



Effectuation logic:

A systematized literature review on entrepreneurs decision making process from 2001-2016

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Abstract

Sarasvathy's theory of effectuation identifies a logic of thinking used by expert entrepreneurs to build a successful venture. The purpose of this paper is to see how research about the effectuation logic (=EL) on the entrepreneurs decision-making process has evolved since Sarasvathy's paper in 2001 and help move effectuation research forward. Through a systematized literature review based on the research papers compiled by The Society for Effectual Action at the University of Virginia, we analyze 100 papers published by the Journal of Business Venturing. This study helps clarify such logic within the academic area, contributes to the Entrepreneurship Education, besides being important to individuals who are thinking on starting a new venture. Considering its limitations, since this research only considers articles published on the JBV, we cannot generalize its findings. Besides, this paper contributes with an innovative integrated view of the EL where the micro, meso and macro dimensions are shown in relation to the time perspective, since researches made until now have been considered too much fragmented. Based on this review, we identify gaps in literature and suggest topics for future studies.

Keywords: entrepreneurship; entrepreneurs; effectuation; effectual logic; review; decision making.

Lógica effectuation: uma revisão sistemática da literatura sobre processo decisório de empreendedores entre 2001 e 2016

RESUMO

A teoria da effectuation de Sarasvathy identifica uma lógica de pensamento usada por empreendedores especialistas para construir um empreendimento de sucesso. O objetivo deste artigo é ver como a pesquisa sobre a lógica de effectuation (= LE) no processo de tomada de decisões dos empreendedores evoluiu desde o artigo de Sarasvathy em 2001 e ajudou a levar adiante a pesquisa de effectuation. Através de uma revisão de literatura sistematizada com base nos documentos de pesquisa compilados pela The Society for Effectual Action na Universidade da Virgínia, analisamos 100 artigos publicados pelo Journal of Business Venturing. Este estudo ajuda a esclarecer essa lógica dentro da área acadêmica, contribui para a Educação Empreendedora, além de ser importante para os indivíduos que estão pensando em iniciar um novo empreendimento. Considerando suas limitações, uma vez que esta pesquisa considera apenas artigos publicados no JBV, não podemos generalizar seus achados. Além disso, este artigo contribui com uma visão integrada e inovadora da LE, onde as dimensões micro, meso e macro são mostradas em relação à perspectiva temporal, uma vez que as pesquisas feitas até agora têm

sido consideradas fragmentadas demais. Com base nessa revisão, identificamos lacunas na literatura e sugerimos tópicos para estudos futuros.

Palavras-chave: empreendedorismo, empreendedores, lógica effectuation, effectuation, revisão, tomada de decisão.

INTRODUCTION

It is relevant to understand the way entrepreneurs think and act. Sarasvathy (2001; 2008) could increase our knowledge on the entrepreneurial process by describing two different logics applied by entrepreneurs for taking key decisions: causation and effectuation. Causation refers to a planned strategy approach; and effectuation, on the other hand, refers to emergency strategies and options based on loss affordability, flexibility, and experimentation.

In the causation logic, the entrepreneur's behavior is to take an existing market opportunity and, through the use of resources, create a sustainable competitive advantage. On the other hand, in the effectuation logic the entrepreneur's behavior is to take the opportunity by experimenting and changing direction as new information becomes available (SARASVATHY, 2008).

In this article, we focus on the effectuation logic literature issued by the Journal of Business Venturing since 2001 until 2016. We separated all articles in groups considering their objectives. We started with a group of 100 articles until we could categorize them by their focus. As a consequence, we could select the articles relative to the entrepreneur's effectuation logic on the decision-making process and made an analyses summarizing important features, such as gaps in literature that could be recommended for future studies, relevance of effectuation aspects along the time.

Beyond the contributions to scholars, this research gives a clear picture of which elements from the effectuation logic have been relevant along the time. Concerning the logic for the decision-making process we could propose a more integrated and innovative framework which might make it easier for those interested in the subject to understand the logic in a more global model.

Literature on entrepreneurship goes back to the work of scholars who studied the internationalization of the firms within two streams of research according to Andersson (2000): those with an economic approach and those with a process approach. The first group of researchers understood men had access to perfect information and made a rational decision. In this group we had authors like (e.g. HYMER, 1960; VERNON, 1966; BUCKLEY; CASSON, 1976; DUNNING, 1977). The second group had its basis on the organizational theory and replaces the economical man by the behavioral man. In this last group we had Johanson and Vahlne (1977) and Andersson (2000).

However, our modern context reflects instability, uncertainty, complexity and high competition. As a consequence, it became important to understand the entrepreneurs' decision-making process within a context where one cannot predict the near future. If traditionally studies on entrepreneurship mentioned the rational decision-making model, nowadays the effectuation logic

changes that line of thinking and presents an alternative way to the traditional process called causal logic or causation.

Despite the fact that advances in research on entrepreneurs' decision-making process have happened, according to Shepherd, Williams and Patzelt(2014), such decision-making process is still not clear enough because it has become highly fragmented. It is not clear when, why, where, and how individuals make important decisions in the entrepreneurial process, entrepreneurial entry decisions, decisions about exploiting opportunities, entrepreneurial exit decisions, heuristics and biases in the decision-making context, characteristics of the entrepreneurial decision maker and the environment as decision context. That gap in literature has motivated us to make this systematic review on the subject and to create an integrated framework which might make effectuation logic easier to understand, making this paper relevant to entrepreneurship literature and to practitioners.

