R&D and roll out to the market phase and is also profitable, its business model can be considered as viable. But the company does not have the ability to test its business model in different market scenarios. The aim of this research is to develop a business model engineering tool – in the form of a Microsoft Excel spreadsheet – which can be used for engineering the business model of the investment research company – e.g. by testing, fine tuning and supporting further implementation and development of the business model.

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Main aim of the engineering tool is to help the founders of the fast growing investment research boutique to engineer (monitor, test, adapt and fine tune) their business model in order to discover strengths, weaknesses, opportunities and threats. This engineering can be done in different scenarios in order to optimally capitalizing on one of their most important assets: their mailing list with thousands of investors. Results from the engineering process could be used to find areas for business model improvement. Furthermore, the testing tool could be used to predict sales and profit levels in different market scenarios.

4. BUSINESS MODEL LITERATURE REVIEW
The business model concept plays an important role in developing a business model engineering tool. Most business model views show a clear approach on how to build a business model [9, 3]. Most of these approaches give a set of components that together describe the whole organization. Since the business model concepts show this set of components for building a business model, it can also be used contrariwise, thus to obtain the necessary information (i.e. business model analysis results) for developing a business model engineering tool.

4.1 What is a business model?
The history of business modeling goes back a long time. Centuries ago, people where not even aware of having a business model although they did have one. For example, a baker bakes bread, sells it, and probably makes some money from it. This baker, despite the fact that he may not know it, has a clear business model. The first time people began thinking about business modeling was in the late nineteenth century. The example of the president of American Express is already stated in the introduction. The man developed a new way of getting cash money, and developed a viable related business model [10].

Later on in history, people became more interested in business modeling, and science became involved as well. One of the first more modern definitions of a business model was stated by Timmers [18]: “A business model is an architecture for the product, service and information flows, including a description of the various business actors and their roles, a description of potential benefits for the various business actors, and a description of the sources and revenues”. Then, the main purpose of the business model concept was to build information technology systems [3]. More recently, Porter [15] related business models to market structures and how companies fit into these structures. Within such a context, business models can be used to make strategic choices [3]. Nowadays, a widely used business model definition within this context is the definition by Rosenbloom and Chesbrough [5]: “A business model is a blueprint for how a network of organizations co-operates in creating and capturing value from technological innovation”.

4.2 Components of a business model
In the early business model literature, most attention has been paid to empirically defining business models [8]. More recent literature has a stronger focus on business model design and several business model design components have been proposed as well.
Afauah and Tucci [1] describe business models as systems that are built from different components, such as value, revenue, sources and capabilities. Osterwalder and Pigneur [13] define four fundamental business model components: product innovation,
customer management, infrastructure management and financial management. These four components are used to group all their subcomponents.

For this research, a definition more appropriated is presented by Bouwman et al [9, 3]. They define a model, called STOF-model, almost similar to the one of Osterwalder and Pigneur [13]. The difference is that Osterwalder and Pigneur’s [13] model has less domains or business model components. Though it has other domains, it covers the same areas as the model of Osterwalder and Pigneur. The STOF-model, depicted in Appendix A, is a systematic modeling approach to design business models and a structured view on business models. The STOF-model uses four different domains or business model components to describe the underlying logic of business model designs. Each domain has the generation of value for customers and end users as well as the other roles (mostly organizations) participating in the value network as a key point. The business model components are:

- **Service** (describes the subcomponents of the service concept an [n] [group of] organization[s] offers, its value proposition and the market segments that are targeted)
- **Technology** (a description of technical architecture, service platforms, devices, applications)
- **Organization** (a description of actors, roles, interactions, strategies and goals, value activities)
- **Finance** (a description of investment sources, cost sources, revenue sources, risk sources, pricing)

Since the STOF business model framework gives a systematic approach in designing a business model, it can also be used contrariwise – i.e. for analyzing an existing business model instead of designing a new one. In this case study, where a viable business model is already defined and implemented, the STOF business model framework can be used to find and determine the necessary variables for developing a business model engineering tool.

### 4.3 Business models, static or dynamic?

While most business model literature has a static and qualitative nature, early stage business model development and validation of business model designs is mostly lacking in literature as well as practice [9, 11]. Because of continuously changing market, technology and regulatory environments, most business models have to change as well and can therefore be seen as dynamic concepts. A typical example of a continuously changing business model is the business model of the Finnish company Nokia. The company was founded in 1865, and at that time, of course, did not make money by producing and selling mobile phones but with manufacturing paper [9, 3].

