Establishing the Fundamentals of the TRIZ application to the development or improvement of SMEs Business Models

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ABSTRACT

In Colombia, Small and medium enterprises, SMEs, play a fundamental role in the economy. SMEs contribute about 80% of the labor force that generates 35% of GDP. However, by the second year of their operation, about 70% fail and disappear which affects the economic performance. There are many reasons why SMEs fail early, among which we can mention the lack of strategic planning and analysis of the environment, the ambition to grow rapidly coupled with the lack of long-term planning. SMEs fail, among other reasons, because of lack of innovation and their inefficient business models. Innovation might be a good tool to avoid early failures. The goal of this master’s degree document is to lay the foundations for the research that should answer the question: does the TRIZ innovation methodology have the potential to develop SMEs’ new business models or improve existing ones? Therefore, the hypothesis raised here states that, the TRIZ innovation methodology has tools that enables the development or improvement of SMEs’ business models. This hypothesis will be validated during the investigation that we will be carried out during the course of the Doctorate in Technological Innovation Management that will take place during the following semesters. The final goal of the doctorate program is to develop a service model, based on TRIZ and the Business Model Canvas (BMC) to allow SMEs either to develop or improve their business models so that they can be differentiated, innovative and sustainable. The methodology applied in this project consists of executing four experiments in order to validate the desirability, feasibility and viability of the proposed service. The results obtained allow us to conclude that the application of TRIZ to each of the nine modules of the BMC is feasible, viable and desirable, which sets the foundations for the long-term doctorate project.

Keywords: SMEs, Business Model Innovation, TRIZ and Business Model Canvas.

1- INTRODUCTION

This master’s degree document has the objective of setting the foundations that will be the central basis of the doctoral project that will take place, once the master’s program is finished. The findings obtained so far from four experiments, explained in detail below, let validate the same number of hypotheses that will allow the development of the future doctoral project.

As explained before, SMEs are great engines of the economy growth worldwide. Right now, they are big contributors in the GDP and responsible for the employment creation of any country (Baidoun S. et al. 2018, p 61). SMEs play a fundamental role in the Colombian economy. In 2018, Colombia had about 1.6 MM SMEs (DANE, 2018) which employ 80% of the country’s workforce and generate the 35% of GDP (Ministerio del Trabajo, 2019). The importance of these enterprises is huge so the Colombian government shall protect and develop them. However, by the second year of operation, 70% of the companies in Colombia, fail and disappear (Colombia Fintech, 2020). This number is very disappointing and negatively affects the economy. That’s why, we think, any attempt directed towards helping SMEs to be more sustainable and differentiated, would positively contribute with Colombia’s economic performance.

This difficult situation has motivated us to understand their problems and design solutions to contribute to their development and sustainability. One of the things that worries us the most is the fact that SMEs do not assume an innovative role by introducing new products and/or services or new business models, instead, they adopt the role of followers which seems not to bring fruitful results for them. That is why we intend to contribute to this purpose in the field of innovation, more specifically, in the business model innovation (BMI) to help these companies to be sustainable and differentiated.

The problem statement of this paper are the causes why the majority of SMEs fail during the first two years of operation, especially those causes related to the lack of innovation. Failure factors are both internal, such as lack of management experience and functional skills, and poor staff training and development, all of them largely controllable; and external, largely uncontrollable, such as the unavailability of supply chains, high distribution costs, tough competition, rising costs of doing

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business and lack of finance resources (Fatoki O. 2014. p. 5). Among the internal factors, there are the lack of cooperation and networking, obsolete technology and lack of innovation. Regarding external factors, there are poor market conditions and lack of institutional support (Franco M, et al. p. 511). The lack of innovation activities of SMEs has not been widely explored in the literature because innovation is mostly related to large corporations while SMEs operate with low level technology and, therefore, achieving low levels of productivity (Rahman et al., 2016). The majority of SMEs cannot afford to acquire high technology due to lack of financial resources, so they adopt a role of the followers. However, SMEs that practice innovation show higher performance and sustainable growth when compared with those which do not (Rahman et al., 2016).