As a consequence, the objective of this article was to make a systematic literature review on the effectuation logic used by entrepreneurs on their decision-making process and to analyze its evolution since Sarasvathy's first paper in 2001 at Journal of Business Venturing. Besides, we suggest an innovative integrated framework about the entrepreneurs decision-making process, as a means to extend knowledge on the theme.

THEORETICAL CONSIDERATIONS

Causation and effectuation

During the past decade, the entrepreneurship theory provided logic of reasoning to predictive rationality. However, Sarasvathy (2001) came up with two different approaches for entrepreneurs to develop their venture: causation and effectuation. The causation logic would be the process that would go back to the logic of causal rationality, which would happen when entrepreneurs started with a clear goal and selected a group of resources to achieve these goals. This process is consistent with planned strategy approaches from Ansoff (1988), Brews and Hunt (1999) and Minzeberg (1978) and underlays conditions of predictable outcomes through calculation made based on a perfect and stable market. Here entrepreneurs first define their aims and then look for opportunities, always thinking on maximizing their returns.

On the other side, Sarasvathy (2001) brings the concept of the effectuation logic, when entrepreneurs started with a given set of resources to start a venture within an unknown and unpredictable context. According to Kalinic, Sarasvathy and Forza (2014), entrepreneurs use the affordable loss principle which in fact is an estimation of what they can put at risk and what they are willing to lose at the moment of the decision. Besides, considering that the future is unpredictable, they remain flexible and open, considering alliances with their stakeholders and even changing their objectives.

Elements of effectuation logic:

Researches have traditionally studied entrepreneurship as either a set of personality traits that explained success or failure or a set of attributes which contained the seeds of a firm’s success or failure. In case entrepreneurs did not have the proper traits, they would have to develop them. Also, potential entrepreneurs were called on to develop strategies and skills to be able to identify and exploit good opportunities.

However, taking Sarasvathy’s effectuation approach and all studies that have been happening since 2001 have begun to identify elements of effectual logic entrepreneurs use in the beginning of a new venture: (1) they start with who they are, what they know, and whom they know; (2) they focus on what they can do without worrying so much with what they ought to do; (3) they make commitments to the venture with some people they interact; (4) these commitments mean new objectives for the venture; (5) with the increased resources due to their network some constraints start to happen and they delimit who can take part in the network; (6) and by the end, objectives and networks converge into a new market and a new firm. As we follow the articles since 2001 we observe that these elements are present as focus of the analyzed researches in a higher or lower percentage. Please see Table 1 and Figure 1 in order to identify these works and their focus throughout time.

Principles of effectuation logic:

It is important to mention that at each step of the process, entrepreneurs use few principles that do not rely on prediction, but instead, assume the impact of individual creation. Table 1 summarizes these principles.

Table 1 – Basic principles of effectual thought

Issue	Effectual principle
View of the future	<i>Design.</i> The future is contingent on actions by willful agents.
Givens	<i>Means</i> provide the basis for decisions and new opportunities. 3 subconstructs: – <i>What I know</i> – <i>Who I am</i> – <i>Whom I know.</i>
Attitude toward others	<i>Partnership.</i> Build your market together with customers, suppliers and even prospective competitors.
Predisposition toward risk	<i>Affordable Loss.</i> Calculate downside potential and risk no more than you can afford to lose.
Predisposition toward contingencies	<i>Leverage Contingency.</i> Surprises can be positive. Leverage them into new opportunities.
Underlying logic	To the extent that we can control the future, we don't need to predict it.

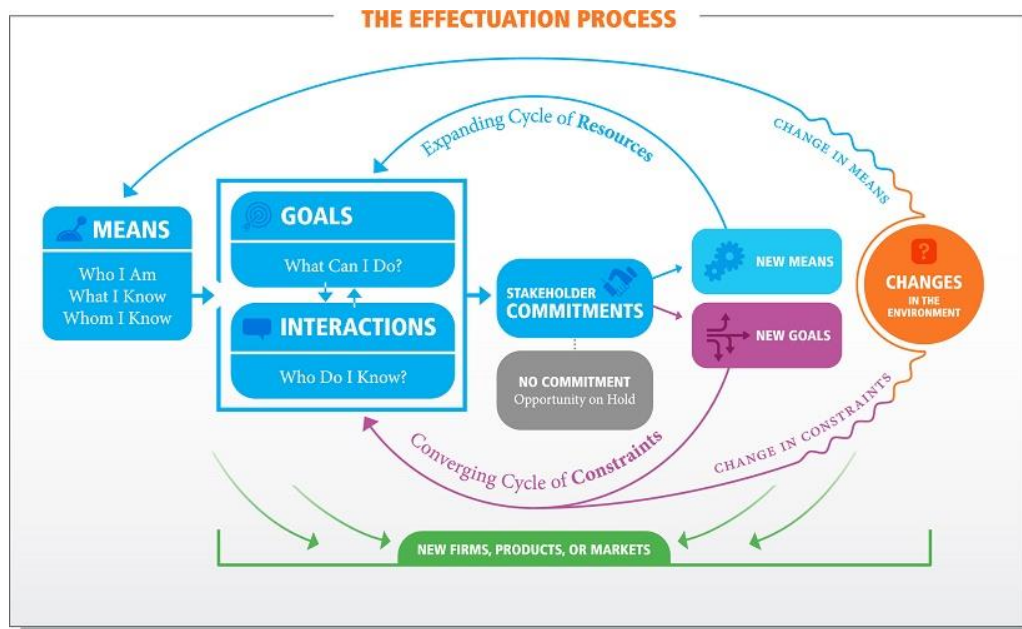
Source: Read et al. (2009).

