

BUSINESS MODELS AND HEURISTICS: HOW DO THEY WORK TOGETHER?

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Abstract

Building on cognitive theories and business model literature, the object of this paper is to analyze to what extent entrepreneurs rely on heuristics to develop business models. While recent research has referred to a cognitive perspective on business modeling, it is still unclear how the cognitive foundations of such modeling happens. Despite the constraining effects that management and entrepreneurship literature has attributed to these cognitive tools, we argue that in making sense of uncertainty, “fast and frugal” heuristics provides entrepreneurs with robust strategies to connect the dots that give rise to startups and their business models. The paper makes two main contributions. First, we introduce the heuristic of similarity into the business modeling literature. Second, through the results of a qualitative survey, we conceptualize and theorize on the cognitive activity of business modeling, presenting it as an iterative process of configuring heuristics.

Keywords: entrepreneurship, business models, heuristics (*imprenditorialità, business models, euristiche*)

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1. Introduction

Interest in business models has grown exponentially in the past few years especially after the ecommerce startups boom in the late 1990s (Amit and Zott, 2001; Markides, 2013). Since then, the concept has been applied to different domains. It has been adopted by strategy scholars to discuss value creation and sustainable competitive advantage (Christensen, 2001; Teece, 2010), as well as by technology and innovation management scholars as a conceptual means for relating a firm’s technological and market domains (Calia et al., 2007; Björkdahl, 2009). Nowadays, while many different definitions of business models have emerged (Zott et al., 2011; Wirtz et al., 2016) and have assumed multiple roles, there is an emerging consensus

that the concept needs to be further treated from a cognitive perspective (Baden-Fuller and Mangematin, 2013; Demil et al., 2015). It is our intention to address this call and explore more fully the idea of looking at business model as a cognitive tool (Chesbrough and Rosenbloom, 2002; Baden-Fuller and Morgan, 2010) entrepreneurs use to process and structure information, in addition to representing business environments.

In fact, while the application of a cognitive lens has been identified and articulated as a promising avenue to enrich our current understanding of business modeling, this relationship has only so far been explored on a rhetorical level. As a consequence, the distinct underlying mechanisms and cognitive processes have largely remained within a 'black box.' In the cognitive perspective that currently prevails, the fundamental question about the micro-foundations of business modeling - 'How does business modeling happen?' - has remained unanswered. One the cognitively challenging aspects of defining the business model for startups is that it requires connecting the dots in the face of great technical and market uncertainty (Chesbrough and Rosembloom, 2002). Dealing with uncertainty requires knowledge without an exhaustive use of information. In other words, dealing with uncertainty and eventually connecting the dots to develop a business model requires heuristics that deliberately and efficiently ignores information (Mousavi and Gigerenzer, 2014).

This paper offers a conceptualization of the cognitive processes that potential startup entrepreneurs employ when performing business modeling by drawing on the stream of research based on heuristics. Heuristics are rules of thumb for reasoning, a simplification, or educated guess that reduces or limits the search for solutions in domains that are difficult and poorly understood (Simon, 1955). Actually, even if strategy scholars have shown a growing interest in the cognitive side of business models (Doz and Kosonen, 2010; Martins et al., 2015), specific cognitive tools, such as heuristics, used in the formation of a business model remains unexplored.

If, as we strongly believe, the business model can be considered as an heuristic (Chesbrough and Rosenbloom, 2002) and if any heuristic must have a referential formal structure such as the building blocks structure (Todd and Gigerenzer, 2012), in this paper we want to find the structure of the heuristic involved in creating a new business model. According to us, a business model results less from a carefully calculated choice from a diverse menu of well-understood alternatives, and more from a process of sequential adaptation to new information and possibilities. We argue that potential entrepreneurs use heuristics as a tool to create business models which serve as strategies to navigate business environments. In particular, this idea is rooted in and links two different streams of literature: one is the cognitive perspective in the business model research (Baden-Fuller and

Mangematin, 2013; Doz and Kosonen, 2010; Martins et al., 2015) and the second one is the research on ecological rationality in cognitive science and the fast and frugal heuristics research program (Gigerenzer, 2008; Todd and Gigerenzer, 2012). According to the first stream of literature business environments are usually characterized by high levels of uncertainty about the markets entrepreneurs enter or create, the outcomes of technological developments they pursue, and their competencies to successfully run a venture (Shepherd et al., 2015).

