

Dynamics systems management model system for entrepreneurship, Emprender Fund-SENA, Valle del Cauca

Modelo de Dinámica de Sistemas para la Gestión del Emprendimiento, Fondo Emprender - SENA, Valle del Cauca

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Abstract

This research paper proposes a System Dynamics Model for Entrepreneurship Management, The Emprender Fund, which was constructed by the characterization of the value chain of the process using the tool SIPOC (Suppliers, Inputs, Process, Outputs and Customers). (Suppliers, Inputs, Process, Outputs and Customers). A turn to the definition of the problem in structural terms, applied by an adaptation of the Causal Model to establish systemic interdependencies and feedback loops, enabling the construction of the model through the VENSIM tool (Ventana Systems Inc) used conceptually based Forrester Diagram. Also, it was calibrated with real data, performing simulations that determined that the main attributes that characterize the model of Emprender Fund are: the bankruptcy of enterprises, time spent by consultants to evaluate projects, and to a lesser extent, the number of business plans evaluated, since the proposed paradigm identifies both critical points of leverage as a dynamic model such as Entrepreneurship, becoming an important tool for management.

Keywords: dynamic systems; attribute; entrepreneurship; variable; Simulation; entrepreneur; businessman; Emprender Fund; management.

Introduction

92% of the Colombian population, consider that being a businessman is a desirable and valid alternative career, being the highest percentage registered in all of the countries that participate in the Global Entrepreneurship Monitor (GEM), while the others considered with a high economic development, such as Belgium, Finland and Japan, the index is lower than 50% (Colombia Global Entrepreneurship Monitor, 2012).

Since the first meeting for the Emprender Fund-SENA from 2005 until the year 2012 –chronological moment for the entrepreneurship research in the Valle del Cauca department- 146 entrepreneurial projects have been approved, whose assigned budget has reached the \$8,738,177,600 million pesos; from the 146 financed businesses, the 40.41% have achieved the disbursement of their seed budget; the 38.36% must convert their disbursement in seed budget; and the 21.23%, can be considered as entrepreneurial leaks, since they decided to not start their business, for what they become a non-executed resource, according to the SENA compiled statistics data base (2014).

The current issue of the businesses created under the Entrepreneurial Model in the Valle del Cauca region, is that it was constituted in an opportunity to put into practice a Systems Dynamic Model, in order to study the causal relations that explain the obtained results.

This article was divided in five parts; topic introduction, records, development of the proposed model in four items; functional analysis of the problem, value chain characterization of the process, interdependencies and Formation Systems for Entrepreneurship (FSFE) circles, and modeling-. At last, the results and discussion, and conclusions are considered.

Records

According to the Business General Census, DANE (2005), the national entrepreneurial structure is formed by microbusinesses and SMBs, in their set, they are the main source of employment and income in Colombia, appreciating that, in most of them, non-legalized Jobs are generated, that is, registered in informality (Cárdenas and Mejía, 2007).

Any how the microbusinesses and the SMBs group themselves, a great variety of economic unities and of different nature and development level, the information drawing from which one can make the approximation, comes from different sources, with different methodologies and thematic contents, limiting the possibility to carry out and analysis of the whole sector while taking in account the same criteria, variables and measurement scales.

Likewise, the microbusinesses, in their most part, are establishment that occupy less than five employees, dedicating themselves, preferably, in

developing commerce and service, and, especially on retail. This sector composition hasn't changed namely in a meaningful grade; subsistence entrepreneurial initiatives are seen, businesses that appear and disappear quickly, people that have started and close it due to the competition, registers from the Chamber of Commerce which indicate enlisted businesses and the other year it isn't, among others

Likewise, according to the National Council of Economic and Social Politics (NCESPC, 2008), among the most relevant microbusinesses characteristics in Colombia, the following stand out: 1. Lack of budget; 2. Narrowness in market coverage; 3. Reduced commercialization capacity; 4. Limited negotiation capacity; 5. Defective product quality; 6. Weak associativity and cooperation; 7. Low worker training; 8. Inefficient management formation; 9. Defective production organization; 10. Sector heterogeneity; 11. Restricted financial Access; 12. Delimited internal market; 14. Clean production issues and environmental healthy technologies; 15. Technological backlog; 16. Productivity decrease in the production factors; 17. Excess of state procedures; 18. Low quality management; 19. Disarticulation of productive chaining; 20. Low human talent formation; and 21. Insecurity.

The national government has been legislating about this theme; the Law 344 about Science and Technology (Colombian Congress Law 344m 1994) and the Law 1994, where it was established that 20% of the SENA must be aimed to competitiveness and business technology and the strengthen of technician programs.

On its part, the Congress of the Republic, in the Article 40 from the 789 Law of 2002 (Colombian Congress 789 Law, 200) formed the Emprender Fund as an independent and especial account attached to the SENA, which must be managed by the same entity, and whose exclusive objective is to finance the business initiatives that come from, be developed or associations from university trainees or professionals whose formation is being or has been developed in institutions that, for the legal effects, are recognized by the State, in accordance to the Law 30 of 1992 and 115 of 1994.

The Emprender Fund has as goal to support the productive projects that integrate the gained knowledge by the entrepreneurs in their formation process with the development of new businesses, making Access easier to the seed budget (recourses condoned after the first year of execution as long as it complies with the established management indicators), to execute the productive

businesses ideas. According with the number of generated jobs, the seed budget was characterized in the next way:

- if the business plan overcomes three jobs up to 80 Minimum Wages;
- five jobs 150 Minimum Wages;
- more than six jobs, 180 Minimum Wages;

If the project exceeds an amount superior to the 180 Minimum Wages for its implementation, the entrepreneur must finance them with their own contributions or resources.

In the financial headings, we have:

- Working budget, machinery and systems related with the project, management and operation spends, legal constitution and required licenses expends.

In the non-financeable:

- Property purchase, feasibility studies, vehicle acquisition, liabilities payments, academic training, among others. (0007 Agreement,2011).

To take an in-depth in the Entrepreneurship Management Model, a “systemic” focus with the representation and circular approaching was used; According to Senge (1999), the decisions taken today will be the reflection of the future, and what we are living today are the consequences of what was chosen in the past.

On this particular ,O’Connor and McDermott (1998) and, Senge (1999) posed that the usual thinking resulted inefficient to handle complex systems, since it tends to see simple cause and effect sequences limited in space and time, instead of a factor combination that influence among themselves; it is necessary then to think the problem from the systemic and repetitive point of view, and which traces does the past have, and more the systemic approach conceives any world aspect such as casual iteration between attributes that describe them, obtaining systemic representations with arrows and dots, denominated Casual Diagrams, which capture the proposed hypotheses.

Proposed model development

Functional problem analysis

The national government, in order to overcome the difficulties and weaknesses that are currently living the entrepreneurs, it counts with an entrepreneurship politic (Colombian Congress, Law 1014 of 2006), that has as main objectives to encourage the institutional joint, facilitate the entrepreneurial activity, develop new finance instruments, strengthen the supporting non-financial industry for the entrepreneurship, and encourage entrepreneurships that include each time, more science, technology and innovation.