Effectuation is an approach used in the new venture setting to solve problems in a functional way despite uncertainty. Traditional strategies require the decision maker to have access to information, that the future would be equivalent to past so that predictions would be based on historical data, the effectual principle of DESIGN guides the entrepreneur to incorporate the impact of his actions on the outcome of the context. MEANS give the decision-maker a basis for direction, suggesting that opportunities as from knowledge or network. PARTNERSHIP means that new opportunities may be created as a consequence of the additional means provided by network. AFFORDABLE LOSS reinforces that entrepreneurs should incorporate the possible downside in evaluating alternatives in a way that a failure will not result in a greater venture or personal failure.

Also, when an unpredictable future exists, the entrepreneur should seek to LEVERAGE CONTINGENCY, looking for other alternatives from surprises.

According to Alvarez and Barney (2005) and Sarasvathy (2001b), effectuation provides heuristics intended for uncertainty, a context in which several entrepreneurs work. As an overview on the Effectuation Logic, we recall to Sarasvathy diagram as follows:

Figure 1- The Effectuation Process



Source: Society for Effectual Action – Materials (2017).

Entrepreneurial decision-making

Shepherd, Williams and Patzelt (2014) discussed about the entrepreneurial decision-making process. In order to conclude our summary and contribute to the extent of literature studies, it is important that we refer to that paper.

According to their research, individuals are heterogeneous in their perceptions of the context where they are situated, and these different perceptions influence how they assess environmental conditions and ultimately make entrepreneurial decisions. Thus, their perception of the environment (and not the environment itself) is one aspect that impacts their decision. Also, entrepreneurs as any individual have their personal characteristics (such as human capital, affect and emotional reactions), and based on that there will be differences in the assessments of the attractiveness of potential opportunities.

Besides, the decision to pursue a career, which could be to become self-employed, to work for a company or to create a new venture may also be influenced by an individual's aspirations and attitudes, abilities, and opportunity costs. However, the factors that influence the decision-making process change over time, as a consequence, the decision might also be different in different moments.

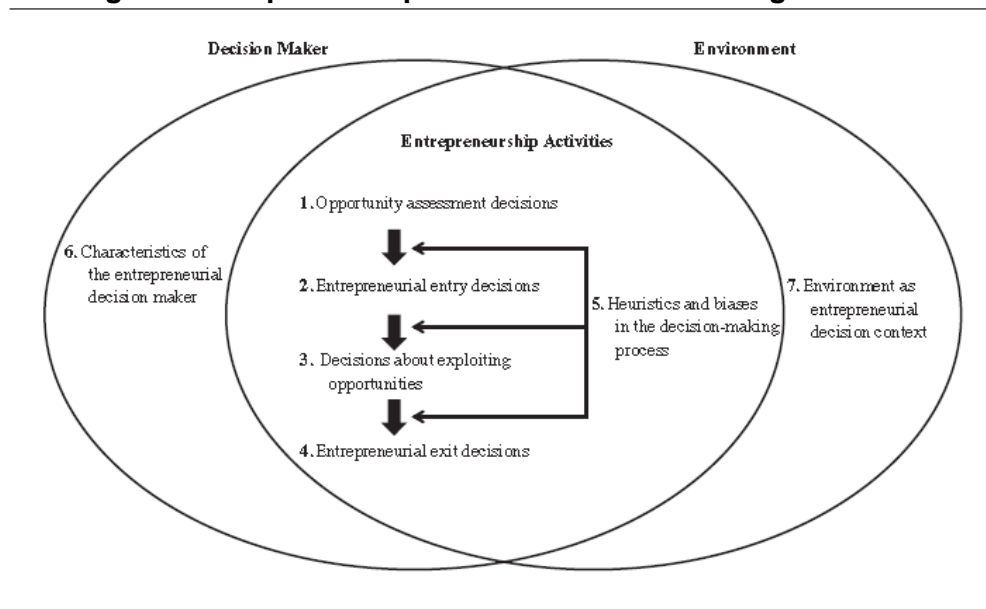
Another decision Shepherd discussed about is the exploitation of an opportunity, which in the case of an entrepreneur may involve the creation of a new venture. The exploitation decision can

be influenced by several features like the degree of planning, the organizational context the source(s) and availability of funding, among others. Entrepreneurs might decide to go on or to exit and this can occur because the performing is poor or when it is performing well.

Finally, the decision-making process is also nested in individual-specific differences, such as gender, self-efficacy, metacognition, assessments of risk, affect or emotions, and national and cultural heritage, regulations, culture or other forces.