Thus, as business models are actually dynamic, external factors should be taken into account. External factor like rapid technological developments or increasing market dynamics require an approach in which business model can be adapted to changes. Morris et al describe this as the external ‘fit’ [12]. Sustainable business models, according Morris et al, must be consistent and there must be a fit between external factors and the configuration of key activities. Bouwman et al [3] make use of three external factors in their dynamic STOF-model by focusing on market, technology and regulation.

Like the four business model components in the STOF-model can influence each other, the same goes for the three external factors in the dynamic STOF-model. In other words, if something changes in one of the three external factors, it may have an impact on the other two external factors.

Next to that, business model design does not necessary need to take place in the implementation or market phase, but can also take place in the market offering as well as the R&D phases – it can be seen as an iterative process [11, 17]. The dynamic STOF-model as depicted in Appendix A shows this option. Actually, focusing on business model design only in implementation or market phase is very risky and costly [11]. Not managing the business model at all may be even more risky and costly [17], and leads to flawed business models.

Thus, business models can be considered as dynamic, and therefore need to be managed actively. In this section, a method for developing a business model more structurally is found in the dynamic STOF-model. For developing a business model engineering tool, the same framework can be used contrariwise, i.e. for analyzing an existing business model.

In the next sections, the three steps from the research approach (as discussed in section 3) will be used for building a business model engineering tool. Since the second step, the actual development of the business model engineering tool, is the most important one, the three steps are extended into a seven-step approach. This approach is depicted in Appendix E, and contains the following steps: analyzing the (already existing) viable business model, developing a cockpit, transforming cockpit variables into calculations, adding scenarios, calculating output for the scenarios, generating and interpreting the output from the business model engineering tool and finally improving and fine tuning the business model. Hereby the cycle is complete, and the cycle can start again. Each of the seven steps are discussed in the next sections.

### 5. STEP 1) ANALYZING THE VIABLE BUSINESS MODEL

As already stated, the online investment research boutique used for this case study, already had a viable business model. Considering Bouwman et al [9, 3], business models are about adding value. This value is being added by all kinds of underlying variables. About every organization sells a specific product or service for a specific price. Before organizations can sell their products or services, costs need to be made, e.g. raw material or knowledge need to be acquired. Both the selling price and the costs that need to be made in order to produce a specific product or service are examples of variables that can lead to value creation.

A first step in developing a business model engineering tool is to find the most important variables. In this case study most of the variables are found via expert interviews with the founders of the online investment research boutique. The STOF-model from Bouwman et al [3] helps as a kind of checklist and to group the variables. In this case, the variables are divided into the four components of the STOF-model, with ‘market environment’ as an extra component. An overview of all variables can be found in Appendix F.

The variables under the business model component service, are mostly related to the services the online investment research boutique offers. VP, VS and TopX are abbreviations of products they offer. Furthermore their most important asset, their mailing
list, and the related growth rate are considered to be variables for the service component.

The variables belonging to the technology component are costs related to technology the organization uses. Variables used here are iDeal and Paypal (two electronic payments systems needed for receiving payments from customers), costs for webhosting and backup (to keep their website in the air) and costs of inventory.

The organization component contains the costs for keeping the organization up and running. Salaries, traveling costs, subscriptions on business & investment magazines, journals, books and newspapers, as well as marketing costs belong to this business model component.

The financial component is the most important one in this case study, because it contains the most variables and is crucial for the existence of the organization. This component contains all pricing details for the services delivered, as well as all other variables that have to do with cash in- and out-flows.

Once the variables are found, step 2 can be started.

6. STEP 2) DEVELOPING A COCKPIT

The variables in the first step need to be processed into the business model engineering tool. For this research, the engineering tool will be built in Microsoft Office Excel – a popular spreadsheet application.

According to Tennent and Friend [17], an effective way for showing the most important variables, is to use one sheet exclusively for these variables. This sheet will be called the cockpit. The variables can be shown in exactly the same way as they are found, using the business model components from the dynamic STOF-model.