The goal of the Emprender Fund is to finance productive projects that integrate the acquired knowledge of the entrepreneurs in their formation processes with the development of new businesses, making easier the access to the seed budget, when putting at disposal the necessary beneficiary resources that the bet requires and demands

In Colombia it can be believed that the entrepreneurship is an already established politic. (Tarapuez et al., 2013). The efforts held in the implementation of these national guiding, the evidence in the creation of the Emprender Fund could be seen, but it requires and demands the businesses to the financed businesses that don’t show the desired indicators. Despite this, big entrepreneurship researchers such as Kantis et al., 2002; Komori (2002); Stevenson (1998) and Cooper (2013), held an entrepreneurial politic that can increase in a great sum the country richness and decrease, ostensibly, the psychosocial phenomena.

It allows the accomplishment management indicators to determine in the National Council Directive of the Emprender Fund the money reimbursement, or the seed budget assignation to the entrepreneurs that at the end decide to continue with the business legalization process.

The terms are known by the entrepreneurs, and stay legalized in manner starting from the work initiation act. This sign is done with the assigned auditor and with the duly constituted business under the commercial legislation of Colombia. The Cooperation Contract (Law 1676, 2013), considered that, this is a financial obligation that must be accomplished with all the normativity and established sanctions when facing the juridical Colombian frame.

According to the 001617 Agreement of 2006, that modified the Operations Manual of the Emprender Fund, the main management indicators are the job generation, budget execution, the marketing management, and the sales supervision.

Value chain characterization and structural problem analysis

The entrepreneurship value chain process starts when a citizen proposes a business idea in an entrepreneurial unit, until the moment that is evaluated by the Emprender Fund as a business, so the assigned resource becomes in a condoned seed budget or the business has to reintegrate the financial resources and assume a debt with its respective payment period.

Emprender Fund business process value chain characterization.

To address the characterization for this process, is accurate to understand some concepts used in the System Dynamics, which is a methodology developed by the Massachusetts Institute of Technology (MIT) with Jay Forrester (1969) as the Lead Engineer. Redondo (2013) proposes the following definition: "The System Dynamic conceives any world aspect as the casual iteration between the describing attributes; thus, systematic representations with points and arrows are achieved, denominated as Causal Diagrams, which capture all the proposed hypotheses. The model and the recommendation are the modulator's point of view.

In System Dynamics, the parts of the system are denominated as attributes understood as what is capable to be said in the system. This comprehension depends on the analyst of the problem and its capability to understand its structure.

• Causal Diagrams

The relations used in the System Dynamics to articulate attributes, are denominated Causal Relations.

• Level Diagrams

Represent each state of the variables in the system, through which we can visualize in a general way; among them are the non-tangible accumulations or of information and the tangible or material information.

• Flows

Are change ratios, that is to say, those that produce the accumulation in the state variables.

• Auxiliary variables

They are variables that capture very specific situations in the system.

• Parameters

They are constant values in each system process, but can vary from process to process.

In this research the conventions showed on Figure 1 were used, which represent the Dynamic System's levels, flows and auxiliary variables. These allowed the development of the Entrepreneurial Model and simulate some variables.

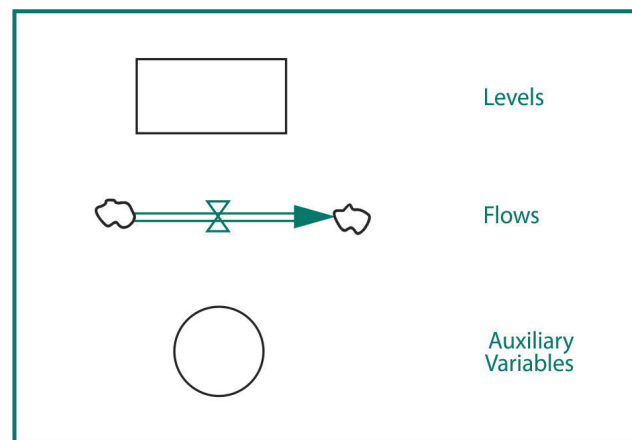


Figure 1. Dynamic Systems convention. Source: Forrester, 1969.

It is understood as a value chain those planning, execution and control activities done to give value to the customer (Womack and Jones, 2005). This model pretends to characterize the entrepreneurship for the SENA Emprender Fund, Valle del Cauca Region. The used tool for the Formation Systems for Entrepreneurship (FSFE) is the SIPOC Diagram (Simón, 1981), whose name comes from the acronyms Suppliers (S), Inputs (I), Process (P), Outputs (O) and Customers (C).

The SIPOC allows to have a clear vision of the value chain in the entrepreneurial process and its surrounding, through the identification of relevant elements (Figure 2).

General Objective: To encourage the entrepreneurial and entrepreneurship culture throughout capacitation and counseling activities that contribute the productive growth of the country through the creation of competitive and sustainable businesses in the market			RESPONSIBLES FOR THE PROCESS AT NATIONAL LEVEL: Work and Employment Director, Entrepreneurship Group, entrepreneurship and Emprender Fund Coordinator, Group for the generation of income for the vulnerable and country population, Regional Directors, Center Sub-principals	
S	I	P	O	C
Natural People with Business People that Accomplish the 007 Agreement of 2011 Requirements	Business Ideas	16 Entrepreneurial Execution	Natural People with Businesses - Condoned or with Financial Obligations with the EF.	Entrepreneurship Units, Emprender Fund, SENA, State, Entrepreneurial Sector
		15 Inventory Site Visit		
		14 Resources Assignment		
		13 Inventory Assignment		
		12 Business Legalization		
		11 Resources Approbation and Assignment		
		10 Prioritization and Grading		
		9 Results Publication (Feasible, not Feasible)		
		8 Answer Generation from the Business Plan Formulator		
		6 Plans Question from the EF (Emprender Fund)		
		6 Business Plan Evaluation		
		5 Credit Documents Reception		
		4 Enrollment Opening		
		3 Formulate Business Plan		
		2 Project Creation for the EF Platform		
		1 Credit Business Plan in the Suitable Entrepreneurship Unit		
Documents (Properly certified and availed by the Law 30 of 1990 and 115 of 1995)	Indicators (That accomplishes the established requirements by the 007 Agreement of 2011 and that has innovative and highly productive ideas)	Entrepreneurial Process	Emprender Fund Accomplishing Indicators	Resources, platforms, management reports

Figure 2. SIPOC- Entrepreneurship value chain
Source: The authors.

The system Suppliers (S) of the entrepreneurial chain are the natural people, of legal age for the Colombian State, coming from the Superior Education Institutions, (SEI); the business incubators; the professionals of certified formation and in especial formation in the SENA, and the businesses that have less than a year from being legally constituted and that fulfil the requirements from the 007 Agreement of 2001 from the Emprender Fund.

The system Inputs (I) are the business plans, coming from the SEI, the business incubators; the professionals of certified formation and in especial formation in the SENA, and the businesses that have less than a year from being legally constituted.

The Processes (P) are the business plans that undergo 16 stages, describe don Figure 2, starting from the plan financing in an entrepreneurial unit, until the business achieves the liberation after finishing the whole process, that is to say, until the reimbursement of the condoned budget from the Emprender Fund.