In a world of increasing uncertainty, complexity, and change, it is essential to act entrepreneurially. However, decision making in such environments is a challenging task. Shepherd, Williams and Patzelt (2014) add that there have been many previous work with substantial contributions to our understanding of how entrepreneurs act, but most of them built a fragmented model which in fact did not show the overall picture of the decision-making process. Thus, he includes his model which were reproduce here.

Figure 2 – Map of Entrepreneurial Decision-Making Research



Source: Shepherd, Williams and Patzelt (2014).

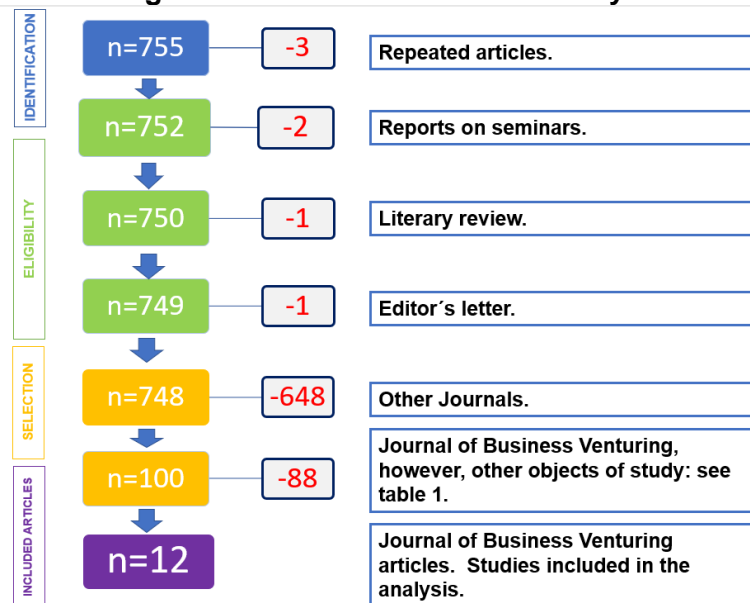
METHOD

We have chosen the systematic review study because it allows us to identify and summarize literature from specific themes on a systematic and trustworthy way. Our search started from data compiled from The Society for Effectual Action on entrepreneurship. This Society belongs to the University of Virginia Darden School of Business, where Sarasvathy presently works. From a compilation of 755 papers presented on the site we chose to work with all articles from the Journal of Business Venturing (Publisher-Elsevier) from 2001 until 2007 with the aim of analyzing the ones whose focus was specifically on the effectuation logic. The choice for that Journal happened because that is a dedicated journal focused on publishing articles on the entrepreneurship phenomenon with a multi-disciplinary approach, besides having a high H-index (131). Also, the

decision to dedicate our research mostly on the articles dedicated to the decision-making logic was because this was one of the most studied topic since 2001 according to our analysis.

At first, we deducted the repeated articles, few articles on seminars, letters from the editor and a literary review since this was a compilation of articles and not an empirical research. After that, we set aside other Journals with which we would not work on this research and, finally, we have got to 100 articles only from Journal of Business Venturing. Analysing more deeply we could identify each articles' main focus and, we could separate the ones that dealt excursively on the decision-making logic. The reader can follow the process in a clearer way by Figure 3 below and find the description of all articles from the journal on Table 2.

Figure 3 – Diagram of selected studies on the systematic review



Source: Based on PRISMA flow diagram (Moher et al., 2009).

Table 2 – List of researches on Entrepreneurship from 2001 – 2016 in the Journal of Business Venturing

	TITLE	DATE	FOCUS
1	A conceptual framework for entrepreneurship education policy: Meeting government and economic purposes	2013	entrepreneurshipeducation
2	Beyond cultural values? Cultural leadership ideals and entrepreneurship	2016	context
3	Do market information processes improve new venture performance?	2010	context
4	Institutions, entrepreneurs, and communities: A special issue on entrepreneurship	2013	context
5	Market imperfections, opportunity and sustainable entrepreneurship	2007	context
6	Measuring the social identity of entrepreneurs: Scale development and international validation	2016	context
7	Nations of entrepreneurs: A social capital perspective	2010	context
8	Particularistic and system trust among small and medium enterprises: A comparative study in China's transition economy	2009	context
9	Persistence and heterogeneity in entrepreneurship: An evolutionary game	2011	context