Since the main aim of this business model engineering tool is to monitor, test, adapt and fine tune the business model, a calculation over several years has to be made. Therefore, a starting year can be added to the cockpit. Appendix D depicts the components of the business model and all related variables.

The founders of the online investment research boutique wanted to test their business model in different scenarios. In this step, the only variables in the cockpit will be the standard variables. These variables can be used for testing, and will be replaced by scenario based variables in a later step. The standard variables are the only number that can be changed in the cockpit.

Last thing that has been done in this step, is an expert interview with one of the founders of the online investment research boutique. During this interview, the variables were checked and the cockpit was checked for completeness as well.

7. STEP 3) DESIGNING BUSINESS MODEL PERFORMANCE INDICATORS AND RELATED CALCULATIONS

With the cockpit and the variables the first part of the business model engineering tool is completed. But, since the business model engineering tool needs to be used for monitoring, testing, adapting and fine tuning the business model, there has to be some output – i.e. in the form of business model performance indicators that help to assess how well the business model is performing.

Good performance indicators, for example, can be the profit, turnover or net present value of an organization or investment. In this case study, the most important performance indicators are the turnover per emailaddress, the net profit after tax and the value of a stock portfolio. By following the principles of Tennent and Friend, a new sheet is created for these performance indicators.

Most of the business model performance indicators can be created by using one or more variables from the cockpit, and adding a formula. For example, using the number of subscriptions for a certain service, the price people pay for their subscription, and multiplying these two, the turnover for that service can be calculated. By expert interviews the following performance indicators where found:

- **Total turnover**: The total turnover is the combination of all the services and products that costumers use.
- **Gross margin**: The total turnover minus all of the organizational costs.
- **Profit after tax**: The total turnover minus all of the costs and taxes.
- **Margin per emailaddress**: The profit after tax devided by the size of the mailing list.
- **Addition on management portfolio**: The ammount of money (profit) that is going in to the management portfolio.
- **Value management portfolio**: The value of the of management portfolio. Because the money is invested in stock funds, the value can vary.
- **Value VP**: The value of a portfolio that is used for a service that the investment research boutique offers.

The business model components from the STOF-model, used for steps 1 and 2, can also be used to group the variables in the calculations sheet. Furthermore, the most logical way is to begin with all activities that create a positive cashflow. Therefore, in the case study, all turnover of the services the investment research boutique offers, are calculated. Based on these calculations, the total turnover can be determined. Next, the costs can be subtracted from the total turnover. Referring to the dynamic STOF-model, in this case the total turnover was subtracted by technology costs, organization costs and the costs of financial components.

In accounting terms, when you subtract all the costs from the total turnover, the gross margin is what is left. This gross margin needs to be subtracted by the value added tax (VAT) and tax on income, which leaves the profit after tax. In the case of the online investment research boutique, the profit after tax is divided by the size of the mailing list, to calculate a net margin per email address.

8. STEP 4) ADDING SCENARIOS

Once the business model engineering tool is up and running, the tool can be made more dynamically by adding scenarios. According to Tennent and Friend [17], one of the most functional ways to create scenarios is by putting two main variables in a matrix. A story from one of the founders of the investment research boutique gave inspiration for finding two relevant main variables:

‘An investor always looks for great opportunities to invest money. One of these investors always addressed the same question before making an investment decision. The question was: which two possible developments would affect the organization, but are completely out of your control’. Examples of such developments
are: critical regulatory changes, disruptive technological developments, purchasing power developments.

In this case study, investors need to have money before they will subscribe to investment analysis services. A positive economic growth supports their willingness to subscribe. Next to that, people tend to invest more if the stock market is doing well. Considering these two findings, both market sentiment and economic growth tend to be important, while both of them cannot be controlled by the investment research boutique. Therefore, the variables market sentiment and economic growth were chosen as main variables. When these two variables are put in a matrix, the situation as depicted in Appendix B will appear with the following four scenarios:

- **Scenario 1:** In this scenario the market sentiment is positive, while the economic growth is negative. A situation as this happened in the second quarter of 2009. Stock indices were already going up and thus the market sentiment was positive, while because of the financial crisis the economic growth was still negative.

- **Scenario 2:** In this scenario the market sentiment as well as the economic growth are positive. A situation like this scenario can be found during the internet bubble period. Stock indices raise sky-high, market sentiment was very good and lots of people made quite some money during this period (after losing it again a few years later).