The Outputs (O), for the value chain, are the natural people with condoned businesses or financial obligation, which have or haven't accomplished the performance indicators, agreed throughout the entrepreneurial process with the Emprender Fund.

Finally, the Costumers (C) will be the entrepreneurial units in charge of doing the permanent tracking to the financed businesses through their advisors. On its own, the Emprender Fund will make a permanent tracking to the businessmen, the resources execution and the goals to accomplish. The SENA is the entity in charge to collect the Emprender Fund entrepreneurial performance process. It depends on the community, on a great measure, the acceptability or not in the acquiring of products and services that offer the new businesses, and also the governmental entities, such as commerce chambers, DIAN, and Comptroller, which are the involved entities in the functioning entrepreneurial process in Colombia.

Hollingsworth (1995) proposes a way to draw flow diagrams to summarize an image, in a coherent way, the work, information and decision flow diagrams that represent the reality of the operation system.

The elements of the system are:

- The operative guidelinings submitted by the Emprender Fund Direction (lower right part of Figure 3), which are: i) The operative and financial objectives, and ii) Tracking and control guidelinings that the General Direction establishes for them to be verified by the project auditor, who takes role of referee in the projects and who their execution depends on.

- The process attributed of the entrepreneurship value chain (central inner part of Figure 3) are: i) The elements of which the Entrepreneurs Appropriation Projects (EAP) depend on, which are also considered as suitable attributes thinking in the project approval; ii) The expected rate of reimbursement (reimbursement), and iii) The Quarterly Criteria Tracking Evaluation (QCTE).

- The Tracking Horizon (TH) is the time between the idea approval and the business consolidation. In this time lapse, the action plans were identified and reprogrammed.

- The eventualities effort attention, generated by the obtained results of the simulated businesses performance. In this study, the co-relation between the elements which

the EAP depend on and the expected Project Success Rate (PSR), that is to say, the state and co-relation between the first, determine the result of the second. This was expressed as the function: $TEP=f(EAP\ synergy)$. The more the number of presented projects by the SEI, and the business incubators, lesser will be quality or time dedicated by the Emprender Fund evaluator. The approval of projects with low quality criteria was derived in bankruptcy in the entrepreneurial process. The additional improvement effort, implied to examine the EAP in order to identify the leveraging points and improvement actions.

- The information and work flows between the entrepreneurship process elements.

- The measurement indicators and system output.

The EAP represent the necessary attributes which are counted for the value chain, whose co-relation structure represented the businessmen in the formation of Entrepreneurial Unit of the Valle del Cauca Region.

According to the expressed, drawing from this study, it was determined that:

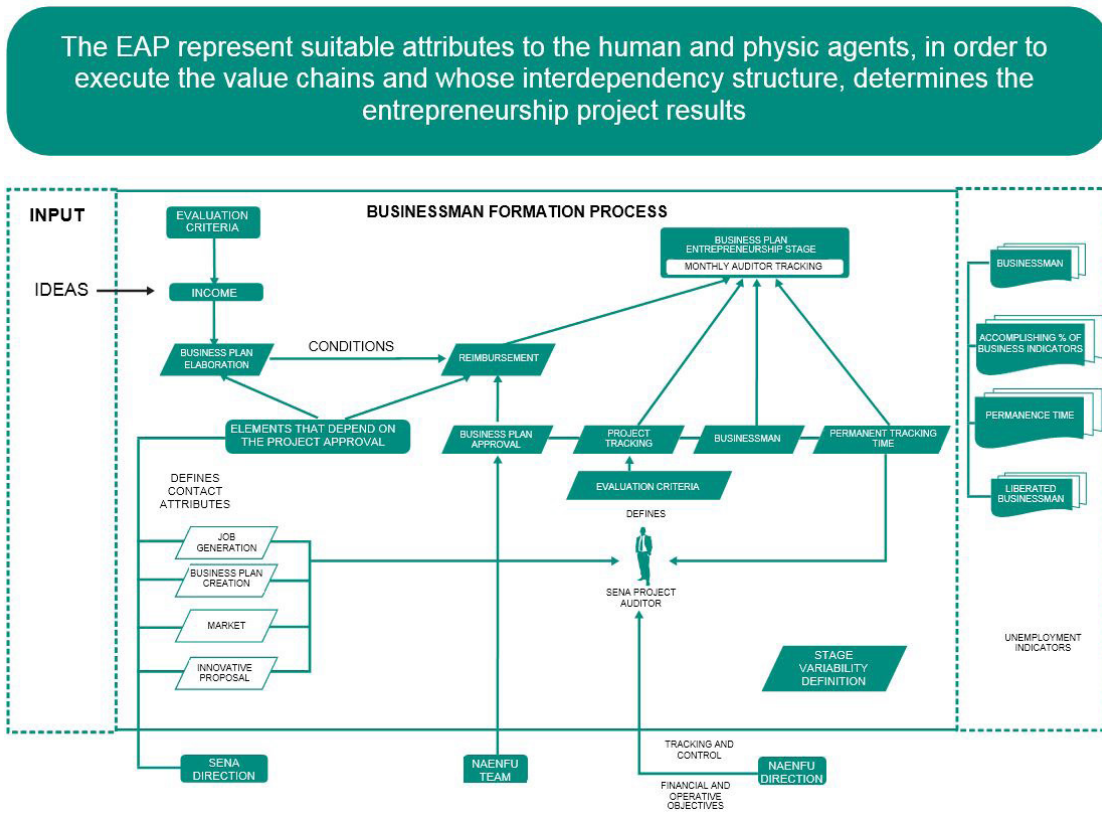


Figure 3. Flow Structure for the Entrepreneurship
Source: Adapted from Hollingsworth, 1995.

In this methodology, the EAP are identified by the system operative agent team. In this system, such team is composed by the project auditor and the Emprender Fund coordination. In the proposed model, the following EAP were identified:

- Technical competence for the idea income (competences for the group that calls and selects the entrepreneurs).
- Entrepreneur’s condition (competences and characteristics that the entrepreneur must take in account).
- Tracking plan planning by the auditors, Emprender Fund and the SENA.

Interdependencies y value chains FSFE circle values

A tool used in this study to define the problem structurally, is an adaption of the called Causal Diagram, (Sterman, 2000), which defined the set of elements that have a relation with the problem, and which allowed, in a beginning, to explain the observed behavior in the created businesses with Emprender Fund seed budget.

The systemic interdependencies to analyze the problem can be observe don Figure 4, where the systemic (circles) feedback loops are shown.