Innovation is not only about developing a good value proposition to address customer needs, but also about how to get the product or service to the customer using the right distribution channel while maintaining direct contact with the customer to get necessary insights to constantly innovate (Osterwalder et al., 2010). SMEs need to create strong networking with suppliers, associates even with competitors and clients where collaboration is a key factor to success by acquiring resources and reducing risks and optimizing business models (Osterwalder et al., 2010). This concept, Business Model (BM), is the main topic of this paper and where the focus is on.

One of the hypotheses raised in this project states that “SMEs fail, among other reasons, because of their inefficient BMs”. SMEs are established based on good value propositions to satisfy customer needs. However, SMEs have fewer resources and limited time, limited or no R&D facilities, fewer technical capabilities, difficulties on recruiting skilled employees and less structured approach to innovation, which makes it difficult to innovate BMs (Ibarra, D, eta l. 2020. p 2). It seems that SME managers tend to lack Business Model Innovation (BMI) and ignore its importance (Ibarra, D, eta l. 2020. p 13). Therefore, basing the success of a business just on a good value proposition is not enough to guarantee long-term sustainability, even if that value proposition proved to be successful in the past (Souchkov, 2015) and product innovation alone cannot explain success (Gomila J. 2009. p 1). Moreover, it is a superior BM, rather than technology or product/service innovation, the key cornerstone that allows an organization to disrupt entire industries and build long-term sustainable business (Osterwalder A, et al. 2020). So, the situation with SMEs encourages us to discover opportunities that may have a major impact in the marketplace by delivering a new service (O’Connor G. et al. 2008. p 52) to help SMEs developing and improving their BMs.

We would like to set the foundations for the research that will address the following question: “how to develop or improve SMEs’ BMs and make them differentiated and sustainable by applying the TRIZ innovation methodology? To answer this question, we will apply several TRIZ tools to each of the nine building blocks that make up the BMC, developed by Alex Osterwalder (Osterwalder et al., 2010), to improve them or even develop new versions of them so that a new or improved BM is obtained. We think this approach is a good opportunity for TRIZ to contribute with both BMI and SMEs differentiation and sustainability development.

Once the opportunity discovered has been validated by the evidence gathered at the incubation stage which is the purpose of the master’s degree project, then the “acceleration stage” takes place (O’Connor G. et al. 2008. p 83). This last innovation building block will be the purpose of the doctorate that will take place during the next 2 years. So, the ultimate goal of the doctorate program is to develop a service based on TRIZ and BMC that will allow SMEs to develop or improve their BMs and make them highly differentiated, innovative and sustainable.

As we will demonstrate in this paper, TRIZ has powerful analytical, problem-solving and technology forecasting tools that, being applied to each of the nine modules of the BMC, will allow achieving this goal. BMC, on its own, lacks problem-solving tools, so, combining it with TRIZ, will be a good match and opportunity to contribute with SMEs’ performance. We will provide enough evidence that TRIZ tools combined BMC and some other innovation methodologies and marketing tools, do have the potential to develop or improve SMEs’ BMs. This evidence, gathered from the four experiments, will prove that the service is desirable, feasible and viable.
In order to set the foundations of this research, it is necessary to understand why TRIZ methodology might be a good tool to be applied to the BMC so that project goals can be achieved. To do so, let’s analyze both, first TRIZ and its tools and algorithms to evaluate its potential, and secondly, the BMC to understand how, where and when TRIZ can be applied on it.

Innovation has taken a relevant role in the business development, not only when developing new products, processes or services but also when developing BMs. There is not proven methodology in the world that allows to effectively innovate in those fields, so that’s why this project will analyze the potential of the TRIZ innovation methodology to be applied in the area of BMI since it has proven successful tools for innovating in products, processes and services.