theoretic analysis			
10	Contingency as an entrepreneurial resource: How private obsession fulfills public need	2011	contingency
12	The questions we ask and the questions we care about: reformulating some problems in entrepreneurship research	2004	entrepreneurs x non-entrepreneurs
11	Behavioral disinhibition and nascent venturing: Relevance and initial effects on potential resource providers	2016	entrepreneurs' features
13	A situated metacognitive model of the entrepreneurial mindset	2010	entrepreneurs' features
14	Beyond hubris: How highly confident entrepreneurs rebound to venture again	2010	entrepreneurs' features
15	Can genetic factors influence the likelihood of engaging in entrepreneurial activity?	2009	entrepreneurs' features
16	Cognitive mechanisms in entrepreneurship: Why and when entrepreneurs think differently than other people	1998	entrepreneurs' features
17	Towards a schematic theory of entrepreneurial alertness	2013	entrepreneurs' features
18	Trapped by the entrepreneurial mindset: Opportunity seeking and escalation of commitment in the Mount Everest disaster	2016	entrepreneurs' features
19	The Questions We Ask and the Questions We Care About	2003	entrepreneurship
20	An investigation of hindsight bias in nascent venture activity.	2009	experience
21	Do serial entrepreneurs run successively better-performing businesses?	2013	experience
22	Practice makes perfect: Entrepreneurial-experience curves and venture performance	2014	experience
23	Should I stay or should I go? Career choice intentions of students with family business background	2011	experience
24	A little bit of knowledge is a dangerous thing: Entrepreneurial experience and new venture disengagement	2016	failure
25	A reconceptualization of fear of failure in entrepreneurship	2016	failure
26	Entrepreneurial exit as a critical component of the entrepreneurial process: Theoretical development	2010	failure
27	Entrepreneurial learning from failure: An interpretative phenomenological analysis	2011	failure
28	Individual responses to firm failure: Appraisals, grief, and the influence of prior failure experience	2014	failure
29	Making sense of entrepreneurial exit strategies: A typology and test	2015	failure
30	Does family employment enhance MSEs performance? Integrating socioemotional wealth and family embeddedness perspectives.	2010	family
31	The impact of family support on young entrepreneurs' start-up activities	2016	family
32	Failure or voluntary exit? Reassessing the female underperformance hypothesis	2015	femaleentrepreneurship
33	Women's self-employment: An act of institutional (dis)integration? A multilevel, cross-country study	2013	femaleentrepreneurship
34	Financing decisions as a source of conflict in venture boards	2010	financedecisions

35	Firm growth and the illusion of randomness	2014	growth
36	Entrepreneurship and psychological disorders: How ADHD can be productively harnessed	2016	health
37	The “heart” of entrepreneurship: The impact of entrepreneurial action on health and health on entrepreneurial action	2015	health
38	The contrasting interaction effects of improvisational behavior with entrepreneurial self-efficacy on new venture performance and entrepreneur work satisfaction	2008	improvisation
39	Perceived progress variability and entrepreneurial effort intensity: The moderating role of venture goal commitment	2015	incubators
40	Industry changes in technology and complementary assets and the creation of high-growth firms	2011	innovation
41	Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs	2011	innovation
42	The power of arguments: How entrepreneurs convince stakeholders of the legitimate distinctiveness of their ventures	2015	innovation
43	International Entrepreneurship research (1989–2009): A domain ontology and thematic analysis	2011	internationalentrepreneurship
44	Attributions to intuition in the venture founding process: Do entrepreneurs actually use intuition or just say that they do?	2011	intuition
45	Angel group members’ decision process and rejection criteria: A longitudinal analysis	2015	investor
46	Drawn to the fire: The role of passion, tenacity and inspirational leadership in angel investing	2016	investor
47	Social trust and angel investors’ decisions: A multilevel analysis across nations	2015	investor
48	When do investors forgive entrepreneurs for lying?	2014	investor
49	Dispersed knowledge and an entrepreneurial theory of the firm	2004	knowledge
50	Entrepreneurial expertise and the use of control	2015	knowledge
51	Knowledge as the source of opportunity	2016	knowledge
52	Learning asymmetries and the discovery of entrepreneurial opportunities	2007	knowledge
53	Causation and effectuation processes: A validation study.	2011	logic
54	Corporate effectuation: Entrepreneurial action and its impact on R&D project performance.	2012	logic
55	Effectual versus predictive logics in entrepreneurial decision-making: Differences between experts and novices	2009	logic
56	Event- and outcome-driven explanations of entrepreneurship	2004	logic
57	Judging a business by its cover: An institutional perspective on new ventures and the business plan	2009	logic
58	Measuring emergence in the dynamics of new venture creation	2006	logic
59	Monetising blogs: Enterprising behaviour, co-creation of opportunities and social media entrepreneurship	2017	logic
60	Properties of emerging organizations: An empirical test.	2008	logic