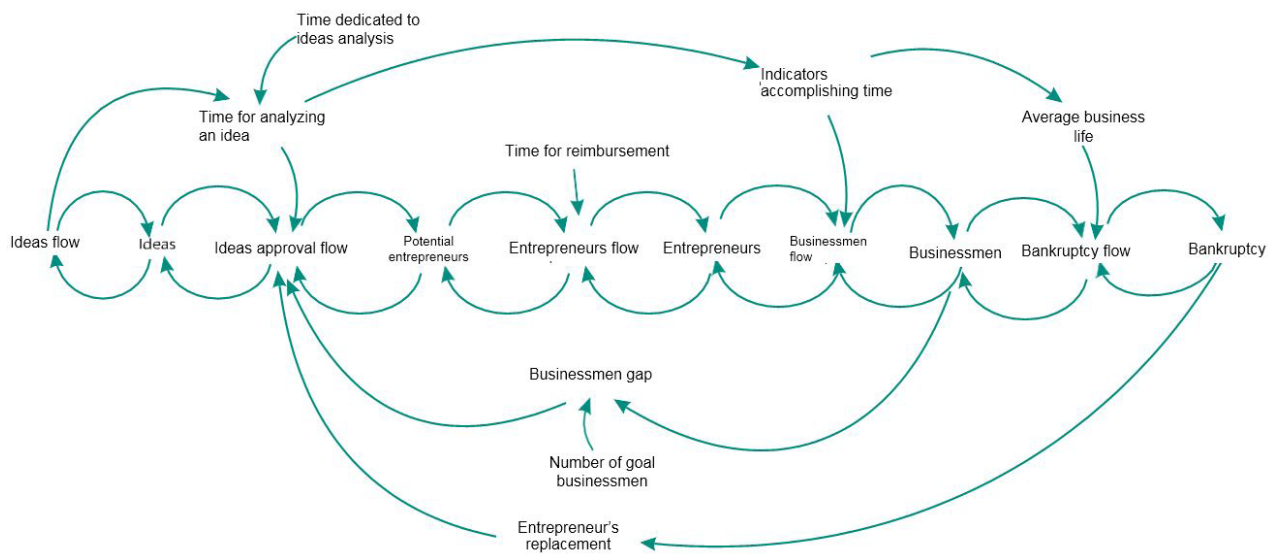


Figure 4. Entrepreneurship Management Diagram.
Source: The authors

The structural relation of the related elements to the problems are: input business ideas attributes (I), value chain processes (P), result and system impact variables (O). The most part of these elements are “imported” from the SIPOC, as show on Figure 2, and the flow diagram structure for the entrepreneurship work in Figure 3.

The parameter identification for the stage definition parameter and the output or system performance indicators, shown on Figure 3, allow to build a Problem Map (Figure 5).

Dynamics Systems Management Model System for Entrepreneurship

$t=(\text{Time sub-index})$:Reference for each of the months of study period ($t=1,36$).

Variable Levels:

Entrepreneurs: Entrepreneurs amount in the t month. Its equation comes given by =Entrepreneur Flow – Businessmen Flow, starting in, 1).

Potential Entrepreneurs: Amount of potential entrepreneurs in the t month. Its equation is given by = Idea Approval Flow – Entrepreneurs Flow, 1).

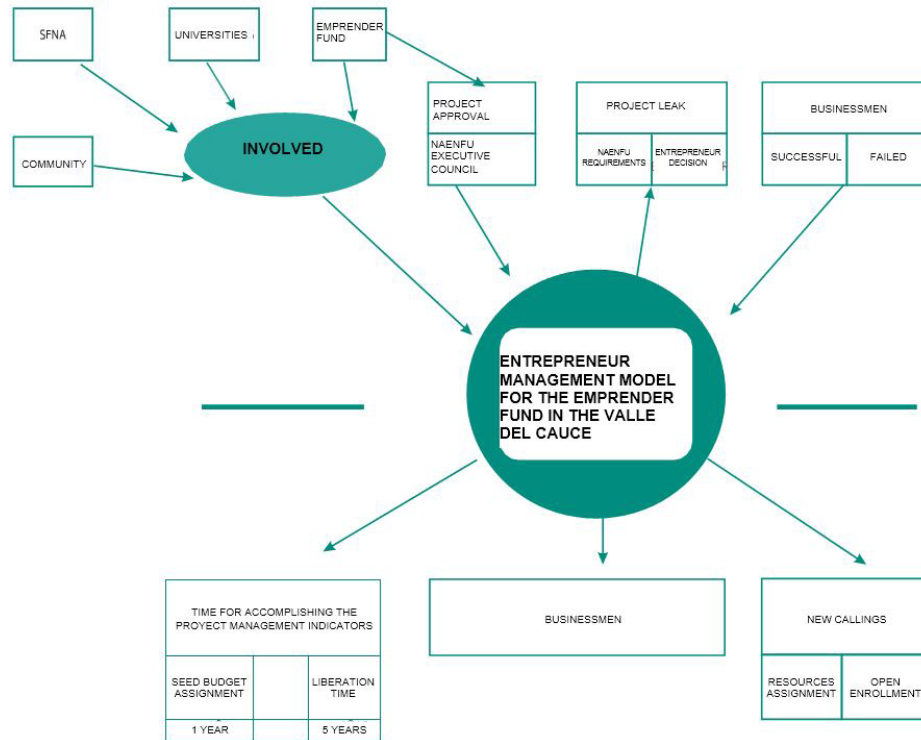


Figure 5. E Problem map for the entrepreneurship problem
Source: The authors.

Businessmen: Amount of active businessmen in the t month. Its equation is given by = Businessmen Flow – Bankruptcy Flow,0).

Ideas: Number of approved ideas in the t month. Its equation is given by = Ideas Flow – Ideas Approval Flow, 1).

Bankrupts: Number of businessmen whose business have failed in the t month. Its equation is given by = Bankruptcy Flow,0).

Flow variables:

Ideas approval flow: Level between the new ideas and the left spaces by the different goal in mind, the replacement of entrepreneurs over the time to analyze an idea that the auditors have. The equation = (Ideas + Businessmen Gap + Entrepreneurs Replacement)/Time for analyzing and idea.

Entrepreneurs Flow: Is the flow in time unit that measures the potential entrepreneurs over the time to make the money reimbursement for the National Entrepreneurs Fund (NAENFU).

Businessmen Flow: Entrepreneurs/ Indicators Accomplishing Time (The entrepreneurs’ flow that accomplish the Management Indicators to become businessmen).

Bankruptcy Flow: Businessmen/Average business life (The bankruptcies generated by business operation time accomplishing the Economic Indicator Fees).

Ideas Flow: Initial ideas amount that arrived to the system; 240 in average.

Auxiliary variables:

Businessmen Gap: Number of Businessmen Goal – Businessmen, it is the system’s limit.

Entrepreneurs’ replacement: Entrepreneurs whose projects are approved.

Bankruptcies: Bankrupted businessmen that will give space for new ideas and surely to new entrepreneurs.

Indicators accomplishing time: Analyzes the Idea quality with the Idea analysis, if it surpasses the thirty six (36) months.

Time for analyzing an idea: Idea Flow / Time dedicated to the ideas analysis, checking the auditors' time and the NAENFU.

Parameters:

Number of Goal Businessmen= 1.340 is the hoped value in the program.

Time dedicated to the ideas analysis: 2/month.

Time for doing the reimbursement =1 month after the study (ideal assumption).

Average business life=It is asked for the indicators accomplishment time of the business in months.

Simulation time = 36 months.

The stage definition parameters and the system performance indicators stand out as critical elements for the Casual Diagram shown on Figure 4. In this structure are identified the positive and negative feedback loops. A reinforcement loop is shown (Figure 6) as the time balancing effect for the Business Ideas approval.