Complex problems often call for simple robust solutions and heuristic strategies solve complex uncertain situations exactly because of their simplicity and not despite it (Gigerenzer et al., 1999): trying to calculate everything, spending more time, and processing more information does not necessarily provide a better, more accurate result. Especially in the field of business decision-making, plenty of information is often available, but one crucial point is that entrepreneurs can generate profit in the market precisely because they intelligently deal with immeasurable, irreducible uncertainty and complexity of information.

Although heuristics are cognitive instruments based on limited information and computation, they can provide better outcomes than other more complex models and have an important potential for decision makers within entrepreneurial environment (Guercini, 2012). Business models might result less from a carefully calculated choice from a diverse menu of well-understood alternatives, and more from a process of sequential adaptation to new information and possibilities (Davenport et al., 2007). The cognitive perspective of business modeling is embedded in broader accounts of cognition in management (Eggers and Kaplan, 2013; Gavetti et al., 2012; Gavetti et al., 2007). Nevertheless, the extant literature provides only limited insights into the cognitive foundations of business modeling and into the mechanisms behind it. In order to fulfil this theoretical gap, we aim to give an answer to the following research question: which heuristics do potential startup entrepreneurs use in the development of business models, and how do they function?

The thesis behind this paper is that among a set of heuristics that we will take into account, there is one in particular which best fits the business model environment and the process of shaping an idea given uncertain conditions: the similarity heuristic. Our idea is that the similarity heuristic is strongly linked to the analogical thinking which is already proven to be a powerful and empowering tool for product innovation and increasing performance (Gavetti et al., 2005). Our hypothesis is that the similarity heuristic will prove to be the most used while imagining the creation of a new business model and we will test it on a sample of 130 students of an entrepreneurship class, which we will consider like “potential entrepreneurs”.

2. Literature review: the cognitive side of business models and the value of entrepreneurial heuristics

2.1 The cognitive side of business models

In the last two decades the concept of “business models” has gained considerable attention among strategy scholars and practitioners (Zott et al. 2011). What exactly is a business model and how it is generated have been matter of a lot debate (Tucci et al., 2017). Actually, while scholars have agreed on the business models’ property to describe the design or architecture of the value creation, delivery and capture mechanisms employed (Teece, 2010), some inconsistencies persist on its generating mechanisms.

Firstly, a part of the literature has treated business models as purposefully designed systems (Dubosson-Torbay et al., 2002; Zott and Amit, 2010) that reflect rational managerial choices and their operating implications (Shafer, et al., 2005; Casadesus-Masanell and Ricart, 2010). Secondly, the evolutionary approach to understanding business models has been based on a view that strategists engage in local search and response to specific problems or opportunities (Chesbrough, 2010). This view has emphasized the role of routines, their relative inertia, and incremental strategic change driven ‘more by trial than by forethought’ (Gavetti and Rivkin, 2007: 424). Third and finally, several scholars have suggested that business models reflect entrepreneurial mental models and cognition (Baden-Fuller and Mangematin, 2013; Furnari, 2015).

Actually, early literature has highlighted the constraining effect of cognition on business models (Tikkanen et al., 2005) and it has also emphasized that cognitive barriers might prevent entrepreneurs to innovate business models (Chesbrough, 2010). Because cognition acts as filtering process, it is likely to preclude identification of models that differ substantially from the firm’s current business model. Particularly, Chesbrough and Rosenbloom (2002) have advanced the idea that the process of constructing business models is closely related to Prahalad and Bettis’s (1989) notion of dominant logic, since that logic is intended to reduce ambiguity and make sense of complex choice faced by entrepreneurs. In their view, while this logic is useful and beneficial, it comes at a cost. The choices made in the creation of a business model eliminates other options and filters out certain possibilities (Chesbrough and Rosenbloom, 2002).

More recently, scholars have attached a more proactive role to cognition in developing business models. In fact, in line with the development of research on cognition in strategic management (Kaplan, 2011), they have suggested that business models stand “as cognitive structures providing a theory of how to set boundaries to the firm, of how to create value, and how

to organize its internal structure and governance (Doz and Kosonen, 2010: 371); business models have been also conceived as schemas or “cognitive structures that consist of concepts and relations among them that organize managerial understandings” (Martins et al., 2015: 105). According to this view, business models reflect conscious managerial choice and strategic design.

