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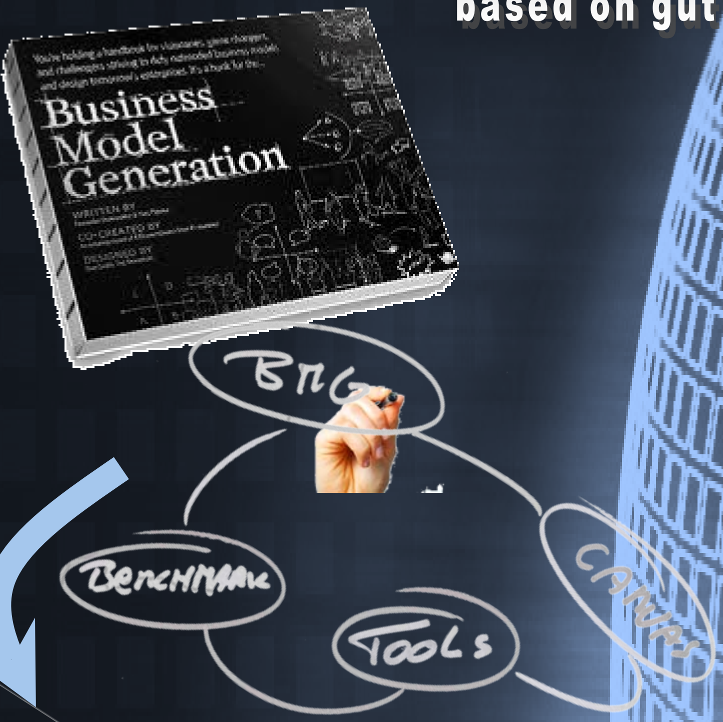
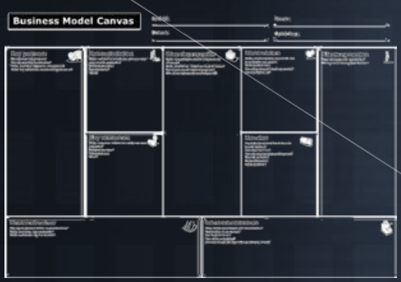
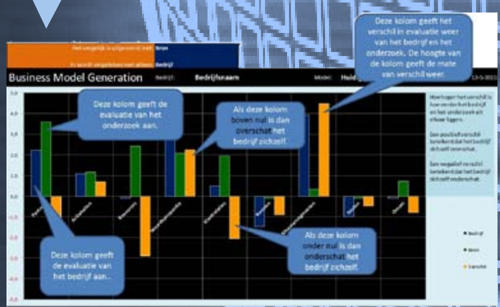
Do entrepreneurs take decisions based on gut feeling rather than on facts?







Avans University of Applied Sciences
Marijn A. W. Mulders
maw.mulders@avans.nl
Clemens P.J.A. van den Broek
cpja.vandenbroek@avans.nl
PO Box 90116
4800RA Breda
The Netherlands
+31765250500

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Marijn A.W. Mulders
Clemens P.J.A. van den Broek
Avans University of Applied sciences,
Breda, The Netherlands
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Abstract

In this paper we review the results of an empirical research of a number of organisations. The research shows a difference in the evaluation of a business model of an organization by the entrepreneur and by the researchers. It shows, based on an extensive list of questions, the decision to be taken on strategic level differs by entrepreneurs compared with the decision to be taken by researchers based on the same set of questions. The paper goes into the field ofentrepreneurs and the factors why they drive their own business like they do and how they gather data and process this data to prepare for a decision on strategic level. The paper describes how cognitive possibilities of the entrepreneur, biases and heuristics, experience and type of personality influence the decision making process. Finally future implications are mentioned as how to influence the process of decision making at strategic level by entrepreneurs in order to be able to have a more objective decision process based on facts rather than on gut feeling.

Researchers and authors have been supporting entrepreneurs in their development of their business and the challenges they have to cope within the current economic situation. Using methods and techniques such as BusinessModelGeneration ofOsterwalder and Pigneur business models of organizationsaremapped in nine different building blocks. Together they are called the Canvas of the business model. Included in the methodology an extensive questionnaire helps to evaluate the business model and the result is a swot of the business model of the organization. Both researchers and entrepreneurs themselves thev filled out this questionnaire resulting in two evaluations of the same business model. To be able to have a good understanding of these evaluations the results of the questionnaire are placed in a simple spreadsheet. To get a clear view of the difference of the two evaluations both evaluations were put together is a third simple spreadsheet. With this graphical overview the differences in the evaluation from the researchers compared with the entrepreneurs became very clear.

The authors therefore questioned themselves why there could be such a big difference in the evaluations. In one specific example form a company in the metal industry a remarkable difference showed in the two evaluations. Choices to be made on strategic lever for the company should be price raise and cost reduction based on the evaluation of the entrepreneur. Using the same questionnaire the researchers came with a total different advice on strategic level. The researchers showed very clear that there advice was in the area of channels and customer relationships. When looking to these two building blocks of the canvas of Business Model Generation the comparison showed a 180 degrees opposite result. In the first situation together with the current bad economic situation the chance of surviving this crisis with price raises and cost reduction is much lower than invest in customer relationships and the channels to inform and reach them. It is also known that in bad economic situations a counter-cyclical investment can give a company a greater chance of continuity. In the search of an explanation concerning this bi gap the authors researched by desk-research how a decision making process works with entrepreneurs. The most important factors that influence the decision making process of entrepreneurs appears to be a number of susceptible factors. Before we go into these factors it should be clear what an entrepreneurs does in his decision making process. A decision making process consists of three different steps from data gathering, data interpreting and the final decision. Data gathering an taking decisions is a clear process where the interpretation of the data that should lead to information and knowledge is not.
Looking at the factors that in the end make up the interpretation of data and the situation to take a decision the first one is how the

entrepreneur will get the proper data on which to decide. Once this information from ICT systems appears to be incorrect the entrepreneur will never rely on that system again. Secondly it shows that in the current information overload entrepreneurs must have the capabilities to select and combine all the data that is available. Too much data from different sources can lead to the maximum entrepreneurs can handle and transcends in certain situations the cognitive possibilities of the entrepreneur.The third factor the entrepreneur takes into account are the biases that the entrepreneur has and influence the decision to make. In uncertain situations entrepreneurs do not follow a logical set of rules to decide what to do. They more rely on biases that give them the idea to be certain about the decision to take. Heuristics, as the next factor is closely related to the biases entrepreneurs use in their decision making process. Based on past experience entrepreneurs tend to decide in the same way they did in an earlier decision making process. However past situations are mostly not the same as current situations and therefore entrepreneurs can make wrong decision using their heuristics. People tend to react based on the personality. This is the fifth factor why entrepreneurs take decisions like they do. More important is the personality off entrepreneurs in stressful situations. One cannot control the behavior and falls back on the personality and reacts based on this personality.