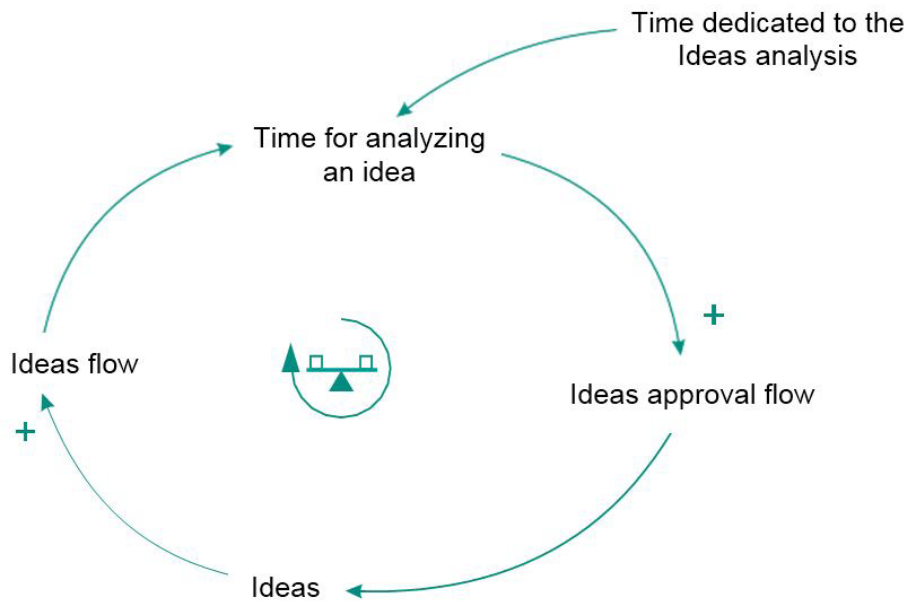


Figure 6. Reinforcement Loop for the Analysis of Business Ideas
Source: The authors.

Dynamic hypothesis

The system representation is proposed on Figure 6, becoming a dynamic hypothesis for the study or reinforcement loop in the Business Ideas analysis.

Reinforcement loop in the Business Ideas analysis

As more ideas are presented, there will be a greater number of ideas flow, which if the evaluators do not increase proportionally, will result in less time to analyze the Idea, which will decrease the quality of

the evaluation and increase the approval flow of ideas. The quality of the process, depending on the model, depends on the time spent analyzing ideas; what has been proposed as the quality of the evaluation of the idea.

The Forrester Diagram in Figure 7 shows the causality relationships between the variables of Flow, Level and Auxiliary with the parameters of the whole system.

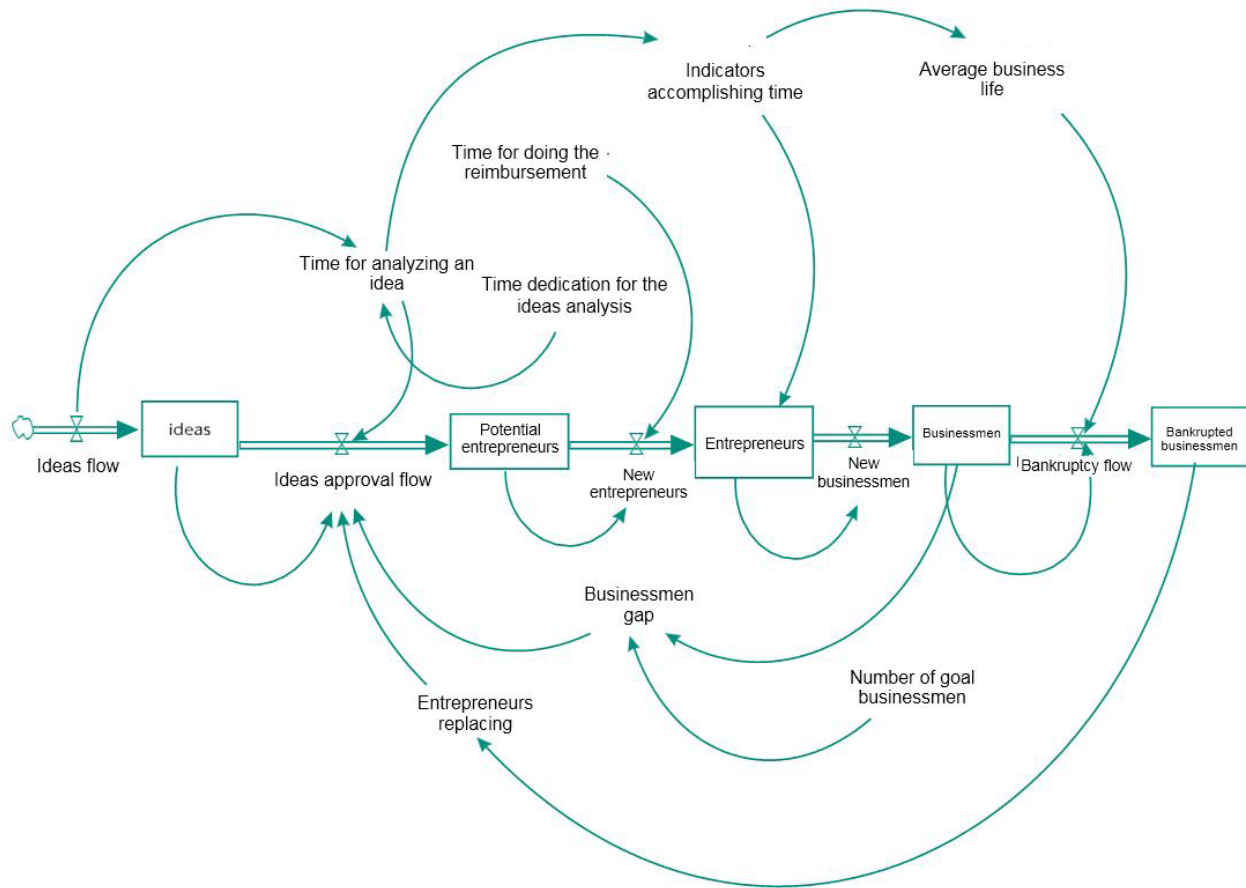


Figure 7. Forrester Diagram for the Entrepreneur Process
Source: The authors

Results and discussion

The developed model does not represent an absolute reality, the modeler is a person that tries to give to understanding the reality position that he represents, it can be believed that this position has been fully understood, a model is representation that can always be improved (Sterman, 2000).

All the problems have a behavior structure and generally, the human being observes the occurrence event. For the Dynamic Systems, the events are the observable, the instant photo, generally, one fourth of the problem, the patterns, the structure and the mental models, represent

the other remaining three fourth parts. The patterns refer to behavioral indicators in a time lapse; the structure, is referred to all the involved processes in the functioning of a system (working system, infrastructure, financial resources, technology), and the mental models refer to the beliefs and principles that people have about a system functioning (Aljure, 2007).

The VENSIM simulation tool, allowed to graphically see the involved variables in the entrepreneur system behavior, it is started by shown the Entrepreneur Management Variables (Figure 8).