2.2 Heuristics

The origin of the term heuristic is the Greek word for “serving to find out or discover.” Heuristics are, above all, strategies to solve problems that logic and probability theory cannot handle (Groner et al., 2014). In this respect, a heuristic is a specific instantiation of a strategy that ignores part of the information available in the problem space. It is fast and frugal as it relies on “a minimum of time, knowledge, and computation to make adaptive choices” (Gigerenzer et al., 1999, p. 14). In literature, there has been a heated debate as regards rule-based behaviors which concern two research programs on heuristics: the “heuristics and biases research program” (Tversky and Kahneman, 1974) which led to the nobel the two israeli scientists, and the most recent “fast and frugal heuristics research program” leaded by Gerd Gigerenzer (2007) and his group at the Max Planck Institute for Human Development. Research following the former program aims to draw attention to the biases of intuition (Tversky and Kahneman, 1974) and it is connoted by a negative perception about the role of heuristic processes in forming judgements and taking decisions (Guercini, 2012). The latter research program, on the contrary, underlines that heuristics can be more effective than the “rational approach of economists” and it is strongly characterized by the effort to define models of formal heuristics (Guercini, 2012). Both programs, confirm in different ways that individuals rely largely on heuristic rules in behavior and cognition.

The use of heuristics in management has been documented for a broad range of decisions (Guercini et al., 2014). However, the specification of different heuristics varies greatly, with the most basic form reported being mere verbal statements of rules of thumb. A large collection of such verbal heuristics was documented by Manimala (1992) in a study on pioneering innovative ventures. These include, among others, “start small, grow big organically,” “Look for new (product) ideas among technological developments abroad especially among new, rare, or specialized products developed abroad”, “minimize initial investments,” “repeat successes to take full advantage of them,” and “sharing is the way to loyalty and prosperity. Give everyone his due.”

Tab. 1. Example of heuristic according to Manimala 1992

Decision	Heuristics
Rather than start the first venture with a full-fledged production unit, start the manufacture of selected production unit, start the manufacture of selected products on loan licenses in the premises of another company and slowly come to one's own using internally accumulated resources	1 Test the outcome before venturing out 2 Minimize (initial) investments 3 Start small, and grow big organically

As noted by Simon (1990) heuristics as foundations of adaptive human behavior address the decision maker's individual cognitive capabilities and the environmental specifics in which the actual decision task is embedded, as well as (obviously) the decision-making task itself (Gigerenzer et al., 1999; Goldstein and Gigerenzer, 2002). The ecological rationality of heuristics emerges from different directions (Loock and Hinnen, 2015) and more specifically, scholars have found that heuristics: (a) collect the essential results of learning processes (Bingham and Eisenhardt, 2011); (b) systematically exploit information coming from the environment (Goldstein and Gigerenzer, 2002); (c) provide beneficial "effort/accuracy trade-offs" and save time or costs in decision making, or enable accurate decisions when such resources are scarce (Hauser, 2014); (d) only require little information to arrive at accurate decisions, which is especially beneficial in situations of low information availability or uncertain information reliability (DeMiguel, Garlappi, and Uppal, 2009); (e) avoid over-fitting decisions to historic data, and appear to be more accurate in predicting new data (Czerlinski et al., 1999); (f) can be assumed to balance efficiency and flexibility, the two conventional foundations of organizational development which are often assumed to conflict (Eisenhardt et al., 2010). Meanwhile, in psychology, considerable effort has been invested in specifying generalizable and testable descriptions of heuristic decision processes. Psychologists have systematized heuristics by studying, among others, common building blocks and in particular, we rely on Gigerenzer and Gaissmaier (2011) that defined three such building blocks which work in this order:

- 1) Search rules: state where to look for information;
- 2) Stopping rules: state when to stop searching;
- 3) Decision rules: state how to decide given the attained information.

Artinger et al. (2014) identified a number of well-specified managerial applications of heuristics that can be traced back to five basic classes of heuristics of which the respective building blocks have been specified: 1) satisfying; 2) tallying and $1/N$; 3) lexicographic strategies; 4) recognition; 5) similarity.