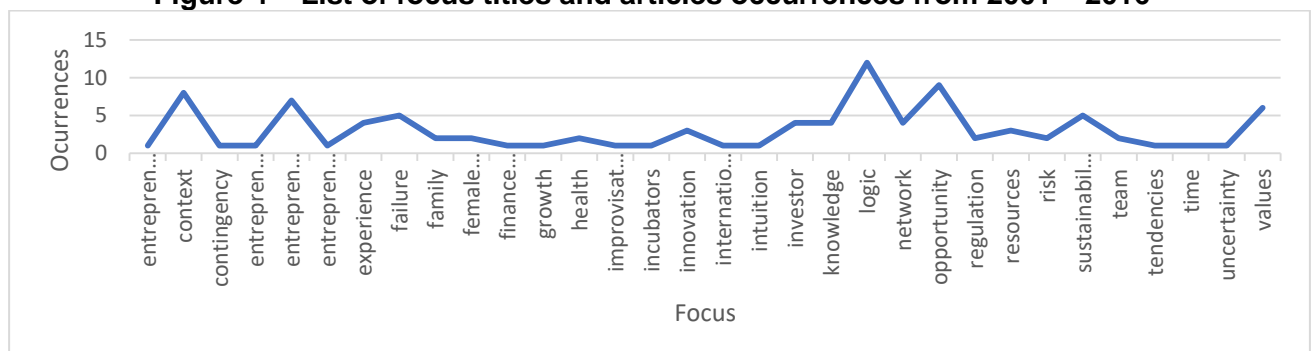
61	Should entrepreneurs plan or just storm the castle? A meta-analysis on contextual factors impacting the business planning-performance relationship in small firms	2010	logic
62	Social interaction via new social media: (How) can interactions on Twitter affect effectual thinking and behavior?	2011	logic
63	The entrepreneurial journey as an emergent hierarchical system of artifact-creating processes	2015	logic
64	Uncertain but able: Entrepreneurial self-efficacy and novices? use of expert decision-logic under uncertainty	2014	logic
65	Academic networks in a trichotomouscategorisation of university spinouts.	2003	network
66	The evolution of interorganizational relationships in emerging ventures: An ethnographic study within the new product development process	2015	network
67	The use of networks in human resource acquisition for entrepreneurial firms: Multiple "fit" considerations	2006	network
68	Toward a dynamic process model of entrepreneurial networking under uncertainty	2017	network
69	Are opportunities recognized or constructed?: An information perspective on entrepreneurial opportunity identification	2010	opportunity
70	Entrepreneurial alertness in the pursuit of new opportunities	2012	opportunity
71	Entrepreneurial opportunities and the entrepreneurship nexus: A re-conceptualization	2015	opportunity
72	Entrepreneurial opportunities as propensities: Do Ramoglou& Tsang move the field forward?	2016	opportunity
73	Focus on opportunities as a mediator of the relationship between business owners' age and venture growth.	2010	opportunity
74	How can we know the dancer from the dance?: Reply to "Entrepreneurship as the structuration of individual and opportunity: A response using a critical realist perspective".	2010	opportunity
75	Making it personal: Opportunity individuation and the shaping of opportunity beliefs	2014	opportunity
76	Misgivings about dismantling the opportunity construct	2017	opportunity
77	Reconciling diverse approaches to opportunity research using the structuration theory	2005	opportunity
78	In the eye of the beholder: How regulatory focus and self-efficacy interact in influencing opportunity recognition	2012	regulation
79	Macro-level determinants of formal entrepreneurship versus informal entrepreneurship	2014	regulation
80	Beyond environmental scarcity: Human and social capital as driving forces of bootstrapping activities	2014	resources
81	Do entrepreneurial goals matter? Resource allocation in new owner-managed firms	2013	resources
82	Swinging a double-edged sword: The effect of slack on entrepreneurial management and growth	2011	resources

83	Missing the boat or sinking the boat: a study of new venture decision making	2005	risk
84	Variable risk preferences in new firm growth and survival	2016	risk
85	Escaping the green prison: Entrepreneurship and the creation of opportunities for sustainable development	2010	sustainability
86	Sustainable development and entrepreneurship: Past contributions and future directions.	2010	sustainability
87	The entrepreneur–environment nexus: Uncertainty, innovation, and allocation	2010	sustainability
88	The influence of sustainability orientation on entrepreneurial intentions – Investigating the role of business experience.	2010	sustainability
89	Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action	2007	sustainability
90	Antecedents, moderators, and performance consequences of membership change in new venture teams.	2005	team
91	Human capital theory and venture capital firms: exploring “home runs” and “strike outs”	2005	team
92	Entrepreneurship theory: possibilities and future directions	2004	tendencies
93	The age-effect of financial indicators as buffers against the liability of newness	2010	time
94	Unpacking the uncertainty construct: Implications for entrepreneurial action	2011	uncertainty
95	A field study of entrepreneurial decision-making and moral imagination	2009	values
96	Balancing “what matters to me” with “what matters to them”: Exploring the legitimation process of environmental entrepreneurs	2016	values
97	Ethics and entrepreneurs: An international comparative study	2003	values
98	Ethics and entrepreneurship	2009	values
99	Related Debates in Ethics and Entrepreneurship: Values, Opportunities and Contingency	2009	values
100	Self-regulation and moral awareness among entrepreneurs.	2009	values

Source: Elaborated by the authors (2017).

From the information in figure 4, the reader can depict that Entrepreneurs’ Logic was one of the most studied subject since 2001.

Figure 4 – List of focus titles and articles occurrences from 2001 – 2016



Source: Elaborated by the authors (2017).

Since we understood that there is still a need for clarification on the entrepreneurs' decision-making process because there have been many researches but most of them brought up fragmented pictures of such process, we considered this an important literature gap to be studied (SHEPHERD; WILLIAMS; PATZELT, 2014).

RESULTS AND FUTURE RESEARCHES

Our analysis from the articles related to the Effectuation Logic started with a list of all keywords used to assess those 12 articles on the Effectuation Logic. The list is summarized on Table 3 and we have just deducted the repeated titles and those related to measurement. This compilation is important since it can be used to find out articles on other journals.

Table 3 – Keywords

KEYWORDS
Business plan
Business planning
Causation
Creation
Decision-making
Discovery
Effectuation
Entrepreneurial self efficacy
Experiment
Expertise
Loosecoupling
New firms
New ventures
Operationsplan
Opportunity
Performance
Service learning
Uncertainty
Venture performance

Source: Elaborated by the authors (2017).