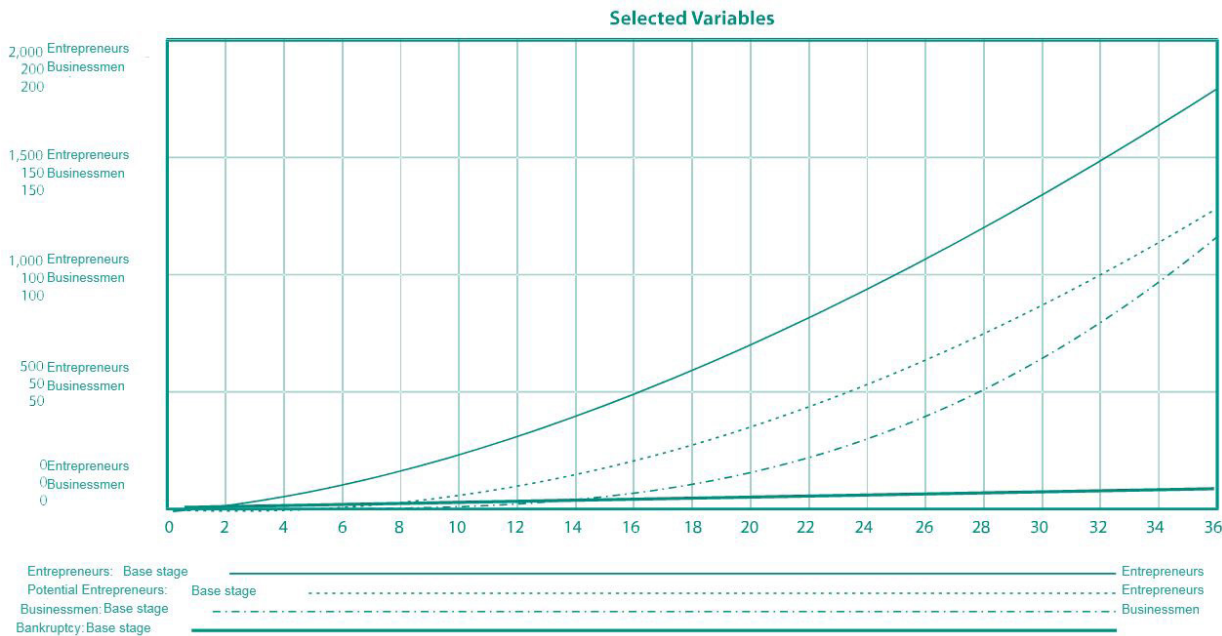


Figure 8. Variable relations in the Entrepreneurship Management
Source: The authors

As observed in Figure 8, there is a transcendental relation between the level variables: Ideas, Potential Entrepreneurs and Bankrupted Businessmen; as the entrepreneurial time horizon raises. All the variables grow in magnitude, certainly, if the system continues working the same without any political control, it will grow. The most critical, according to this perspective study, is the number of bankrupted businessmen through time; to corroborate such information, up next some simulations are presented.

Likewise, on Figure 9 we can observe the direct relation between the ideas increase; for example, when the awareness quality rises to the entrepreneurship program, there is a decrease in the businessmen gap; supposedly then that if the management consciousness raises, if good information is given; the business ideas will keep thickening or increasing since the process is attractive, but the important effect is still the bankruptcy in the simulated period. This relations lead to confirm that the entrepreneurship will keep gaining bankrupts, due to the expansion politics of entrepreneurship around the world.

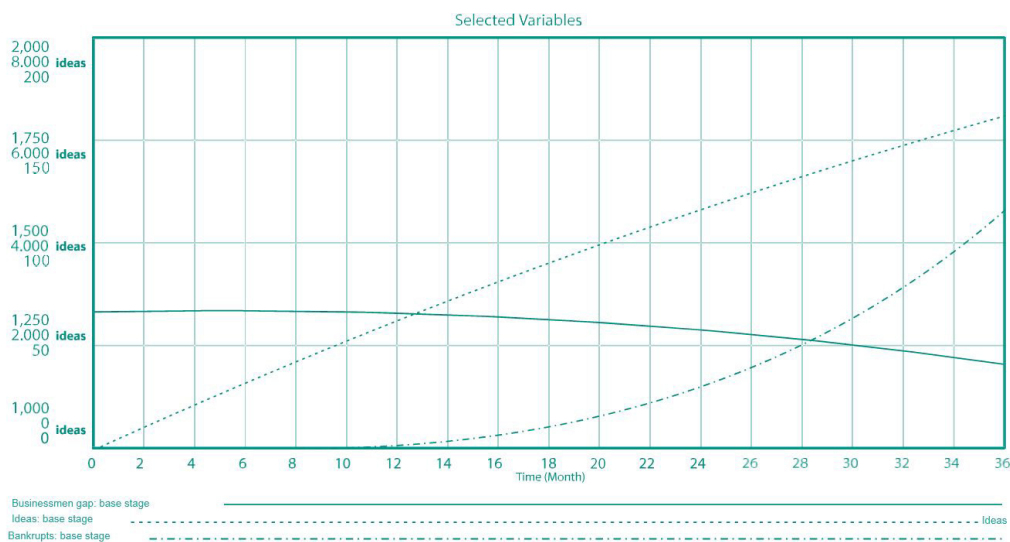


Figure 9. Entrepreneurship Variable Management
Source: The authors

Simulation for the ideas analysis time increase

The simulation for the Time (t) increase through the ideas analysis took in account the variable affect at Businessmen level, for which $t = 2, 4, 5, 6$, was modified

simulating a policy change in the Emprender Fund. Thus, we could obtain the results to perform this analysis, for what it is presented up next the obtained simulation (Figure 10).

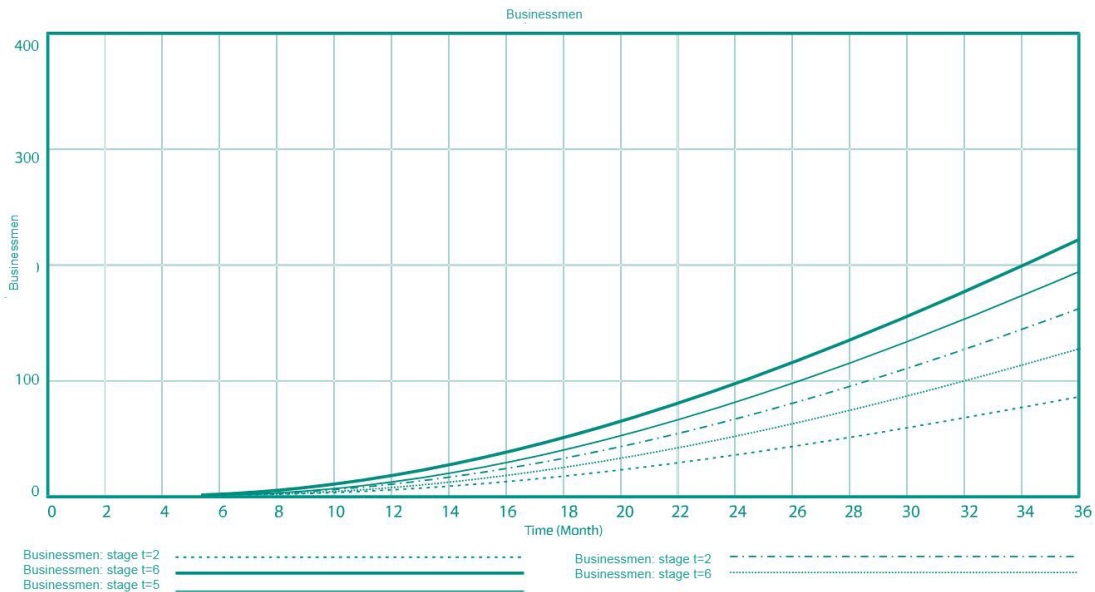


Figure 10. Time dedication to Project Ideas Simulation Analysis
Source: The authors