The decision making process is influenced by the factors mentioned above. Entrepreneurs take decisions to reach future success for their company or themselves. Included they look at the different risks involved to reach this future success. Entrepreneurs within a complex situation or with partly unknown circumstances will take decisions based on routine like they did before. This can be very risky because the former circumstances are mostly not the same as the current and therefore a past decision can work out differently in a present situation. Entrepreneurs with a lot of job experience take decisions based on intuition. This means that the person in this situation has the possibility to mull over the issue over a night's sleep and then come up with a decision. Waking up means that the rational mind takes over the unconscious mind that was mulling over the subject and can take a decision.

Knowing the different factors that make up the decision making process of entrepreneurs a very interesting question remains unanswered. Can the gap between the entrepreneurial decision making process and the researchers decision making process be reduced or even closed. Therefore a new empirical research is started at Avans University in order to discover how researchers and knowledge institutions are able to support the decision making process of entrepreneurs.

We would really encourage entrepreneurs to take part in this further research.

Introduction

Fast changing markets (Drucker)[1] have an effect on the decision making process in organizations. Entrepreneurs will have to adapt their strategy to be able to position themselves on the market towards their customers. Based on the experience of the author one can see a development from companies that positioning themselves on the market. This positioning has evolved in the past years from just offering a product or service on the market towards a changing business model as new positioning instrument. In between there have been other ways of positioning. After the product positioning companies hired good sales people that could make the difference for customers to buy at that company and not from the competition. After a certain period all companies positioned themselves in this way and e new positioning was needed. Companies started to sell quality to their customers with an equal or slightly higher price. The next step in the positioning came from companies that started to sell service to positioning themselves. In the mean time a new way of positioning came from the Blue Ocean Strategy (Kim and Mauborgne)[2].

However this is only for a small number of companies and the majority looked already at the next positioning possibility which are Hostmanship (Gunnarsson)[3] and Customer Oriented organization (Meertens and Mulders)[4]. The current and new positioning that companies are starting to use is the positioning through business modelling. A change of the business model makes a company differ from competition and makes it able to attract more and new customers. This explanation will help understanding the challenge entrepreneurs encounter in developing sustainable enterprises. Being able to survive in ever faster changing markets entrepreneurs will have to take more decision in shorter period of time and the decisions are getting more and more complex to take. Therefore changes in business models as a new positioning possibility should be evaluated because the impact of wrong decision can be disastrous as will be shown in this paper. This paper will go into the decision process of entrepreneurs and the effect on the business model in comparison with the effect on the business model when taking decision based on research and facts. A set of it-tools finally will give insight in this process and supports the entrepreneur in establishing the effect of decision making on the business model.

The Avans Centre for Entrepreneurship

Academics in the field of entrepreneurship education are increasingly aware that, while class-based knowledge input is a vital component of learning, the traditional lecture-based, didactic methods of teaching and learning alone are insufficient. As such, the development of entrepreneurship education demands a new approach to the study of entrepreneurship. In an attempt to achieve real, active learning several programmes have been developed, in which students from a broad spectrum of disciplines working collectively with entrepreneurs on their business development dilemma's. Lessons learned from the innovative programmes, offered by the Avans Centre of Entrepreneurship, will help to inform the wider debate about effective teaching and learning programmes in entrepreneurship education.

Aim of this paper

This paper aims to clarify how managers are able to take business decisions more objective and based on facts rather than on gut feeling. The paper shows what happened in the empirical study where a gap between entrepreneurs and researchers has been found concerning decision making on strategic lever of organizations. The researchers have evaluated the business model of organizations and based on this evaluation come up with an advice. The entrepreneur has also evaluated his own business model with exactly the same evaluation questions and comes up with a very different advice concerning the strategy for the organization. The way this difference was found will be shown based on Business Model Generation and the evaluation questions belonging to the business model generation canvas.The paper further identifies the terminology or ontology used to describe the decision making process in companies and compares this terminology with previous work. The paper will describe the three steps that entrepreneurs go thru in the decision making process. Gathering data, interpreting this data to get information and finally decide on what action has to be taken on strategic level of the organization. The paper will also make clear which aspects are important in the decision making process with entrepreneurs and show the factors that will influence the decision in the end. Desk research shows that biases, heuristics, experience and character are the most important influencing factors in the decision making process of entrepreneurs. The paper will make clear how these factors influence the behavior of entrepreneurs.

Knowing thegreat difference in the final action to be taken on strategic level between the entrepreneurs and the researchers several questions arise that are interesting to further research. First of all concerning this difference or gap how good or how bad is this for the further development and continuation of the organization? Does it mean that in one situation the continuity will be endangered and a possible bankruptcy is present in due time or in the other situation a possible successful organization together with a good fit in the environment. Do entrepreneurs re-evaluate their decisions based on the difference in the evaluation of their business model? Basically does the interaction between the researchers and the entrepreneurs support the entrepreneur in making more objective decisions?

The instruments that are used in this paper are just a few examples to show how a certain instrument can support the evaluation and benchmarking process of the business models of organizations. The paper will therefore give an outline for the ICT-support that is helpful to evaluate business models and the benchmarking against peers from the same industry, country, profit or non-profit, researchers or entrepreneurs, or a combination of the former areas.

Business Models

Many models (Mulders)[5] are available to help supporting the decision making process (Liu, Forrest)[6]. Although business models are being used since trading and economical behaviour exists (Teece)[7] they really became a common understanding as the Internet grew in the mid 90's. From that time on business models have shown an explosive growth (Zott et al)[8]. According to Zott et al there are many definitions for business model but only on a general level. No real definition in detail has come up that can be a standard definition worldwide. Based on their research Zott et al came up with three major phenomena's based on a classification of the business model literature:

1. E-business and the use of information technology in organizations;
2. Strategic issues, such as value creation, competitive advantage and performance of the organization;
3. Innovation and technology management.