- **Scenario 3:** This is the worst scenario, because both market sentiment and economic growth are negative. This situation is like the stock market crash late 2008. Stock indices crashed, banks went bankrupt and people had absolutely no trust anymore in the world economy.

- **Scenario 4:** In this scenario the economic growth is positive, while the market sentiment is negative. A comparison to this situation can be found in the last half of 2002 and the first half of 2003. Many people were then in stocks, but most stock indices started lowering.

For each of these scenarios, a different set of variables in the business model engineering tool can be defined. In the tool for the online investment research boutique, variables can be entered into the model as so-called standard variables. The model then can be set to a certain scenario, and the standard variables will be changed by a combination of a market sentiment and economic growth multiplier, as depicted in Appendix B.

When the economic growth is negative, people tend to spend less money and probably less people will have subscriptions to one of the services of the online investment research boutique. Less subscriptions means less payments, and therefore the existence of the organization could be threatened. On the other hand, when the market sentiment is positive and the economic growth is also positive, more people tend to invest their money. In this scenario, probably more subscriptions will be sold, and therefore the incoming payments will rise.

As the market sentiment and economic growth are set, calculations can be made. Based on e.g. calculations of turnover, profit, taxes and profit after tax, the ‘behavior’ of the business model performance indicators can be shown by the tool. By changing the scenario in the cockpit, outcomes can be generated for every scenario. Once the output per scenario is known, suggestions for fine tuning and improving the business model can be made.

### 9. STEP 5) ADDING SCENARIO-BASED CALCULATIONS

In the cockpit, the four scenarios as stated in the previous section, lead to a switch in the tool that helps to easily switch between different scenarios. Furthermore, most standard variables have to be changed for each of the scenarios. Therefore they need to be updated as well based on the scenario that is being chosen. To make the engineering tool more dynamic, this process of updating variables should also take into account the market sentiment and the economic growth – the two main scenario factors.

Therefore a new table was entered into the cockpit, as depicted in Appendix C. For each of the four scenarios as depicted in Appendix B, a multiplying factor can be entered into the cockpit. To make the tool more realistic, for both market sentiment and economic growth the weight can be set. The result of this table will be a general multiplier that can be used for transforming the standard variables into scenario-based variables. Most of the standard variables are multiplied by the general multiplier belonging to the scenario which leads to a scenario-based variable.

Some of the standard variables are only influenced by one of the two scenario-factors. Therefore it is also possible to make use of the market sentiment multiplier or economic growth multiplier only.

### 10. STEP 6) GENERATING OUTPUT: SCENARIO-BASED BUSINESS MODEL PERFORMANCE INDICATORS

Since in this stage the variables are known, dynamic elements are included and scenario-based calculation is used as well, the business model engineering tool is almost finished. An import aspect that still has to be done in this step is to generate output – i.e. business model performance indicators – that can be used to monitor, test, adapt and fine tune the business model.

Similar to creating input and calculation sheets, the output is projected on a separate sheet. For monitoring and testing the business model, business model performance indicators in the form of charts are developed. In this case study, the development of the margin per e-mail address and the mailing list size appear to be critical business model performance indicators.

For adapting and fine tuning the business model, calculations for only one scenario are not enough. Therefore in the online investment research boutique case, four extra calculation sheets are developed. Therefore the business model performance indicators for each scenario can be calculated and compared with the other scenarios as well. This information is useful to discover strength and weaknesses in the business model in different scenarios and therefore also for adapting and fine tuning the business model. In the next section, the case study output for the different scenarios will be compared and analyzed. Based on this analysis, tips for fine tuning or adaptation will be given as well.

### 11. STEP 7) ANALYSIS & IMPROVEMENT

Improving the business model in such a way that it fits every scenario can only be done if the output of all of the scenarios is compared. In this section the business model strengths and weaknesses in each of the scenarios will be discussed, the situation in each of the scenarios will be compared and then tips for adaptation and fine tuning will be given as well. The calculations within each scenario are based on a grounded guess.
about the market sentiment and economic growth multipliers. This is not exactly correct, but as the great investor Warren Buffet once said:

“It is better to be approximately right than precisely wrong.”