In Simon's (1955) seminal article on bounded rationality, he highlighted satisfaction as an important strategy for decision making. Satisfaction

refers to the realistic goal of finding a “good enough” solution. The tallying and 1/N strategy counts the number of cues favoring one alternative over another. Take the best, which order cues by decreasing validity, is a lexicographic strategy. Recognition-based decisions describe situations where “the mere recognition of an object is a predictor of the target variable” (Gigerenzer and Goldstein, 1996, p. 653). Finally, the similarity heuristic is an adaptive strategy. The goal of this last heuristic is maximizing productivity through favorable experience while not repeating unfavorable experiences. Decisions based on how favorable or unfavorable the present seems are based on how similar the past was to the current situation. Table 2 that follows offers a description of the building blocks of each of the above heuristics.

Tab. 2. The building blocks of the heuristics.

Building blocks	Satisfying	Tallying and 1/N	Lexicographic strategies	Recognition	Similarity
Search rule	Set an aspiration level and search through objects	Search through cues in any order, add positive cues to the tally, and deduct negative cues from it	Order cues by their validity	Search for an object that you recognize	Search for an object that is more similar to the target than objects drawn from a reference class
Stopping rule	Stop search when the first object meets the set aspiration level	Stop after n cues (where n can be any number up to the complete set of cues)	Stop on finding the first cue that discriminates between the alternatives	Stop as soon as one object is recognized	Stop as soon as a more similar object is found
Decision rule	Choose this object	Decide for the alternative with the higher tally. If after searching through all cues there is a draw, guess	Choose the alternative with the higher cue value.	Infer that the recognized object has the higher value with respect to the criterion.	Infer that the identified object has a higher criterion value than those from a reference class

2.3 How do potential entrepreneurs develop business models? A heuristic explanation

The decisional processes which aim to build business models can be considered of pragmatic nature and we consider ‘pragmatic’ the culture that uses empirical facts as its building blocks (Katsikopoulos, 2011).

Pragmatic models are defined as those in which a person's goal is to achieve a satisfactory outcome as opposed to attempt to optimize (Katsikopoulos, 2011) and the pragmatic culture is based on an approach that gathers empirical evidence on people's rationality different from that of the idealistic culture and indifferent to testing adherence to axioms. Indeed, this approach focuses on the impact of providing people with tools for boosting performance on tasks of practical importance as we consider in this paper the task of shaping a business idea.

According to the ecological rationality approach (Todd and Gigerenzer, 2012) the accuracy of a decision-making strategy depends on the structure of the environment in which it is used. Ecological rationality formalizes statements about the relative success of different decision strategies for different environmental structures (Katsikopolous, 2011). Success is measured by external criteria, such as speed, frugality, and predictive accuracy rather than by internal criteria, such as logical consistency. All decision strategies use cues to make inferences, but they tend to differ in how they consider and process these cues. Some models are computationally complex in the way they weight and add cues (linear regression) or make probabilistic computations (naïve Bayes), whereas other models, such as simple heuristics, may use only one cue (e. g., take-the-best) or add cues without weighing their values (e. g., tallying).

3. Methodology

In accordance with previous studies both in management and entrepreneurship, such as Gupta et al. (2014), we adopted a qualitative survey methodology (Fowler, 2013). As our intent was to analyze how potential entrepreneurs use the similarity heuristic (and highlight the diversity among them), we chose to devise a questionnaire for students enrolled in management and/or entrepreneurship courses.

The survey contained questions on the adoption of the heuristic of similarity. It also asked respondents to describe the processes underlying the elaboration of their business model. Table 3 shows the technical datasheet of the survey.

Tab. 3. Technical datasheet of the survey.

Population	Students
Scope	Department of Economics of the University of Messina (Italy)
Sample size	130 students
Sample design	Stratified random sampling, taking into account degree course studies as stratification variable
Fieldwork period	April 2015/July 2015

The objective of this survey is to take a deeper look at the management students' use of the similarity heuristics when they are asked to elaborate and define their business models. The population for which the questionnaire was designed was comprised of students from the department of Economics of the University of Messina (Italy). The survey was carried out using stratified random sampling, taking the degree course followed by each student (management vs business economics) as stratification variables. A total of 130 subjects participated in the survey. They were all undergraduate students who enrolled by responding to ads posted at the department website. The demographics of the subjects showed a good balance between male (46%) and female (54%). They were relatively young (22 years old on average) and passed their exams with an average mark of 25 out of 30. The 79% of the subjects had a background in management while the remaining 21% in business economics. The 16% of the subjects had a job and the 22% declared to aspire to become an entrepreneur. Table 4 summarises the most relevant characteristics of the sample used for this study.