Organizations do not operate their business model in a competitive vacuum (Hamel)[9] and are able to compete through their business model (Casadesus-Masanell & Ricart)[10]. Thus the business model represents a potential source of competitive advantage (Markides & Charitou)[11] and new effective models can result in superior value creation (Morris et al)[12]. Zott and Amit[13] have conducted research based on two factors being the total value creation potential of the business model and the organizations ability to deliver that value. Due to the subject of this paper we will focus more on the phenomena number 2 and less on the others. The reason here is that e-business development has come up because of technological developments that the capabilities of Internet provided us. The third phenomena innovation and technology is a trigger that causes organizations to change their business model accordingly. (Teece)7.In recent developments of 2010 new ways of describing business models came on the market and one in particular is very interesting.The Business Model Generation from AlexOsterwalder and Yves Pigneur(2005[14]/2010[15]) is a good instrument to evaluate the organizations business model with respect to added value, customer relationships, the creation process and the financial aspects to take the right decisions. Authors are aware that the topic of business models led to a lot of publications by journalists, business people, consultants and academics. However in practice business models are still relatively poorly understood as demonstrated by Linder and Cantrell [16]. According to Pigneur and Osterwalder, a business model is:

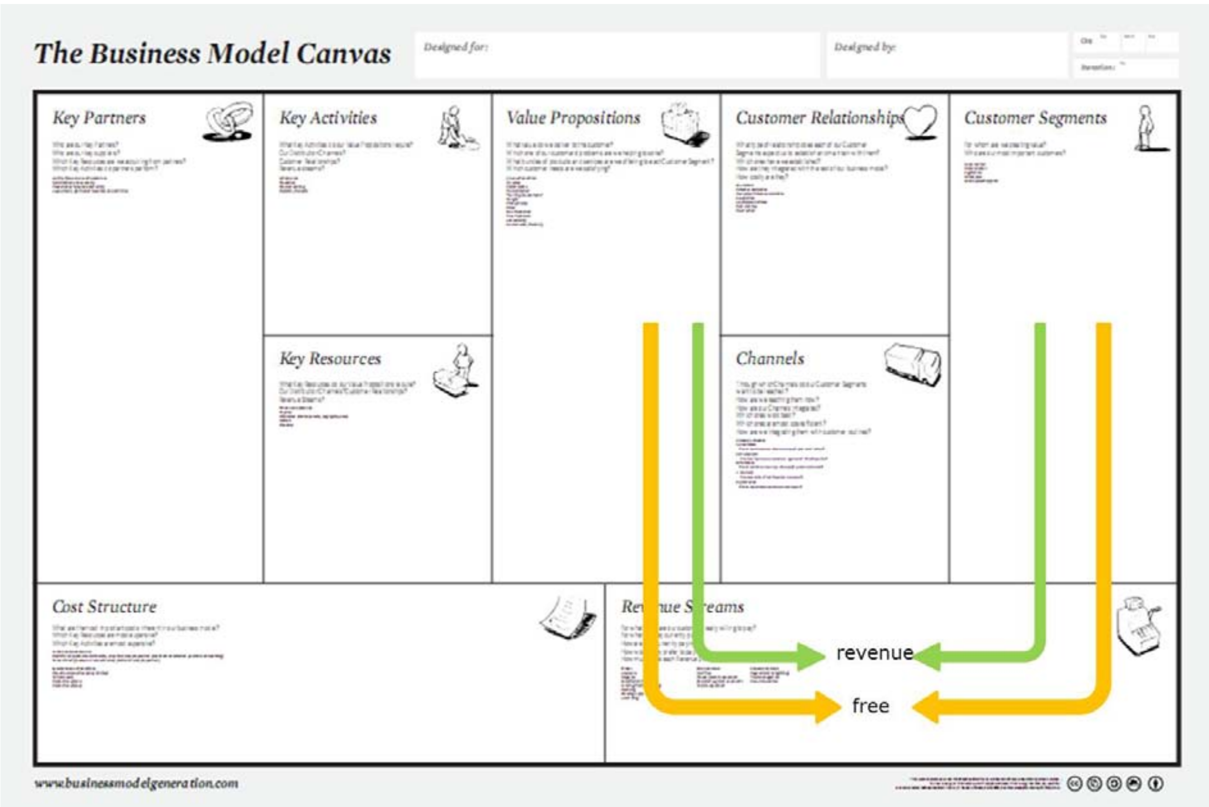
A conceptual tool containing a set of objects, concepts and their relationships with the objective to express the business logic of a specific firm. Therefore we must consider which concepts and relationships allow a simplified description and representation of what value is provided to customers, how this is done and with which financial consequences.

This definition is sufficiently broad to embrace the different reflections on business models that sprung up in different fields such as e-business, IS, computer science, strategy or management (Pateli and Giaglis)[17].

The Business model canvas

The Business Model Generation is realized by people who strive to defy outmoded business models. They are visionaries, game changers, and challengers who want to design tomorrow's enterprises. Business Model Generation gives a toolset in which we are able to describe a business model of anorganization in four main areas that cover nine building blocks called the Business Model Generation Canvas:

AREA	**Building Blocks**
Customers:	Customer Segmentation, Customer Relationships, Channels;
Offer:	Value proposition
Infrastructure:	Key Activities, Key resources, Partners
Financial viability:	Revenue streams, Cost structure



Business Model Generation is the result of a cooperation of 470 experienced business people around the world that developed the concept of the Business Model Generation. This concept is a shared language that allows us to easily describe and manipulate business models to create new strategic alternatives. Without such a shared language (Soley)[18] it is difficult to systematically challenge assumptions about the business model and innovate successfully.

With the help of Business Model Generation management gets a clear overview of the different building blocks and the way they interact together and support the strategic goals of the organization. However it doesn't give the actual improvements for the company and the decisions management has to take in order to really reach the goals that are defined. The quality of the business model must be evaluated to be able to find the bottlenecks in the business model and to take appropriate action (Grigorni)[19]. The overflow of information (Davis)[20] or the lack of (accurate, reliable and up to date) information (Hofmann)[21] leaves managers in an awkward position to decide based on their emotions and gut feeling at that moment. Only few managers are able to take the proper decisions and if the pressure to decide is very high it is even possible that nobody can or will take a decision. This leaves the company in position of uncertainty and employees are waiting for management guidance in what to do. This is one of the most dangerous scenario's companies can get in to because there will be no attention for customers anymore, only for what happens (or doesn't happen) inside the company, and therefore losing customers and business.