On Figure 10 is evidenced that in the simulation, as time increases the analysis dedication directly increases to the number of successful businessmen. The effects are more evident if we change the Auxiliary Variable Businessmen

Gap, which decreases in a meaningful way as the number of businessmen increases, quickly closing the gap, as evidenced on Figure 11.

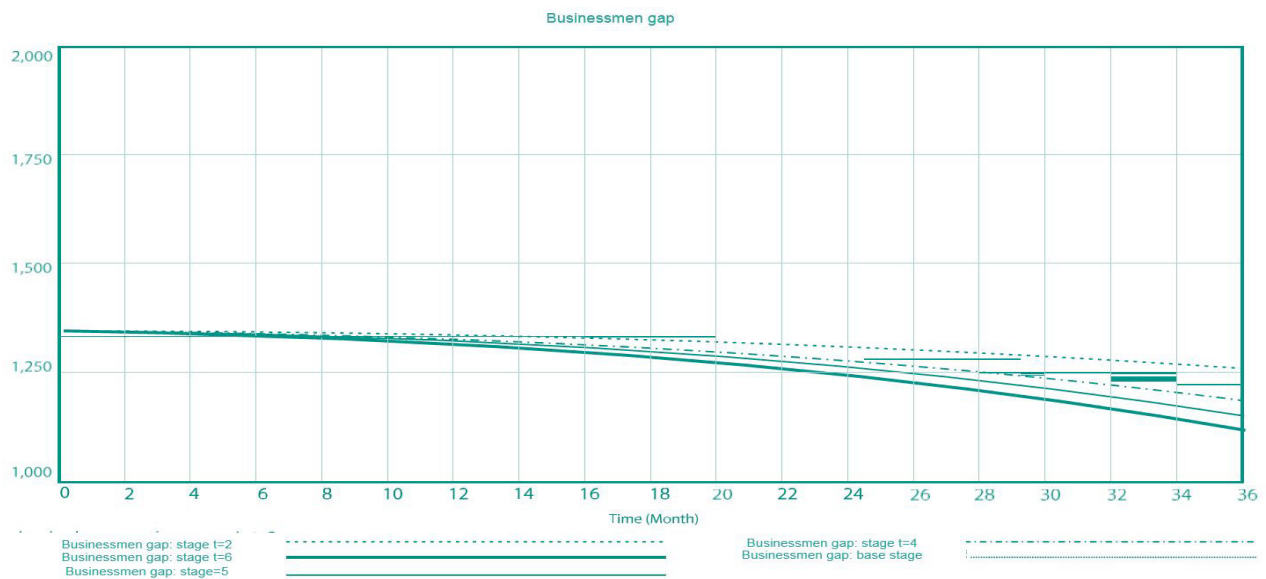


Figure 11. Decrease of Bankruptcy Gaps
Source: The authors.

This says that the time variable, regarding proposed project analysis, would decrease the number of bankruptcies, that is, quality time dedicated to the evaluation, more successful businesses can arise. It is a condition that is necessary to analyze, since the business policies must not be a condition of quantity, but on the contrary, of quality; it is a better guarantee for an entrepreneurship system to finance few businesses with high possibilities, than to finance several businesses destined to a high rate of failure; this reality is hard to confirm, but many systems work showing high indicator rates.

Ideas flow simulation

If the effect of varying the Ideas Flow, the number of Businessmen and Bankruptcies, keeping all the other variables constant, it is found that the behavior is similar for the business level as for the businesses bankruptcies. (Figure 12).

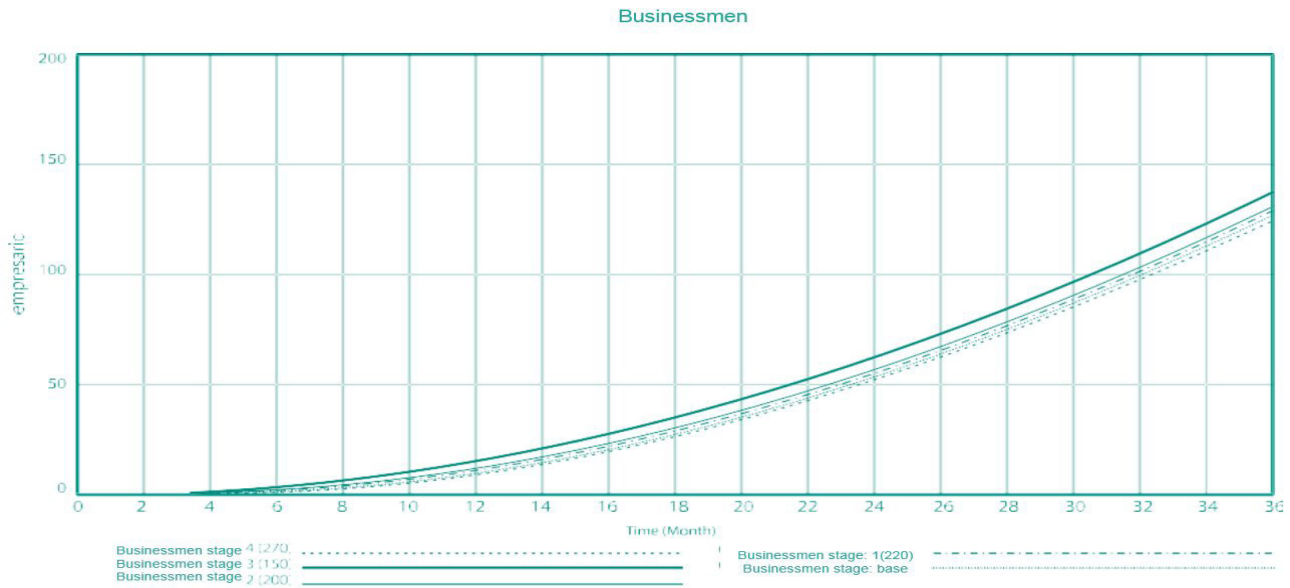


Figure 12. Ideas flow simulation
Source: The authors

The analysis determines that along with the encouraging policies are formulated, the ideas flow will increase meaningfully, (in almost a geometric progression), and that, in the sake of project analysis

and quality, it is not plausible; that means that it could become a positive feedback loop (growth) without control (Figure 13).