Tab. 4. Characteristics of the sample

Sex (N=130)	
Male	46%
Female	54%
Total	100%
Age (N=130)	
Average	22
SD	1,4
Minimum	21
Maximum	27
Marks (N=130)	
Average	25,5
SD	1,8
Minimum	20
Maximum	29
Laurea Degree Course (N=130)	
Management	79%
Business Economics	21%
Total	100%
Employment rate (N=130)	
Workers	16%
No workers	84%
Total	100%

The survey was prepared following extensive information and documentation gathering, which included consultation of previous studies by other authors, as well as those designed by official bodies devoted to carrying out similar surveys in a university context. When designing the survey, particular attention was paid to ensuring that all text would be clear and understandable to all respondents, and also that the language used would be balanced with no hint of bias. All of the questions were followed by a space for answers, making the process of filling out the questionnaire easier for respondents. Respondents provided personal data and general information (such as gender, age, title of degree course they were taking), as one of the objectives was to ascertain whether there were differences in the opinions of each of those groupings. However, no information was kept that would allow the people who participated in the study to be identified.

The survey was conducted with paper and pencil at the Aula Magna of the Department of Economics of the University of Messina. Students received a sheet with instructions for taking the survey. After reading the instructions, they were asked to read the case study and answer to the questionnaire. They were not paid with money but received one more grade point to cumulate to the final mark of Strategic Management. The experiment lasted 30-35 minutes on average. Students had no time limit to make their choice in the survey. Once questionnaires were completed, they were examined individually to ensure the quality of the data provided therein. The number of participants at the Department of Economics allowed us to gather answers from a significant sample of students. All responses were anonymous, and were collected under the laws governing statistical secrecy and data protection. The responses were used on an aggregate basis, without individual references of any kind.

Data was gathered from the completed questionnaires and stored in spreadsheet format, reflecting the answers to each item from respondents. The file was organized into rows and columns, with each row corresponding to one satisfactorily completed questionnaire (one interviewee per row), while the columns reflected the questions contained in the survey. The word-frequency statistics software Nvivo 11 was used to manage, analyse and codify answers. The survey was in form of a case study followed by a questionnaire. A short case study was developed for the subjects to evaluate. Cases can capture the complexities of elaborating a business model and have been used in several studies that evaluated business venture decisions (Zacharakis and Shepherd, 2001). The case method allows the context to be specified so that the subjects are exposed to the same set of information (Finch, 1987; Hughes, 1998). Although long cases both contain rich information and are more typical to entrepreneurs, we kept the case to half a page long. We decided to give frugal information about the industry and we deliberately choose to use an attractive topic for our subjects, i.e.,

service for students, to increase their commitment through stimulating their empathy. Immediately following the case study, two questions tackle with the key two aspects of our research questions: (1) the first question was a double choice question whose set of options aimed to test whether or not our potential entrepreneurs adopt the heuristic of similarity when approaching a business model under uncertainty; (2) the second question was open and was conceived to uncover the decision rules of the subjects. In the first part of the survey, we asked the subjects to put themselves in the entrepreneur's shoes and choose between two options. These two options, gamma and delta, represent two strategies that are possible to adopt for shaping a business model. Specifically, gamma represents the similarity strategy and delta represents the opposite strategy. We kept the language neutral and the two options were put horizontally on the survey's sheet, to avoid any subconscious suggestion through their position.

The findings of the first part of the survey widely confirmed our intuition. Seventy percent of the sample chose the option gamma, which has been confirmed to signify a more convenient and intuitive decision strategy to adopt. In this way subjects asserted that in approaching the development of a business model they would follow a similarity reasoning and in the second part of the survey they simulate how they would build it. To better understand the significance of this result it is important to consider that both of the options gamma and delta follow a ratio and both of them are meaningful. Nevertheless, the variance between the two percentages is clear.