Empirical research in business models

At the Avans University of Applied Sciences entrepreneurs are supported on a regular base in researching markets and evaluating the organization in order to write business plans. In a period of one year between February 2011 and December 2011 thirty-eight researches have been conducted for nineteen companies. For each company a group of around 6 students have conducted this research and delivered a business plan. Areas of the research were:

- internal, organization, finance, marketing and the value chain,
- external, macro analysis, industry, customers, competition, suppliers and distribution.

All researches have been conducted by small and medium sized enterprises in the different industries. The business plan implied also an implementation plan as how to achieve the assignment of the project. The parts of the implementation plan consist of two areas:

- solution plan, which describes what the answer on the assignment is,
- Action plan, how the assignment will be carried out.

All projects were carried out by fourth year students at the Academy of Marketing and Business Management during a twenty weeks period. During this period the students were coached by the teachers who all have a business background or are even themselves entrepreneurs. Contact with the principal of the company was on a regularly base including a final presentation in a business like environment at the Open University in Heerlen. During this research the Business Model Generation book of Österwalder and Pigneur[22] was used. Two aspects of this book are important for this research.

1. The Canvas: nine building blocks that shows the business model of an organization
2. Evaluation, an extensive set of questions to show the quality of the business model.

Students draw the business model based on their research and fill out the questionnaire for the evaluation. After evaluating the business models of the different companies the concerning entrepreneur was also asked to fill out the questionnaire like the students have done. Students, entrepreneurs and teachers than sat together to analyze both questionnaires to see where the similarities and differences are. It became clear that in most cases a large distinction exists between the evaluation of the students and that of the entrepreneur. For start-ups this distinction was less than for already established companies. During this comparison it was not established where this difference came from. Based on the fact that students did the evaluation with the data they gathered through research this evaluation must be correct. Hence that means that the difference from the comparison comes from the results of the entrepreneur.

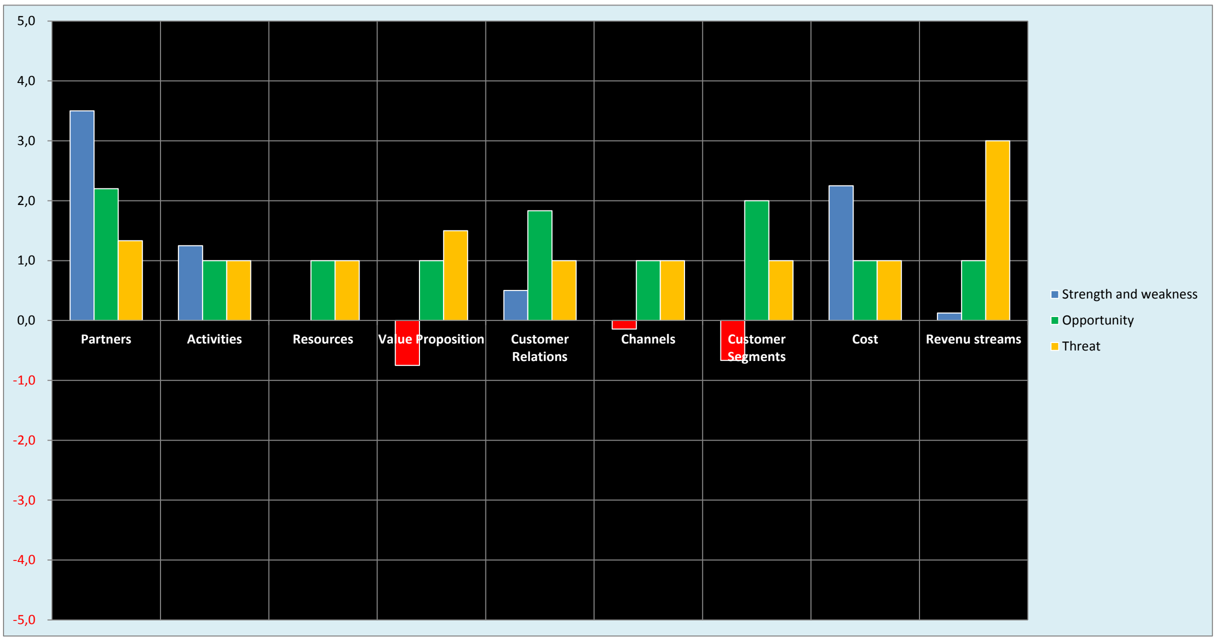
Based on these findings the questions arise why this difference in answering the questionnaire exists? To be able to start answering this question further research is necessary. By desk-research we have found information that will help us to focus on the proper research that will have to be carried out. That means that we will have a look at what is entrepreneurship and how do entrepreneurs gather information, use this information to find the different alternatives and choose the proper one for the situation the company is in at that moment. Secondly we will have a look at how decisions are made and how biases and heuristics influence the process of decision making. Then we will see how business models are used with strategic decision making and how entrepreneurs are able to take better decisions. Finally we will end with an open question to research the way entrepreneurs respond to the questions of the evaluation of their business model to clarify why there is a difference in strategic decision making based on facts from the students research and the opinion from the entrepreneur.

Evaluating Business Models

The origin of the famous saying: “A picture is worth a thousand words.” is not known. However if the evaluation of a business model can be shown in a picture are we then able to take better decisions?

We think we can.