TRIZ, a Russian acronym for Theory of Inventive Problem Solving, was created and developed by the engineer Genrich Altshuller back in 1946. He developed this methodology after having screened over 200,000 patents since then, where he discovered solutions and analyzed the methods of their creations (Bukhman I. 2012. p 23). Out of those reviewed patents, only 40,000 were really innovative being the rest just mere improvements. So, Altshuller defined the “innovative problem” as one in which one parameter that changes in one direction will be in conflict with another parameter, sometimes several, of a product or process. This situation is what he called a “System Contradiction” (Bukhman I. 2012. p 23).

Another important discovery is that there are 39 typical parameters that could define or represent any general parameters of science and engineering. Besides this, he also found out that the majority of technical problems (based on system contradictions) were solved using what he called and described as the “Inventive principles”, being 40 in total. Using the 39 typical parameters and the 40 inventive principles, he designed and built his famous “Contradiction Matrix”. One of the fundamental principles of TRIZ states that, instead of directly jumping to get a solution, TRIZ leads you to deeply analyze a problem, build its function model, and then apply a relevant pattern of a solution from the TRIZ databases to identify possible solution directions, then adapt them and finally solve the problem (Souchkov V, 2015. p 3).

From this point on, Altshuller continued developing his methodology adding more analytical tools, aimed at discovering functional disadvantages. In addition to this, he also created technology scouting algorithms, aimed at finding advanced technologies (solutions) to solve technical problems. After that, he and his disciples, who had been observing and analyzing how technologies evolved, developed the Laws of System Evolution to finally create the “Trends of Engineering System Evolution” - TESE, a tool that allows to accurately forecast technologies so that disruptive innovations can be developed (Lyubomirskiy A. et al. 2017).

Based on these TRIZ tools, we think the combination of TRIZ, and the BMC has the potential to accomplish the goal of making SMEs differentiated and sustainable by developing or improving their BMs. It might be necessary to combine these two methodologies with some other innovation methodologies such us Design Thinking, Systematic Inventive Thinking (SIT), among others, and some marketing tools so that the proposed service be useful and effective.

BMC is a great tool to describe a BM in a structured way. It divides any BM into nine building blocks. The left part of the BMC has what is called the back-office building blocks of any BM, the components responsible for its functioning. This left part (highlighted in red in the following graphic) consists of three important components:

- **Key partners**: This module describes the network of necessary suppliers and strategic partners that contribute to the operation of a BM (Osterwalder A. et al. 2010. p 39). We think some TRIZ tools can be applied on this block to help identifying potential suppliers and strategic partners, tools such as technology scouting algorithms (Function Oriented Search – FOS), analytical tools such as Function Analysis - FA, etc.
- **Key Activities**: this is about the description of the most important activities that must be performed within a company to guarantee that its BM works (Osterwalder A. et al. 2010. p 37). Here the technology scouting algorithms can also be applied as well as analytical tools (FA) and problem-solving tools (Inventive Principles, the “Algorithm for Inventive Problem Solving” - ARIZ, Contradiction Matrix, FOS, etc.) and technology prospecting tools such as Trends of Engineering System Evolution - TESE.

- **Key Resources**: this module describes the most important assets a company needs in order to operate effectively and efficiently (Osterwalder A. et al. 2010. p 35). As it happens to the previous block, here the technology scouting algorithms can also be applied as well as analytical tools (FA) and problem-solving tools (Inventive Principles, ARIZ, etc.), and TESE. All these tools will allow to identify more efficient and long-lasting technologies and resources. Besides, problem-solving tools might be applied to improve existing resources or technologies where functional disadvantages have been identified after applying TRIZ analytical tools.

The interaction of these three blocks must be as smooth as possible to guarantee an efficient performance of the BM.