Tab. 5. Percentage of similarity heuristic adoption

Option Gamma (Similarity Heuristic)	Option Delta (Avoiding external influence)
70% (90 /130)	30% (40 /130)

3.1. The building blocks of similarity heuristics: a content analysis

A content analysis was conducted of the descriptions of the similarity heuristics adoption process that represent the 70% of answers in our sample in order to surface the key building blocks of the similarity heuristic mentioned in these answers, and to profile the decisions rules used in relation to each decisions rule. To be more precise, the following steps have been taken in the content analysis:

- (1) cleaning the text in order to simplify the word frequency count process;
- (2) counting of word frequencies;
- (3) grouping of words with the same stem (e.g. implement, implementing, and implementation) in the word frequency results;

- (4) elimination of the words, which appeared only once or twice, or words, which are of no value, such as pronouns;
- (5) clustering of the words students use in connection with each words when they are asked to explain similarity heuristic;
- (6) the proposal of the similarity heuristic building blocks.

It should be noted that the counts for some words exceed the total number of answers, for example “service” has been repeated 159 times where there are only 130 answers (Table 6). This is due to the fact that the word “service” appeared in some answers more than once, for example. Additionally, we split the frequencies of those words that appear exclusively in one answers’ categories from those words that appear in two or three categories. For example, “service” is a common word and appears 85 times in “focus on strengths”, 49 in “overcome weaknesses” and 25 in “rely on successful services”. Table 7 summarises the total number of occurrences of words in the database of answers, relative to the total number of answers in which that word appears.

Tab. 6. Words frequencies grouped by categories

Categories	Frequency count of exclusive words	Frequency count of common words	
Focus on strengths	Strengths, 45 Competition, 30 Differentiation/ Uniqueness, 38 Innovation, 39 Benefit, 20 Certainty, 15	Service, 122 Product, 37 Student, 52 Client, 43 Price/Monetization, 35 Market/Segmentation, 25 Business Model, 24 University, 23	Collaboration/Network/ Interaction, 30 Entrepreneur, 20 Capability, 10 Marketing/ Communication/Brand, 14 Profit, 30 Web, 13
Overcome weaknesses	Weaknesses, 30 Need, 28 Satisfaction, 27 Improvement/ Development, 32 Problem, 10 Creation/Creativity, 15 Opportunity, 18 Feedback, 17 Efficiency, 28	Service, 59 Product, 26 Student, 30 Client, 37 Price/Monetization, 22 Market/Segmentation, 10 Business Model, 20 University, 17	Collaboration/Network/ Interaction, 9 Entrepreneur, 20 Cost, 10 Marketing/ Communication/Brand, 16 Profit, 18 Web, 10
Rely on successful services	Success, 11 Fit/Adaptability, 15 Platform, 5 Uncertainty, 15	Service, 33 Product, 22 Students, 4 Price/Monetization, 20 Market/Segmentation, 5 Business Model, 106 Collaboration/Network, 12	University, 8 Entrepreneur, 9 Capability, 8 Cost, 11 Marketing/Communication Brand, 5 Web, 7

Tab. 7. Total word frequency versus number of times words has appeared by definition

	Total n° of occurrences	N° of occurrences in distinct answers
Service	189	130 (100%)
Product	85	60 (46%)
Students	84	80 (62%)
Clients	80	65 (50%)
Price/Monetization	77	59 (46%)
Market/Segmentation	56	55 (42%)
Collaboration/Network	51	38 (29%)
Business Model	50	48 (38%)
Entrepreneur	49	37 (28%)
Profit	48	46 (35%)

NB we did not report words whose total occurrence corresponded to total distinct answers

On the ground of the above word analysis, it is possible to affirm that in the nearly 50% of the cases subjects identify similar services' weaknesses to be overcome in their business models.

"In order to develop my business model, I would analyze a similar service. This process would help me in understanding customer needs and which expectations this service is not able to satisfy"

"To develop my business, I would try to improve and solve weaknesses of similar services, focusing on negative feedbacks from customers"

Therefore, our potential entrepreneurs search similar services for clues, stop the search when weakness to be overcome are identified, and decide as regards their business modes building on those weaknesses. Accordingly, the building blocks of this decision are as follows:

- search rule: identify a similar service
- stopping rule: detect its weaknesses
- decision rule: overcome its weaknesses in my business model

In the 30% of the answers subjects considered similar services to transfer and improve the strengths of those services into their own business model.

"If already exists a similar service I'm pretty sure that my idea has the potentiality to be successful. That's way I would try to detect its strengths and improve them in my project".