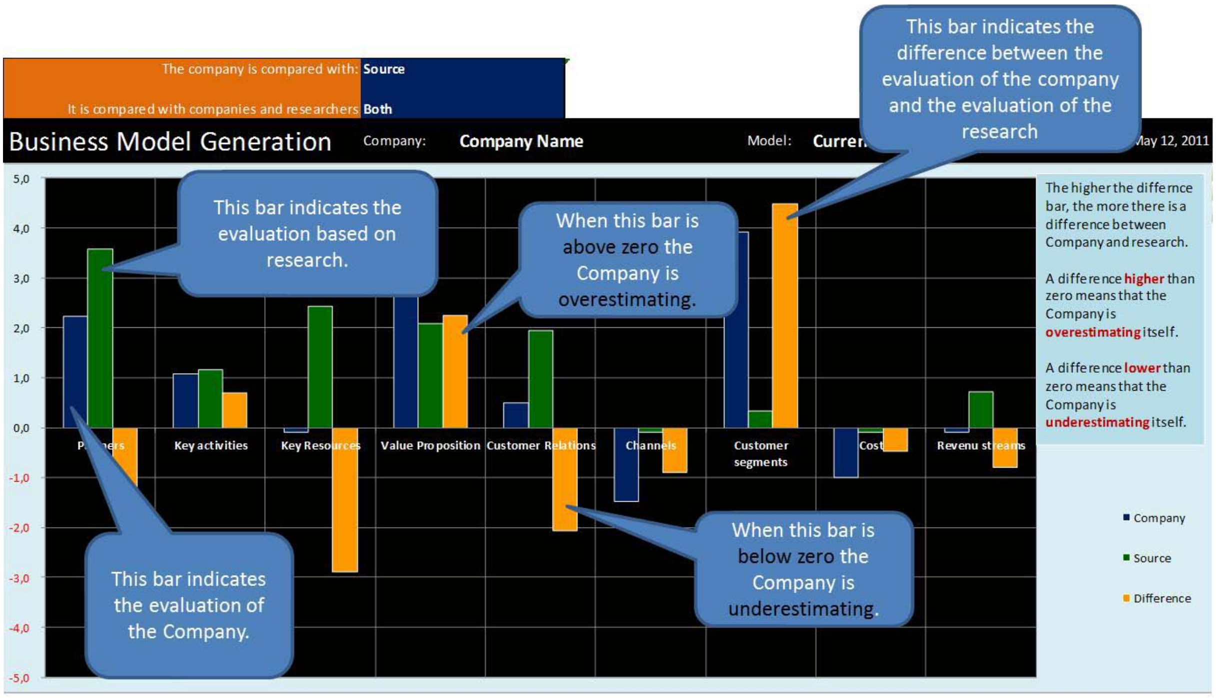
For the first stepwe use a set of questions that is translated to a picture in a graph format. This set of question shows the strength and weaknesses of a company and the opportunities and threats from the market. The questions for evaluating the strength and weaknessesare on a scale from -5 till +5 and the opportunities and threats on a scale from 1 till 5. This allows us to make the strengths, weaknesses, opportunities and threats visible in a picture (Lidwell et al)[23].



Looking at the building blocks we see the strength and weaknesses as the left bar in blue or red. Blue implicates that this building block has a strength. The higher the bar the greater the strength. If the bar turns red it means that this building block has a weakness. The lower the red bar the greater the weakness. The green bar shows the opportunities in the building block and the yellow bar shows the threats. These bars are from 1 till 5. The higher the bar the better the opportunity or the worse the threat. That means that the best evaluation of a building block is a high score of 5 on strength with a high score of 5 on opportunity and a low score of 1 on threats. The worst case is a low score of -5 on weakness a low score of 1 on opportunities and a high score of 5 on threats. One can easily see on which building blocks the attention and the decision making should take place.

A good reader or listener will immediately see or hear that the strength of the evaluation lies in the quality of the answers to the questions. The graph will make the results very clear however garbage in is garbage out (Fuechsel)[24] as they used to say in information technology. Managers will fill out the question based on their (feeling) knowledge of the company. I.e. many CEO's are able to give a list of USP's of a company but are they all usp's? Once I had a company with a machine park of € 40.000,- which the CEO said it to be his most important usp but 55 kilometres away the same machine was used.

The second step is to have researchers fill out the same questionnaire based on fact-finding. Now we will have a second evaluation. The difference between these evaluations is that one is based on beliefs whilst the other is based on facts. Comparing both evaluations leads to a total different graph where we clearly can see the deviation from both evaluations.



Again we see the graph from the different building blocks. In thissituation the blue bar shows the resultfrom the company based on the feeling of the manager. The second bar in green shows the resultbased on real market information from the researchers. The third bar in yellow shows the differencebetween the answersfrom management and the researchers. The higher the yellow bar the greater the difference is betweenwhat management expectsandwhatresearchers have found. Another issue thatbecomesclearimmediately is the score of the yellow bar above zero or below zero. If the yellow bar is above zero this means that the company is overestimatingitself. On the other hand ifit is lowerthan zero the company underestimatesitself.If the yellow bar is zero or close to zero both manager andresearchers have the same opinion. This does notmeanthatnothing has tobedone. Ifbothevaluations have a high score of 5 this building block is in perfect shape. However the lower the score or even a score below zero means that that building block is far from healthy and will need attention to be able to lead to a higher score.

Entrepreneurship

Although most people have a common understanding of an entrepreneur or entrepreneurship it still remains a necessity to put the entrepreneur (ship) in the light of the decision making process. So let's start with looking at the definition of entrepreneur. There are many and the one that describe it well with respect to this subject is; (Hirsch et al)[25] and I 'quote'.

Entrepreneurship is the process of creating something new with value by devoting the necessary time and effort, assuming the accompanying financial, psychic, and social risks,and receiving the resulting rewards of monetary and personal satisfaction and independence.

In this definition four aspects are important. The first one is the process of creation. Creating new values for the customers. Secondly an entrepreneur never stops thinking about the business and devotes time and effort to create the value stated before. Entrepreneurs are willing to take risks is the third aspect in the definition of an entrepreneur. And last but not least the entrepreneur really wants a reward for the time and effort to bring value and taking risks. The most important reward is independence followed by own personal satisfaction.
The entrepreneurial activities are filled with enthusiasm, anxiety, frustration and hard work. Some lead to success and other to failure. In Holland in 2011 140.00 (Chamber of commerce) new entrepreneurs started their own business and we know that in the first year 20% does not exist anymore and after five years 50% quit their company. This high rate of failure is due, as an example, to the poor sales, lack of capital, competition, lack of managerial ability. Many other entrepreneurs survive and are challenged by taking decisions in further developing their companies.
Entrepreneurs are always developing their business and exploiting new opportunities that have a higher expected value. Entrepreneurs show a higher emphasis on exploiting new opportunities when the expected demand is large (Schmookler)[26] and (Schumpeter)[27], when industry margins are high (Dunne, Robertson & Samuelson)[28] ,competition is nor too high or too low(Hannan& Freeman)[29], low capital cost (Shane)[30]and there is a young technology cycle (Utterback)[31].
The discovery of new opportunities is based on two important facts.

1. Availability of information necessary to identify an opportunity;
2. Cognitive possibilities to evaluate the opportunity.

Information gathering and distribution.

Since the seventies of the last century, information and communication technology (ICT) developments have increasingly marked changes in organizations. As a result the way in which organizations take strategic decisions, are organized, cooperate, conduct business and communicate with their suppliers and customers have changed significantly in the last decades(van der Zee 2000)[32]. The terms place and time now have an additional *virtual dimension*(Coghlan; Dromgoole&Joynt2004)[33]. Changes in which ICT plays an important role have increased enormously and the speed in which they succeed one another is breathtakingly fast. As a consequence, CEO's of large and small enterprises have to make many decisions in a very short time. If you are a small or a large company, decisions will have to be made based on available information. The larger the company in most times the greater the amount of information available. This doesn't make it easier for CEO's to make the proper decisions.