Then we have an important module, the core of any BM:

- **Value Proposition** (highlighted in yellow in the figure below): this module describes the set of products and services that create value for a specific market segment (Osterwalder A. et al. 2010. p 23). The value proposition is responsible for making the customer lean towards the product of a given company and not that of its competition. Here there is a TRIZ tool whose objective is precisely that: make the consumer select a product with at least one attribute whose radical development, through innovation, is decisive in the decision process of its purchase. This TRIZ tool is called, “Main Parameters of Value” – MPV, which can be discovered through tools such as FA, TESE, Trimming and Cause-Effect Chain Analysis - CECA. As it happens with the three blocks mentioned before, it is important to guarantee a good interaction between this module and the other eight.

The right side of the canvas contains the three blocks related to the consumer (highlighted in blue in the figure below):

- **Customer Relationships**: This module describes the different types of relationships that a company establishes with certain market segments. These relationships can be personalized, automated, and can be held depending on the objectives that a company pursues: customer acquisition, customer loyalty or sales stimulation, etc. (Osterwalder A. et al. 2010. p 29). We believe that some analytical tools such as FA, Supersystem Analysis and TESE can be applied effectively to identify existing problems in the way a company relates to its current clients and to prospect new forms of relationship. However, there might be more TRIZ tools yet to be analyzed and tested so this will require further deeper research.

- **Channels**: This module explains how a company communicates with the different market segments to reach them and provide them with a value proposition (Osterwalder A. et al. 2010. p 27). For this module TRIZ has analytical tools (flow analysis, CECA and FA) to identify key problems that a company might have in its supply chain, problem-solving tools such as the Inventive Principles, Contradiction Matrix and technology prospecting tools (TESE) to identify new generation channels.

- **Customer Segments**: in this module, the different groups of people or entities that a company addresses through its value proposition are defined (Osterwalder A. et al. 2010. p 21). TRIZ also has a good tool to discover right targets for a given company’s products and services: Reversed Function Oriented Search – RFOS. Unlike the other algorithm, Function Oriented Search - FOS, RFOS focuses on finding market segments that share a problem (mainly functional) to offer a differentiated value proposition to eliminate those headaches. This tool acts as a “pain relievers” according Osterwalder’s definition (Osterwalder A. et al. 2010. p 21).
There might be some other TRIZ tools that can be applied in this module still to be selected but that would be the purpose of this doctorate project.

Finally, we have left the last but not least two modules: Cost Structure and Revenue Streams which make up the so-called "profit formula" block (revenues minus costs), highlighted in green color (see figure below).

- **Cost Structure**: here all the costs that a company must incur to implement the BM are described. These costs are produced when creating, developing and delivering the value proposition, maintaining the customer relationship and generating the revenue streams (Osterwalder A. et al. 2010. p 40). Here, many TRIZ tools work pretty well since TRIZ has been massively applied to efficiently reduce costs after its creation. We can name analytical tools to identify problems that generate costs (FA, CECA, Trimming, Function Modelling, Value Analysis, etc.), problem-solving tools to eliminate key problems responsible for generating extra costs (ARIZ, FOS, Inventive Principles and Contradiction Matrix, etc.) and technology prospecting tools (TESE) to identify next generation resources, key partners and key activities that will allow to get a more efficient cost structure.

- **Revenue Streams**: This module refers to the cash flow generated by a company in the different market segments it serves. If we subtract from these revenues the costs that are generated to guarantee the operation of the BM, we will obtain the profit that said BM produces (Osterwalder A. et al. 2010. p 31). Technology prospecting tools (TESE) can be applied to identify new ways to generate income and perhaps some analytical tools (FA, Trimming, CECA, etc.) and others to solve problems (FOS, Inventive Principles, Standard Inventive Solutions - ISS) can help generate more effective sources of income. In any case, this module, like the other eight, will require a more in-depth investigation to identify the potential of TRIZ in the development or strengthening of BMs.