11.1 Output from scenario 1
In scenario there is a negative economic growth and a positive market sentiment. Then, people will still invest, but only if they have the money. In the cockpit, this means that the growth of the mailing list and number of subscriptions is low, but there is still a growth to be expected.

When taking a look at the calculations, we see that, because of the small growth, the most important business model performance indicator – the margin per email address – is still expected to grow as well. Over a period of five years, the net margin per email address has grown by almost 52 percent. Next to that, the profit after tax has grown by almost 65 percent, as depicted Figure 1.

![Figure 1: Profit after tax, scenario 1](image1)

If taken into consideration that the profit after tax is actually money that is not directly needed for a specific and can be seen as ‘excess cash’, one possibility is to invest that money into a ‘management portfolio’. This portfolio can also be used when money is needed in worse times, as a kind of financial buffer. When doing this, the yearly addition as shown in Figure 2 will take place, which results in a potential buffer of over two million Euros after five years.

![Figure 2: Additions on Management Portfolio, scenario 1](image2)

In this scenario, there are almost no weaknesses. Money is made, key figures are growing and eventually profit will be made. When monitoring the business model in this scenario, a great opportunity lies in growing the mailing list. When the mailing list grows, the number of subscriptions will increase which will lead to higher turnover and profit levels.

11.2 Output from scenario 2
From all of the four scenarios, this is the most positive one. Most business models are viable in this scenario, the same goes for the investment research boutique business model. Still it can use a little explanation. Both market sentiment and economic growth are positive, ensuring that more people will start and continue investing.

When looking into the calculations belonging to this scenario, no weaknesses can be found. Every performance indicator is growing and positive. The key indicator, margin per email address, will grow with 242 percent over a period of five years. The profit after tax will even grow with 285 percent in five years, as depicted in Figure 3.

![Figure 3: Profit after tax, scenario 2](image3)

The figure clearly shows a more exponentially growing line, which is of course a positive trend for the investment research boutique. When looking to the potential additions to the management portfolio, as depicted in Figure 4, a similar exponential line is shown. In five years time, the management portfolio in scenario two could grow to almost five million Euros.

![Figure 4: Additions on Management Portfolio, scenario 2](image4)

Since this is the best possible scenario, no critical business model risks are found in this case. When the investment boutique is in this scenario, the best thing to do would be to letting the mailing list grow further. Even when doing nothing at all, profits are still expected to grow. But since most business models should be profitable in this kind of scenario, this is not the most interesting scenario from business model engineering perspective.

11.3 Output from scenario 3
This scenario is the direct opposite of the previous scenario. Both market sentiment and economic growth are negative. When market sentiment is negative, less people tend to start investing. Next to that, because of negative economic growth, more and more people do not have any money for investing anymore.
The calculations belonging to scenario three, give a clear view on the miserable situation. Growth of the mailing list is minimal, the number of subscriptions compared to the standard number is much lower, profits will drop and thus the margin per e-mail address is expected to drop as well. If this scenario will be reality for a few years, the margin could drop to around ten cents per address, a decrease of almost 96 percent. Profit after tax could also decrease with almost 96 percent, as shown in Figure 5, resulting in a profit after tax of not more than 3000 Euros a year.

When taking a look at the management investment portfolio which can be seen as a sort of money buffer, scenario 3 is the situation to discover that this portfolio is a must have. The addition to the portfolio of money resulting from profit is at first still positive, later decreases, but still stays positive. Next to that, the return on the portfolio will also be negative in this scenario. Negative addition means that money is subtracted from the portfolio to put back in the investment research boutique. When this portfolio had not been made in front, the business would probably go bankrupt. The additions and subtractions according the management portfolio are shown in Figure 6.

When looking at the calculations in scenario three, one thing is clear: without the management investment portfolio the investment research boutique would be bankrupt in this scenario. Thus, in better scenarios, for example in scenario one or two, the boutique should reinvest yearly profits into the management portfolio in order to be able to finance operating costs in tough years like in scenario 3.