Because of an information overload companies are starting to develop and implement ICT and software systems to support them in the decision making process. Due to the shortening of life cycles of available ICT, absorbing new ICT has to be a key capability to transform and adapt quickly to changing circumstances (Broek; Dhomen and van der Hooft 2010)[34].
Starting from base systems like management information systems through data warehouses up to decision support systems (Sauter 2010)[35] and in the end strategic business intelligence systems companies are trying to support the decision making process to make the proper decisions (Arnott and Pervan 2005)[36]. Although these systems are implemented with the most care and time and money there is always the question by the decision makers is all this gathered information correct, up-to-date, accurate, and trustworthy? If just once this information is not correct the CEO doesn't rely anymore on the systems and start deciding based on the experience and 'gut' feeling sometimes ending in wrong decisions. Apart from the loss of the investments made, the organization's development is also brought to a halt. This results in a decreased competitive position. Look at the ABM-AMRO takeover of the Italian bank Antonveneta[37],[38]. The CEO of ABN-AMRO went to the Italians based on his experience as a Dutchman with a nice contract to buy this bank. Would he have anticipated on the culture difference the takeover would have gone differently.

Discover opportunities

Taking decisions is not just a set of rules you use to evaluate new entrepreneurial opportunities (Baumol)[39]. Although the entrepreneur may have the information available still there needs to be a capability to combine this information to means-ends to discover the real opportunity. Visualizing these relationships is very difficult and there are many examples (Rosenberg)[40] that entrepreneurs failed in recognizing the opportunity within the information. People differ in the way they combine information and consisting concepts into new opportunities (Ward, Smith and Vaid)[41]. Where one sees opportunities, the other merely sees the risks involved (Sarasvathy, Simon, Lave)[42].
However entrepreneurs are more likely to discover opportunities than other people (Baron)[43] because entrepreneurs think less counterfactual (spent less time in what might have been), have less regret over missed opportunities and are less susceptible to inaction inertia.

Decision making

Entrepreneurs act in an environment where different factors may play a role in the decision making process. Developments within the organization but clearly from the market like customer's behaviour, competition threat, governmental regulations, suppliers, investors etc. have an impact on the organization. All provide information that will have to be taken into account within the decision making process and will lead to opportunities and threats (Kotler)[44] towards the company. Based on this information the entrepreneur must take decisions on strategic level to cope with the challenges and to determine the success of the strategic decision (Bankova)[45].

Process of decision making.

Decisionmaking is a multistage and multicriteria process (Hall and Hofer)[46]. The decision maker evaluates between the possibilities of future success and risks involved. The process of evaluation is based on the information available like the knowledge about the decision, the probability of each option, the results of the options etc. (Harris)[47].
Another critical factor according to Harris is that decision making is a non-lineair, recursive process which means that decision makers move forward and backward between the criteria that make up the decision and the options that are available based on the criteria. During the decision making process a certain criterion may come up that the decision maker did not take into account yet and really wants to take this criterion in the set of criteria thus influencing the possible outcome of the

options. That means that the available options influence the criteria and the criteria influence the options that are considered.
In more and more complex situations with an overload of information to select the proper criteria and possible options entrepreneurs cannot cope anymore with this increasing complexity and create a kind of 'shortcuts' in their way of thinking. To be able to cope with this complex environment two simplifications are possible. The first one is taking decisions based on routine and the second is taking decisions based on intuition. Decision making of entrepreneurs based on cognitive mechanisms is discussed later on.

Routine decision making.

Entrepreneurs who will have to take decisions in a too complex environment or with partly unknown circumstances try to structure the first options and classify them according to their own knowledge and experience. (Loasby).[48]In this case the entrepreneur takes an old decision situation to adjust the new circumstances and applies the same techniques based on the former knowledge. Taking decisions based on habits can be very dangerous in a continuously changing business environment where market characteristics are rapidly changing as well. These circumstances require entrepreneurs to manage change constantly. If not and thus only relying on knowledge and experience can lead to a so called "boiled frog" case (Bankova)[49]. Entrepreneurs that have the tendency to over-generalize based on a few characteristics and observations (Busenitz and Barney) [50] may lead decision makers to be reactive instead of pro-active with respect to solve problems or meet decisions. According to Bankova entrepreneurs that take decisions reactively may lose their customers because they are not able to adjust their organization to new market circumstances. Furthermore, research (Frese et al.)[51] shows that a reactive strategy is negatively related to the success of the firm. Besides this a reactive strategy leads to less success and less success leads to reactive strategies and thus ending a circular process being a downward spiral. (Van Gelderen et al.)[52]That means that in a rapidly changing business environment pro-active decision making is a critical factor to success according to Van Gelder et al. Proactive planning means anticipate on future events and developments and requires entrepreneurs to analyze the changing market circumstances and take decisions according to allocate proper resources and means to deal with the upcoming events rather than just to react on the different crises as they occur. (Van Gelder et al).

Intuitive decision -making

Entrepreneurs with years of job specific experience use a sophisticated form of reasoning based decision making that's called intuition (Prietulaans Simon)[53]. Intuition is notemotion; it is subconscious, complex, quick and not based on former points of view state Khatri and Ng[54]. They say that intuition is connected to experience and expertise and not the opposite of rationality or a process of random guessing. It is more a completing path to come to a decision based on the experience and expertise of the entrepreneur. Mintzberg and Wesley[55] argue that intuition has to do with deep knowledge that is developed over the years and where the unconscious mind has been mulling over the issue. The bright idea than often comes after sleep because the rational thinking is shut off during sleep and the unconscious mind has freedom to mull over the issue. After sleep the rationality takes over again and the mind is able to make the logical argument. Therefore Mintzberg and Wesley argue that no one should accept any theory of decision making with ignoring insight. This is supported by Levander and Raccuia[56], who studied entrepreneurial personality, and found that the behavior of entrepreneur's rationality has a lower priority than instinct.