This preliminary analysis of the theoretical foundations of TRIZ and BMC allows us to think that there is a good opportunity for this project to generate fruitful results. So, next steps are about describing the methodology we will use to develop the proposed service. To do so, several experiments will be carried out during the project which will be explained in detail in next session. The purpose of these experiments is to provide enough evidence whether the opportunity discovered is desirable, feasible and viable, therefore, a good business opportunity.
3- METHODOLOGY

As explained before in the introduction, the problem statement of this project is to know why the majority of SMEs in Colombia fail in early stages of their operation. We also numbered several causes for their failure so, the goal of this project is not to address all of them, which would be an ambitious and impossible task to accomplish, but to address one important cause: SMEs fail, among other causes, because their BMs are inefficient and do not support their value propositions. So, having narrowed the objective of this project, now we will explain what methodology will be applied to address this challenge. In this case, the approach of the applied methodology is a research through design based on different experiments (both quantitative and qualitative); some of them which will require several future iterations. These experiments allowed us to validate several hypotheses about the desirability, feasibility and viability of the proposed service.

EXPERIMENTS

Four experiments will be carried out in this project with the objectives of mitigating the associated risks and getting strong evidence. By doing this, some hypotheses raised will be validated: desirability, feasibility and viability of the project.

Experiment 1.

This experiment will validate the hypothesis 1: “SMEs’ managers and stakeholders are not aware about the importance of BMs”. If so, did they apply that knowledge to develop their current BMs? We want to validate the desirability of the project.

Applied tools:

- Discovery Survey (Bland D. et al. 2020. p 94). A survey will be submitted to SMEs’ managers. Among other questions, there two that need to be addressed to validate the importance of the concept of the BM: “¿have new Business Models been designed in your company?” and “¿does your organization have a systematic method in place to develop new BMs?” See Graphic No 4.1.1 in the annexes.

Results of Experiment 1:

<table>
<thead>
<tr>
<th>Have New Business Models Been Developed in Your Company?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>59%</td>
</tr>
</tbody>
</table>
Total SMEs surveyed (email): 71

We can validate the hypothesis No. 1 based on the results of questions 1 and 2.

**Experiment 2.**

This experiment will validate the hypothesis 2: “The application of TRIZ methodology to the BMC has the potential to develop or improve BMs”. We want to validate the feasibility, desirability and viability of applying TRIZ to BMI.

Applied tools:

- Concierge (Bland D. et al. 2020. p 248). This experiment will consist of an iteration of the proposed service in a SME to develop or improve its business model.
- Expected Results: customer satisfaction will be validated and a list of TRIZ tools used will be developed.
- Figure No 4.2.1 in the annexes explains this experiment:

**Results of Experiment 2.**

First iteration of the methodology was performed on a SME. This is the case FIQ Ltda. As explained before, a questionnaire with nine parts (one for each module of the BMC) was submitted to the client so their current BM was described. After that, each questionnaire was analyzed, and some problems and opportunities were discovered mainly on the Value Proposition module. After applying the TRIZ tool RFOS, an opportunity to perform distillation in a remote industry was discovered. Distillation is one of the processes in which FIQ has vast experience. One of the industries that is currently demanding this type of processes is the cannabis-based medicines. We also proposed to FIQ not to sell the equipment for distillation but rather to offer the service of distilling (PaaS) generating a new constant revenue stream. Figure No. 4.2.3 below shows the first iteration of the new BM.
It is important to note that the hypothesis No. 2 was validated since the client expressed its satisfaction with the service received.

Experiment 3.

This experiment will validate the hypothesis 3: “TRIZ has tools that can be applied to develop or improve BMs”. We want to validate the feasibility of applying TRIZ methodology to BM innovation.