Furthermore, the results from the scenario 3 business model engineering tool calculations lead to few interesting more generic remarks. First, because of its low operating costs and the existence of the management investment portfolio, the boutique can survive tough and difficult scenarios like scenario 3. But, when more costs are cut, the chance of survival is even bigger. The calculations show that there still are some costs that can be lowered, like the traveling and subscription costs. Second, increasing the mailing list size would probably generate more profit, also in tough scenarios – even in bad economic situations, or probably even because of bad economic situations, investors may see great investment opportunities. These people need to be attracted to the boutique. Furthermore, the boutique itself could profit from the potential investment bargains that are expected to be found in this scenario. In bad economics times, many stocks become cheaper and cheaper, and interesting investment opportunities arise. In order to capitalize on these opportunities, it could be wise to create a special money reserve during better times, next to the management investment portfolio.

### 11.4 Output from scenario 4

The last scenario given by the matrix depicted in Appendix B, has a negative market sentiment and a positive economic growth. In other words, in this scenario people have some money they can invest, but the stock indices are not performing that well. When looking at the calculations for this scenario, the business model performance indicators are not that good, but the existence of the boutique is not immediately at risk.

From the calculations, the conclusion can be made that the growth of both profit after tax and margin per e-mail address is negative. Margin per email address dropped a little over 48 percent, while profit after tax dropped a little over 45 percent. The expected decrease of profit after tax is depicted in Figure 7.

When the profit after tax is decreasing, at some point in time, profit will be too low to cover the costs. That is why the earlier mentioned management investment portfolio forms a good buffer that may improve the viability of the business model in more difficult scenarios. When including the variables from scenario 3 in the calculation for additions to this management portfolio, we see that the management portfolio is still growing. Additions resulting from the return on investment are not much, but the line is still slightly climbing. The additions resulting from reinvesting yearly profit, is also decreasing because the profit level are slightly decreasing as well. This is depicted in Figure 8.
Looking at the performance indicators from the business model engineering tool we can conclude that the business model is still viable, also in a suboptimal scenario as this one. Main reason for this survival are the low operating costs of the investment research boutique. More profit could be made in this scenario as well, again, by increasing the size of the mailing list. For example, when the size of the mailing list doubles, the profit more than doubles.

11.5 Comparing four scenarios

In a short recapitulation, the business model tested in this case study is profitable in all five year period scenarios. This is the absolute strength of the business model. If the timeframe of each scenario would be larger, say ten years, scenario 3 would surely not be profitable anymore. The continuation of the online investment research boutique it not in danger, because of the existing management portfolio. Without this portfolio the online investment research boutique would probably be bankrupt. This is a threat as well as an opportunity. By having a reserve, the management portfolio, worst case scenarios can be survived.

When comparing the four scenarios and the related business model performance indicator results, a number of interesting things can be stated about the business model viability. First of all, because of its relatively low and constant costs, the profitability of the business model is mostly dependent on the size of the mailing list and the number of investors with subscriptions. Although the costs are relatively low, in really tough market circumstances there are still some possibilities to save money on certain costs like traveling costs. This is another strength of the business model. Second, based on the business model engineering tool results it seems a great idea to invest the profit after tax in a certain buffer. A management investment portfolio as suggested in previous section could be an option, but the value of such a buffer on the short term is relatively uncertain because of the risk of stock market crashes. So, creating an extra low risk buffer could be worthwhile as well, not only because it may lower risks but also because this buffer could also be – partially – used for ‘extreme bargain investing’ when markets go down significantly. Thus, by having a buffer, a double opportunity is gained.

Considering the most important business model performance indicator, the margin per e-mail address, we see that different scenarios have a strong influence on this indicator. Figure 9 shows the expected growth and increase per scenario in the next five years. Over a period of five years, the margin could vary somewhere from around ten cents to thirty Euros.

Another important indicator is the one on the value of the management investment portfolio. Although it initially could be used as a buffer, in good times it can become a valuable asset as well. The value in five years from now, could vary somewhere between 160,000 Euros in very tough market circumstances and 5 million Euros in good ones.

Overall, it would be advised to try to further increase the size mailing list because it has a positive influence on most business model performance indicators – it generally leads to higher profit levels because of increased scalability.

12. CONCLUSIONS

In this paper, an approach for developing a business model engineering tool is given. With such an engineering tool, organizations can monitor, test, adapt and fine tune their business models by analyzing the different business model performance indicators that form the output of the tool. The first results are encouraging: the case study shows that the business model can be tested in different scenarios and strengths and weaknesses and related opportunities and threats were discovered as well. Based on the analysis opportunities for further business model improvement were developed. These improvements are currently in development. We suppose that continuous business model engineering with a scenario based support tool with business model performance indicators may lead to more viable business model implementation and thus a healthier business.