Cognitive mechanisms with entrepreneurial decision-making

Another component that makes up the decision making process with entrepreneurs besides the decision making process by nature can be explained by the way entrepreneurs think, in other words how do they use cognition in their

decision making process. Research was started that looked at personal traits, hence competences, of the entrepreneur and the way that some entrepreneurs recognized opportunities and perused them compared with others that did not (Shaver and Scott)[57]. However these studies didn't explain the relation between the different entrepreneurs why one would recognize and pursue an opportunity and another not. Baron shifted the research to another direction and found a possible explanation in cognitive pre-dispositions that means that entrepreneurs simply think in a different manner. Although non-entrepreneurs have the same tendency in their general risk taking as entrepreneurs, the entrepreneurs see more opportunities to make profit in different business situations than non entrepreneurs (Palich and Bagby)[58]. So entrepreneurs really do see the risks involved however they do not see the risk that high as others would see. Entrepreneurs take decisions where they rely more on biases and heuristics and speculate that many decisions never would have made if it wasn't for them. (Busenitz and Barney)[59] According to Bazerman[60]the 'cognitive illusion trap' is the most dangerous aspect of the decision making process. Even the most smartest people can fall into this trap which causes them not to see the proper reality but a deluded one. Misguided thinking is the result. Accordingly, Baron states that by information overload, responsibility, commitment, emotions, high degree of uncertainty or other situations that entrepreneur can come into, their susceptibility to cognitive biases and errors is increased.
The cognitive perspective in the decision making process shows us that everything we say, think or do is influenced by our mental processes and by the cognitive mechanisms with which we handle information like acquire, store, transform and use to accomplish a large number of tasks like decision making and problem solving (Sternberg)[61].

Subjective opinions

"Airplane Management". People who frequently travel by plane often read the glossy magazines on board of these plains. In each copy you will find one or more success stories (best practices) of CEO's. This off course has been for that company at that moment in that situation the best choice and it shows based on the results these companies reach."I can do that too" the manager says and instructs the employees to do exactly the same as what was read in that glossy magazine. However, the use of 'best practice' is currently discussed in many sectors and by many disciplines (Duignan)[62]. Again the decisions are made on the base of emotions and the risk this company is focussing is very high. It is a different company, in a different situation and at another moment in time.
Emotions frequently do influence the judgments and choices people make. The importance of anticipated emotions such as regret and disappointment in decision making has been demonstrated by Zeelenberg, van Dijk, Mansteadand van der Pligt[63].Guiding your company, whether it is a large or small company, based on emotions,Lerner and Keltner[64], is very risky.

Biases and Heuristics

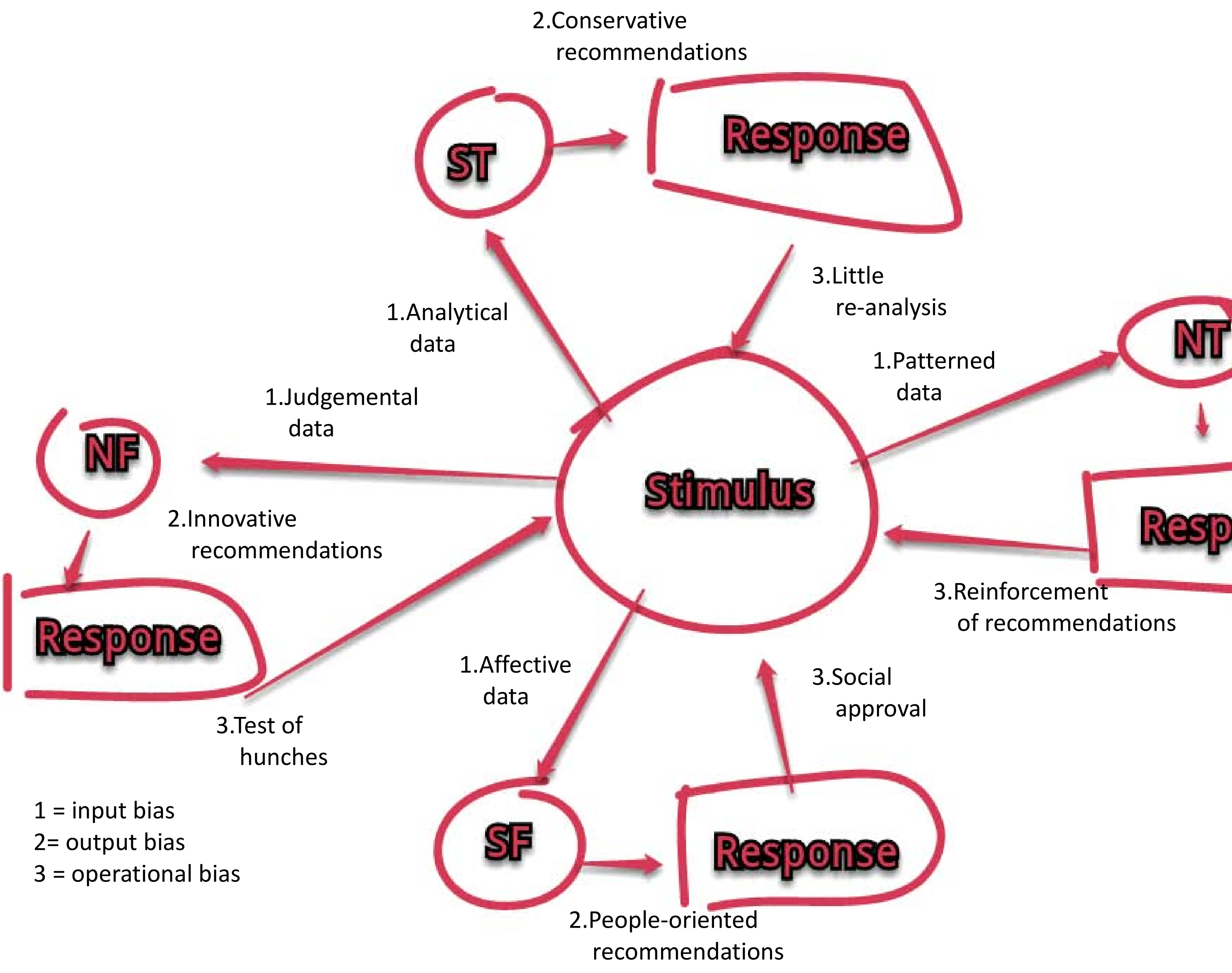
Entrepreneurs fall back on biases and heuristics when they don't make use of the rational decision making process based on facts. (Stevenson et al.)[65] These biases and heuristics people use in assisting them in the decision making process are decision rules, cognitive mechanisms and subjective opinions. Kahneman and Tversky[66] described their view of heuristics and biases as follows: "In making predictionsand judgments under uncertainty, people do not appear to follow the calculus of chanceor the statistical theory of prediction. Instead, they rely on a limited number of heuristics whichsometimes yield reasonable judgments and sometimes lead to severe and systematic errors" (Kahneman&Tversky, p. 237). They then defined three cognitive heuristics for riskjudgments: representativeness, availability, and anchoring-and-adjustment.