Deducting the articles with other focus, we came up with Table 3 that brings not only articles with the focus on the effectuation logic in chronological order from the most recent backward, but also their respective authors. All these articles reinforced either the elements but also the principles of the effectuation logic on the decision-making process of the entrepreneurs.

Going further with our analysis we could summarize all findings from each research and recommendations for future research, making it easier to have an overview of the gaps in literature as per authors from the Journal of Business Venturing.

On the table 4 we show researches' findings and their authors' recommendations for future researches. On our side, we would suggest one similar systematic review with other high-quality journals so that we could have an overview of the main publications on the Effectuation Logic.

Table 4 – List of authors on Effectuation Logic (2001- 2016-JBV)

	TITLE	DATE	AUTHORS
1	Causation and effectuation processes: A validation study.	2011	Gaylen N. Chandler Dawn R. DeTienne Alexander McKelvie Troy V. Mumford
2	Corporate effectuation: Entrepreneurial action and its impact on R&D project performance.	2012	Malte Brettel René Mauer Andreas Engelen Daniel Küpper
3	Effectual versus predictive logics in entrepreneurial decision-making: Differences between experts and novices	2009	Nicholas Dew Stuart Read Saras D. Sarasvathy Robert Wiltbank
4	Event- and outcome-driven explanations of entrepreneurship	2004	Andrew H. Van de Ven Rhonda M. Engleman
5	Judging a business by its cover: An institutional perspective on new ventures and the business plan	2009	Tomas Karlsson Benson Honig
6	Measuring emergence in the dynamics of new venture creation	2006	Benyamin B. Lichtenstein Kevin J. Dooley G.T. Lumpkin
7	Monetising blogs: Enterprising behaviour, co-creation of opportunities and social media entrepreneurship	2017	Veronika Gustafsson Mohammad Saud Khan
8	Properties of emerging organizations: An empirical test.	2008	Candida G. Brusha Tatiana S. Manolova Linda F. Edelman
9	Should entrepreneurs plan or just storm the castle? A meta-analysis on contextual factors impacting the business planning-performance relationship in small firms	2010	Jan Brinckmann Dietmar Grieschke Diana Kapsa
10	Social interaction via new social media: (How) can interactions on Twitter affect effectual thinking and behavior?	2011	Eileen Fischer Becky Reuber
11	The entrepreneurial journey as an emergent hierarchical system of artifact-creating processes	2015	Paul D. Selden Denise E. Fletcher
12	Uncertain but able: Entrepreneurial self-efficacy and novices? use of expert decision-logic under uncertainty	2014	Y Engel N G Dimitrova S N Khapova Tom Elfring

Source: Elaborated by the authors (2017).

Table 5 – Findings and recommendations for future researches

TITLE	DATE	RESULTS	FUTURE STUDIES
Causation and effectuation processes: A validation study.	2011	It showed that participants with high self efficacy were more likely to apply effectual logic than participants with low self efficacy.	To extend the applicability of effectuation theory to the study of all entrepreneurs, novices and experts alike.
Corporate effectuation: Entrepreneurial action and its impact on R&D project performance.	2012	With the exception of the causal “goals-driven” orientation on R&D output, researchers found no significant influences for either effectuation or causation	To envision measuring effectuation and causation (e.g., as an average of all R&D projects pursued) on a company level and incorporate objective performance measures on this level.
Effectual versus predictive logics in entrepreneurial decision-making: Differences between experts and novices	2009	Experts and novices differed in several elements related to entrepreneurial expertise.	To collect a body of longitudinal data about the everyday behavior of entrepreneurs, which explicitly helps us answer the question: how do entrepreneurs acquire expertise?
Event- and outcome-driven explanations of entrepreneurship	2004	It extends Aldrich’s distinction by arguing that event-driven and outcome-driven explanations represent fundamentally different kinds of process and variance theories based upon fundamentally different ontological and epistemological assumptions.	To develop a process-based social science to complement the variance approach.
Judging a business by its cover: An institutional perspective on new ventures and the business plan	2009	Studied companies had a preference for only symbolically adopting the business plan too.	To falsify the researches' conclusions.
Measuring emergence in the dynamics of new venture creation	2006	The authors found that that the dynamics in the case were best organized into three different modes: strategic organizing, tactical organizing, and organizing the vision. Second, their analysis showed significant punctuated shifts within each of those modes, and that the shifts occurred at virtually the same time, leading to a dynamic process defined as emergence event. In addition, they explored the internal sequence of the emergence event, which led to a transformation in strategic organizing, which then generated the emergence of a new vision.	New methods for understanding entrepreneurship.
Monetising blogs: Enterprising behaviour, co-creation of opportunities and social media entrepreneurship	2017	Dpmmax sets prerequisites for successful monetisation.	Studies of enterprising individuals, supported in their endeavours.