In the first step of the seven-step framework, as depicted in Appendix E, the implemented business model is analyzed. This analysis needs to be done in order to define the main variables in step two. To define these variables, a clear view of how the business works – i.e. a clear understanding of the underlying business model – is needed. The first two steps were relatively time consuming. In the case study, a few iterative expert interviews with one of the company founder were needed for these steps. Since the case study consisted of a relatively small organization, this step would probably take even more time when a multinational would be involved.

Once the variables are defined, they can directly be implemented in the engineering support tool. These variables were implemented in the same logical way as they were obtained from the business model analysis by making use of the dynamic STOF-model and its components as developed by Bouwman et al [3]. The third step is focused on designing relevant business model performance indicators and doing the necessary calculations with the standard variables from the previous step. This step is relatively easy and quick, if the first two steps are done correctly.
Once the calculations are made, the business model engineering tool is up and running. To obtain usable information for monitoring, testing, adapting and fine tuning the business model, some kind of uncertainty has to be added. In this case study, this uncertainty comes from four different scenarios. These scenarios are created in step four. As these scenarios cannot exactly describe the expected future since the future is uncertain by nature, it is important to take two key uncertainty variables as a basis for creating four scenarios. In this case study, these variables were obtained by searching for two factors that have a critical influence on the business model performance of the investment research boutique but cannot be influenced by the boutique. Once these two factors are defined, a multiplier needs to be developed. In this case study, the multiplier is a weighted average from the two factors. This step is not very difficult, but takes relatively much time because the scenario forecasts needs to be developed as realistically as possible.

The fifth step is focused on making the calculations from step three also possible when using the scenario-based business model variables. This is not too difficult: because the calculations are already made the only thing to do is formalize them for all variables. Once all calculations are made, they can be used for generating output in the form of business model performance indicators. Besides calculating the business model performance indicator results for each scenario, the output of these indicators can be combined for all four scenarios as well (e.g. in one chart or table) in order to easily compare the business model performance in all four scenarios. This can be very useful for the last step, step seven, where the business model performance indicator output needs to be analyzed by looking at strengths and weaknesses behind the business model as well as deriving related potential threats and opportunities for business model improvement.

Although the business model engineering tool gave critical new insights about strengths, weaknesses, opportunities and threats related to the business model of the investment research boutique, there is a disadvantage. Obtaining variables from the viable business model, making scenarios and scenario-based calculations is relatively time consuming – even though this case study contains a relatively small organization. Developing a similar business model engineering tool for a large organization is expected to take much more time. However, since business model engineering is an increasingly critical aspect of managing organizations and may also lead to substantial improvements and increasing viability, the right balance needs to be found between the effort available for business model engineering and the expected output in the form of a better understanding of the strengths, weaknesses, threats and opportunities for improvement related to the business model in use or development.

Future research can be useful to further develop the business model engineering tool. In the recent tool, each scenario takes places for the complete planning period of five years. In real life, it is more likely that in the period of five years, more than one scenario takes place. Furthermore, the view on the engineering tool could be more developed, for example by a tool like Xcelcius.

13. REFERENCES


Appendix A: The dynamic STOF-model from Bouwman et al [3]

Phases  Technology R&D  Roll out  Market

![Diagram of the STOF-model]

Appendix B: Scenario building through variables in a matrix

![Matrix diagram]

Appendix C: Multiplying factor calculation

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<tr>
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<th>Market Sentiment</th>
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<th>Weight</th>
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Appendix D: Anonymized part of the cockpit of the business model engineering tool

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**Standards**

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<td>Subscriptions ValuePortfolio Quarterly</td>
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<tr>
<td>Subscriptions ValuePortfolio Monthly</td>
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<td>Subscriptions ValueSelection Yearly</td>
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<tr>
<td>Subscriptions ValueSelection Monthly</td>
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<td>Subscriptions Yearly TopX</td>
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<tr>
<td>Paypal payments (#)</td>
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<td>Price Per Paypal Transaction</td>
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Appendix E: 7 step business model engineering tool framework

Appendix F: Variables derived from the business model of the online investment research boutique

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