"I choose the first option because I think that to consider a similar service is helpful to understand new elements to include in my business model and which feature are crucial for a successful service".

Accordingly, the building blocks of this decision are as follows:

- search rule: identify a similar service
- stopping rule: detect its strengths
- decision rule: improve its strengths in my entrepreneurial venture.

Finally, in the remaining 20% of the answers the choice of similarity is considered a parachute to avoid too high risks.

“I would start by considering a similar service to give a foothold to my idea”

“I choose the first option because I’m not a creative person. I’m rather rational and prefer to be inspired by an existing successful model. In this way I wouldn’t be wrong”

Accordingly, the building blocks of this decision are as follows:

- search rule: identify a similar service
- stopping rule: select a successful service
- decision rule: bank on it to avoid risks

Tab. 8. The building blocks of the similarity heuristic in our sample

Building blocks	Overcome weaknesses	Focusing on strengths	Rely on successful services
Search rule	Identify a similar service	identify a similar service	identify a similar service
Stopping rule	Detect its weaknesses	detect its strengths	select a successful service
Decision rule	Overcome its weaknesses in my business model	improve its strengths in my business model	bank on a successful service to avoid risks

4. Discussion and conclusion

This article examines to what extent potential startup entrepreneurs rely on heuristics to develop their business model. It focused on the cognitive side of business models by illustrating the power of simple decision mechanisms such as heuristics in making fast and frugal decisions. In so doing, it contributes to business model literature that have recently called for more cognitive oriented studies (Baden-Fuller and Mangematin, 2013) and to the literature on heuristics in business contexts (Binghman and Eisenhardt, 2011; Guercini 2012; Guercini et al. 2014; Mousavi and Gigerenzer, 2014). The findings of the survey conducted on a sample of 130 subjects confirmed our hypothesis and show how that the heuristic similarity prove to be the most used while imagining the creation of a new business model.

This is consistent with the managerial literature focusing on analogical reasoning (Gavetti and Rivkin, 2005) and it reveals how the similarity heuristic works and how it is used as adaptive strategies in a potential entrepreneurial context. Particularly, we found that the participants in the survey follow three different decision rules when approaching a business model, i.e., overcoming weaknesses, improving strengths and banking on successful products/services. These decision rules belong to the adaptive toolbox entrepreneurs exploit in dealing with the uncertainty of the environment.

Although surveys are widely recognized as an efficient method to acquire information, they impose artificiality on the research. Moreover, we are aware that our sample may not fully reflect entrepreneurial actors' decisions, because we are dealing with students taking classes involving entrepreneurship instead of actual entrepreneurs dealing with real money and uncertainty. As a result, the degree on which results can be generalized all over situations and real world applications are limited. This is why we are motivated to test the same research question with a different methodology, such as an experimental survey which has as its participants real entrepreneurs. This would provide us with a potentially less biased result. Nevertheless, this research deserves the merit to lay the basis for opportunities for further basic and applied research such as on the set of basic heuristic principles, the interaction between heuristics and the entrepreneurial environment, the creation of formal tools for organizational application of heuristics, and an integration of insights from different research programs. We are hopeful that this study will spur a program of research that will enrich the conceptual foundations of opportunity recognition and evaluation based on a cognitive approach. The end goal, of course, would be that entrepreneurs have a better-developed toolbox of heuristics from which to draw in order to effectively and efficiently make decisions.

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Riassunto

Basandosi su studi sia cognitivi sia imprenditoriali, questo lavoro intende analizzare i processi attraverso i quali gli imprenditori impiegano le euristiche nelle fasi di elaborazione dei modelli di business. Nonostante infatti un interesse crescente verso l'accezione maggiormente cognitiva del concetto di business model, rimangono ancora poco chiari i meccanismi attraverso i quali gli imprenditori procedono a svilupparne di nuovi. A dispetto di numerosi studi in management che dimostrano l'inefficienza delle euristiche, si ritiene che nel tentativo di far fronte all'incertezza del contesto di riferimento, euristiche "veloci e frugali" forniscano all'imprenditore strategie solide per sviluppare startup e business model. Il lavoro offre due contributi. In primo luogo, introduce e discute l'euristica della similarità nella letteratura sui business model. In secondo luogo, concettualizza e specula sulle attività cognitive sottostanti l'elaborazione dei business model.

Parole chiave: imprenditorialità, business models, euristiche

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