Properties of emerging organizations: An empirical test.	2008	Boundary and exchange are necessary and sufficient for firm survival in the shortterm and that resources are necessary but not sufficient.	To augment the model by either adding additional properties or by expanding the properties already in the framework.
Should entrepreneurs plan or just storm the castle? A meta-analysis on contextual factors impacting the business planning-performance relationship in small firms	2010	Studies controlling for industry effects are found to report a weaker business planning performance relationship. This study showed the positive link between business planning and firm performance.	It could e.g. analyze how uncertainty, sensitivity to contradictory information, or strategic flexibility impacts the execution of business plans.
Social interaction via new social media: (How) can interactions on Twitter affect effectual thinking and behavior?	2011	Evidence that such channels (like Twitter) can help entrepreneurs create and capitalize on opportunities.	To consider more broadly the effects of social media adoption by individuals who found ventures and who work in entrepreneurial firms.
The entrepreneurial journey as an emergent hierarchical system of artifact-creating processes	2015	It showed that the ability to conceptualize the entrepreneurial journey in terms of hierarchically organized patterns of artifact emergence contributes to our understanding of the endogenous, self-causing, context-creating, self-organizing and path-dependent dynamics of venture creation.	To study the issue of how to integrate the "heterogeneous aspects of contexts "and "delineat[e] the microfoundations of entrepreneurship " in multi-level explanations.
Uncertain but able: Entrepreneurial self-efficacy and novices? use of expert decision-logic under uncertainty	2014	.It showed the multidimensionality of the uncertainty construct, as changes in self-eficiency were independent from evaluations of state uncertainty. Also, it showed how efficacy beliefs influence situational framing and how these projections of the self ve entrepreneurial decisions and actions.	To extend the study to all entrepreneurs, novice and experts alike.

Source: Elaborated by the authors (2017).

LIMITATIONS

Like any study, ours has limitations. We have conducted an issue-by-issue search of a leading journal in the field, Journal of Business Venturing, however, there certainly are additional relevant journals that we did not examine with the present study. Therefore, our review does not claim to be exhaustive but only to supplement the knowledge generated by part of the articles compiled by The Society for Effectual Action from the University of Virginia.

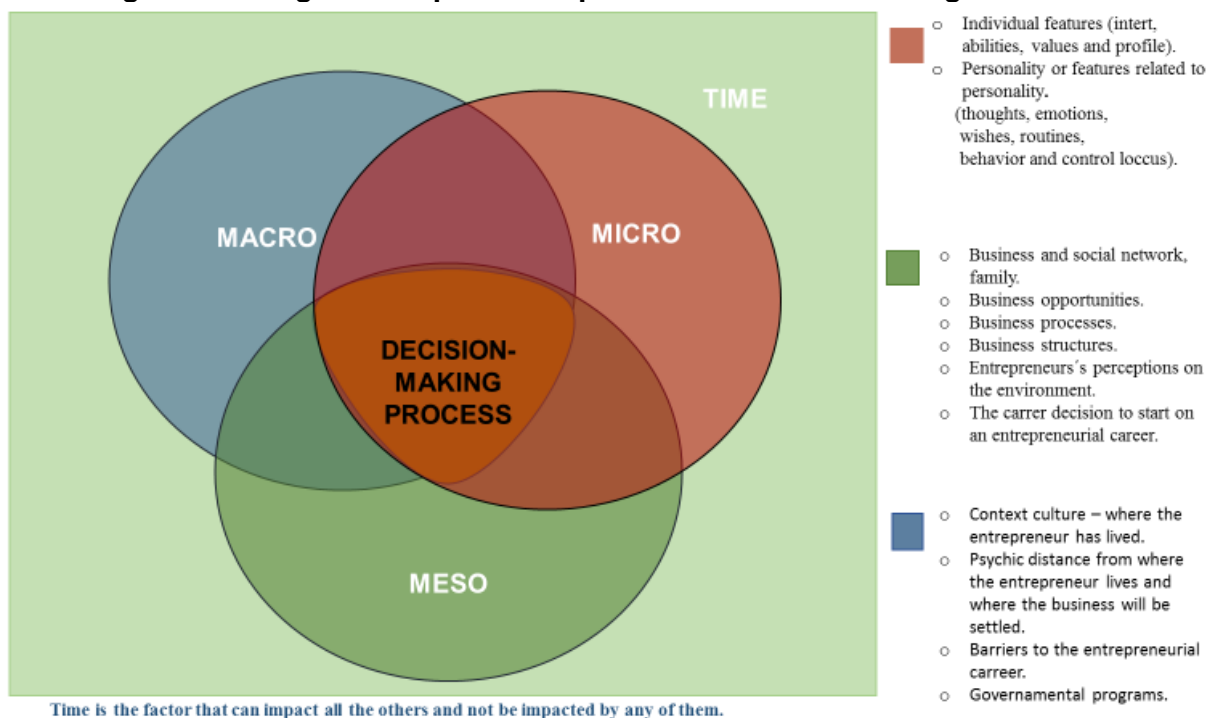
CONCLUSION

Our initial purpose was to see how research on the effectuation logic on the entrepreneurs decision-making process has evolved since SarasSarasvathy´ first paper in 2001. We hope that

this synthesis can make it easier to understand how science has evolved since Sarasvathy discussed about the effectuation logic for the first time.

Also, as mentioned in the beginning of this study we would like to contribute to move forward with the research on the effectuation logic for the decision-making process of the entrepreneurs. Thus, inspired by the work of Shepherd, Williams and Patzelt (2014) we would like to present a small diagram where we can integrate elements from Sarasvathy's researches as well as other elements we have seen as focus on the researches summarized here, besides some aspects like culture and time mentioned by Shepherd, Williams and Patzelt (2014).

Figure 5 – Integrated Map on Entrepreneurial Decision-Making Process



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