Representativeness

With this heuristic the entrepreneur thinks that the decision concerning a certain subject or event is similar with another decision taken in the past and assume that the probabilities are the same.

Availability
With this heuristic the entrepreneur uses the frequently or likelihood of an event or situation to occur in his mind within the decision making process.

Anchoring and adjustment
With this heuristic the entrepreneur will take his reference and experience (anchor) in the decision making process and then adjust it insufficiently to reach the final conclusion. Entrepreneurs make use of heuristics as devises for filtering and organizing to reduce the complexity of the decision making process. However this not always lead to the right decision. It may even lead to systematic errors or biases. Bias and heuristics are often used as the same but there is a big difference when looking at it more closely. In more complex situations where information overload is huge and/or pressure is high cognitive capabilities may be insufficient to gather the proper information, see the different alternatives and select the best one. In these situations entrepreneurs use biases in their decision making process and this can be very dangerous and result often in inferior decisions. These decision come from inaccurate assumptions from data and/or from an inferior decision making process. Besides that entrepreneurs also show an overconfidence of bias (Forbes[67], Koellinger et al[68]) and are often very optimistic about their own success in business (Cooper et al)[69]. The intuitive response of entrepreneurs is often based on recognizable parts of organized



1 = input bias
2= output bias
3 = operational bias

information according to Simon[70]. The more often the entrepreneurs use this in the end it will be a habit and become the representative of a characteristic decision style. That also means that entrepreneurs use heuristics in gathering information, looking for alternatives and selecting the best alternative. Eventually these heuristics become the entrepreneur's preference and this means that the personality of the entrepreneur implies an implicit set of heuristics and biases in the decision making process.
Many strategic decisions occur in stressful situations (Kotter)[71]. Stress lowers the control with respect to behavioural responses (Brief et al)[72]so that entrepreneurs take decisions based on intuition. The significant portions of variations in strategic decisions can therefore be explained by the heuristics the entrepreneur uses. Entrepreneurs also have their own personality. Based on Jung's[73]personality test the Meyers-Briggs Type Indicator (MBTI) has been developed and shown to be valid and reliable (Tzeng et al)[74]. It defines four personalities based on two ways that people obtain data and two ways that people evaluate data.

- Sensing-Thinking(ST), systematic decision making with hard data;
- Intuition-Thinking(NT), non-linear thinking by studying patters in data;
- Sensing-Feeling(SF), people's opinion in decision making;
- Intuition-Feeling(NF), Judgment and experience, personal view as facts.

These four types of personality each have an impact on the gathering of data, evaluating data and generation alternatives. That means that each type of personality has a different preference and influences the decision making process as shown in the figure before.Personality types cognitive trails.

1. Input biases occur when entrepreneurs selectively rely on information where they give more weight to different classes of information (Markus and Zajong)[75]. Based on the personality type there are four different input biases: Analytical data, Patterned data, Affective data and Judgmental data.

2. Output biases occur when the entrepreneur has a preference concerning the response. They fail to evaluate the data properly and supply guesses in the absence of data. Based on the personality type there are four output biases:
- Conservative recommendations,
- Long-term recommendations,
- People-oriented recommendations
- Innovative recommendations.

3. Operational biases occur when entrepreneurs use the date incorrect and draw conclusions from inappropriate samples. Based in the personality type there are four operational biases: Little re-analysis, Reinforcement of recommendations, Social approval and Test of hunches.

Future implications

We have discovered an important difference in the outcome of decisions on strategic level taken by entrepreneurs and taken by researchers. Through the business model evaluation we were able to get a clear graphical overview of this difference in decisions. The process of creation, never stop thinking about the business and the devotion to it, taking risks and in the end wanting a reward for are for entrepreneurs the drive to fully participate in the development of their organization. The decisions of entrepreneurs are influenced by their cognitive possibilities, biases, heuristics, past experience and the type of personality. Together with the data they collect decision are made for the future of the organization. As the empirical research shows that big differences can occur between the way entrepreneurs take decision and the researchers that take decision based on actual information the next questions can be formulated:

"Looking at the difference between the two evaluations of the business model how good or how bad is this difference for the strategic direction of the organization?"

"How are we able to influence the process of decisionmaking by entrepreneurs in such a way that more objective decisions will be made concerning the strategic direction of their organization?"

"Do entrepreneurs re-evaluate their decisions based on the outcome of the comparison of the two evaluations of their business model?"

The empirical research of the companies together with the desk research about the decision making process of entrepreneurs had led to some insight of the decision making process of entrepreneurs. A better understanding of this process shows why entrepreneurs take different decisions but it gives no answer to the above mentioned questions. A subsequent study will answer the questions mentioned before.

Practical implications

Convincing somebody who has formed an opinion based on feeling is not easy. Even with the set of questions from the 470 authors it is difficult and one can argue whether this is the proper set of questions.Besides that gathering information is not easy and is the quality of the research enough to sustain the evaluation based on facts? We believe that taking decisions based on graphical views that is made through research and facts will lead to better management of the company's business model.
The current graphical view is made with a simple Excel graph just to see how more information one can get from these graphs rather than the set of questions with the corresponding answers. The way these graphs are made is an extensive job to do and input errors are made easily. No toolset yet is available where the data can be stored, evaluated and compared. Thus there is a need for developing this toolset in order to stare de company data, evaluations, comparisons en to be able to benchmark business models against others in the industry, country, profit-non-profit, research or entrepreneur or a combination of the mentioned selection criteria. A very helpful part of the toolset for companies is the benchmark, Lankfoord (2001)[76]. A benchmark is reference to the quality of performance of another company based on the same set of criteria. In this case the evaluation of a company can be benchmarked against a database that includes many evaluations. The company can see in this way how the performance is of the company compared to all the companies in the benchmark. It is even possible to have an "incompany benchmark"where the evaluations of employees are benchmarked against each other.

Finally we are happy to close with a call for participants in a further research that is already started at Avans University of Applied Sciences. Avans will set up a research to define ways of closing the gap between entrepreneurs and researchers to be able to support entrepreneurs in their decision making process to help them taking more decisions based upon facts rather than on gut feeling.

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