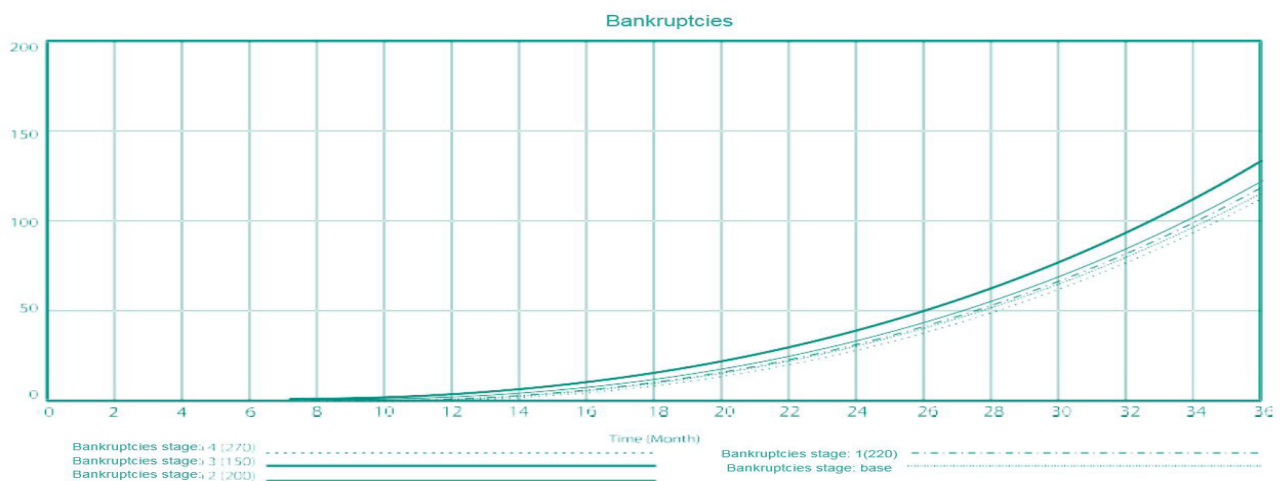


Figure 13. Behavior of Businessmen Bankruptcy
Source: The authors

Goal businessmen simulation

If the increase of goal Businessmen is increase, maintaining the initial conditions, the model stabilizes, but does not closet he respective gaps, as shown on Figure 14.

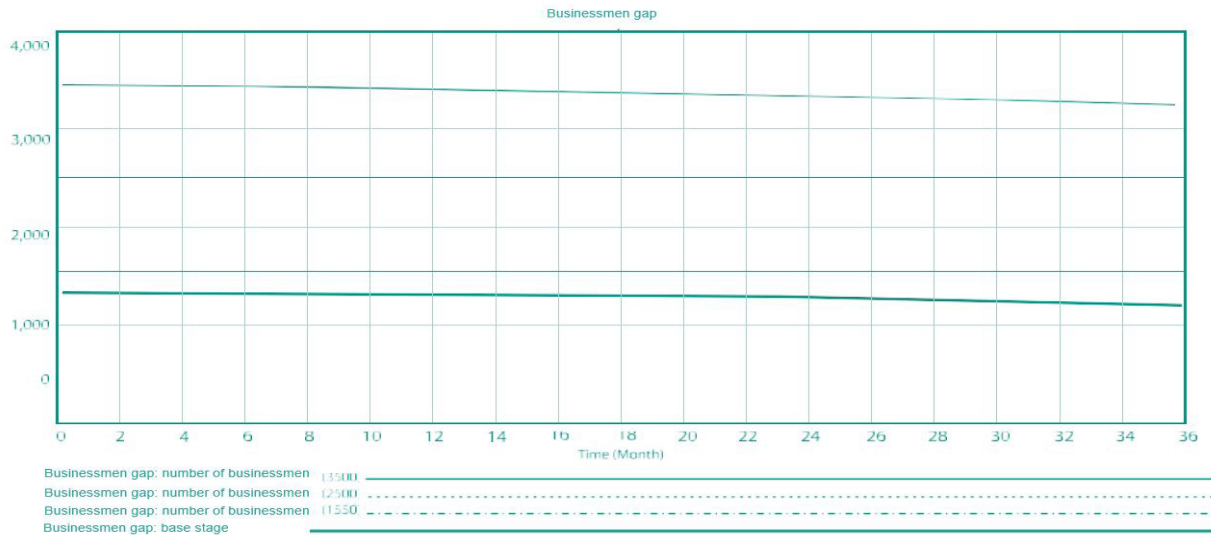


Figure 14. Goal businessmen simulation
Source: The authors

The bankruptcies as the ideas will maintain constant, behaving as a linear growth model that has not been analyzed in dynamic terms, leaving to drift their growth limits. A linear model can only poorly measure the business growth management; it can be a very friendly policy and a much desired goal, although it can only be an apparent business growth.

It is demonstrated in several studies in the state of this article that the businesses bankruptcy phenomenon does not affect other big regional, nation, or other businesses. Concerning should be put onto the several modern day societies that currently preach and encourage young men to develop their incentives that end up being failures.

For this article in prospective, the obtained results are not necessarily of absolute truth, it depends on the obtained vision in the different simulations, however, the business idea quality, the assertiveness in the project formulation, a positive attitude against an imminent crisis, mixed with all the involved entities in the entrepreneurial process, acting in the quality of all processes and decreasing the indicators to show, could end up in better successful results for the financed entrepreneurial programs through the Colombian State.

Conclusions

The main limitations found in the course of this research, was the lack of information about the state in matters of dynamic entrepreneurial modeling, the unawareness of the Systematic Thinking methodology, and also the lack of statistical information of the process.

In this research a systemic methodological framework as obtained and applied, one that uses non-integrated tools for studying and the improvement of value chains in the Emprender Fund, which includes its modeling and as well as its simulation. This framework was applied in the Formation of Entrepreneurs Process in the SENA, and the consistency of the results validated the posed methodological framework as an analysis instrument and exploration of key factors in the study object system, in order to simulate and identify leveraging points for the improvement of a system value chain. A characteristic element of the methodological framework is the evaluation quantification of key factors, in its most part qualitative, in a consensual way from the key system actors, such as the input for the simulation model and the analysis of resulting improvements.

In the case of studied entrepreneurship, the obtained results lead to characterize, the obtained results, such as the leveraging points, the idea approval time. Yet, if it is wanted to highly impact the entrepreneurship value chain formation, then it is relevant to intervene in great measure the suitability attributes. It can be concluded that the businesses survival is determined by the dedication time to the idea evaluation; and due to other suitability attributes, that characterize human and physical agents, both value generators in processes.

The proposed methodology, is well only a first systemic approach to the problem, it can allow the development of a dynamic model more complete that allows to predict the behavior of the process, allowing to identify critical and leveraging points in the entrepreneurship. In this sense, this study is the main input for developing a Master thesis in Industrial Engineering, where the quantitative analysis is more in-depth for the key success factors for the Emprender Fund entrepreneurial process; besides a research group is being created for the Services Technological Management Center (STMC) in Systematic Thinking, which will be enrolled in the SENA's seeders research, SENNOVA.

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