Applied tools:

- Partner and Supplier Interview (Bland D. et al. 2020, p 114). We will ask TRIZ experts their opinion about which tools can be applied on each of the nine modules of the BMC.
- Analysis of Results. Those interviews will be analyzed and a list of TRIZ tools recommended by TRIZ experts will be developed.
- Figure No 4.3.1 in the annexes explains this experiment:

Results of experiment 3

We interviewed 6 TRIZ experts in TRIZ to validate the feasibility of applying TRIZ tools to the BMC in order to develop or improve BM. As it can be seen in the Tables 4.1 in the annexes, we asked those six TRIZ experts to list and explain which TRIZ tools could be applied in each of the nine modules of the BMC. All of them almost coincided on the TRIZ tools to be applied in the following components: Key Partners, Key Activities, Key Resources, Value Proposition and Cost Structure. Some of them proposed tools to be applied in Customer Segments, Channels, Revenue Streams. Surprisingly, some of them proposed some tools to be potentially applied in Customer Relationships. The result of this experiment exceeded our expectations which is a good sign about the real chances of achieving the goals of the project. All experts not only agree with the statement that TRIZ tools have the potential to be applied to BM development or improvement but also recommended some tools that were not originally considered. So, a further analysis will be needed about these new tools and understand their usefulness. Based on the results achieved, we can validate the hypothesis.

See Graphic 4.3.2 in the annexes with all tools proposed by the six TRIZ experts.
Experiment 4.

This experiment will validate the hypothesis 4: “Some SMEs will be interested in hiring the service of BM development or improvement by combining TRIZ with BMC”. We want to validate the desirability of the proposed service.

Applied tools:

- Explainer video (Bland D. et al. 2020, p 200). We submitted (via email) two explainer videos of the proposed service. These videos include a short survey about their content: we want to validate if the proposed service is “easily understood” and “how desirable it is”.

Results of Experiment 4.

We submitted two explainer videos by which we explained the proposed service applied to two case studies. In total, 49 people watched the videos and answered three questions. The results obtained are shown below:

<table>
<thead>
<tr>
<th>Question No. 1</th>
<th>After watching the two videos, is the proposed service clear to you?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>98.0%</td>
</tr>
<tr>
<td>No</td>
<td>2.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question No. 2</th>
<th>How useful do you think the proposed service to be developed will be?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very useful</td>
<td>32.7%</td>
</tr>
<tr>
<td>Useful</td>
<td>67.3%</td>
</tr>
<tr>
<td>Somehow useful</td>
<td></td>
</tr>
<tr>
<td>Not Useful at all</td>
<td></td>
</tr>
</tbody>
</table>
Based on the results obtained, we can validate the three hypotheses since they comply with the success criteria. See Figure 4.4.2 with the Test Card of this experiment.

4- ANALYSIS

Four experiments were performed. Results obtained from Experiment No. 1 showed that SMEs’ managers are not aware about the importance of designing or improving a BM for their companies. Based on this, we think the service has a good opportunity and potential on the market.

In the Experiment No. 2, the first iteration of the service was performed, showing that TRIZ can be applied to BM development. Of course, there are still variables that required adjustments, some TRIZ tools yet to be tested, and other innovation methodologies and marketing tools to be combined with TRIZ. By having tested TRIZ on a real case, we could experience its feasibility and viability in BMI. Even though, the results achieved so far are very promising and client was satisfied with the deliverables, we must emphasize that just one iteration might not be enough to fully validate this hypothesis, it will be necessary to perform more iterations, adjusts the tools to collect information, analyze it and solve problems. We expect that, after having performed several iterations, we will develop a new TRIZ-BMC based service strong enough to help SMEs developing and improving their BMs.

Experiment No. 3 confirms the feasibility of the service. Six TRIZ experts validated the application of several TRIZ tools, even some new that are recently developed and not known by the author which deserve further analysis.

Lastly, Experiment No. 4 validates the desirability of the service: 100% of SMEs interviewed so far said they think the proposed service is useful, 67,3% think it is very useful and 78,6% of them might be interested in hiring the service.

5- CONCLUSIONS

Though this project is still in progress, some important conclusions can be made so far. First, the situation of SMEs is real and critical: SMEs are struggling to survive long-term and there is a big necessity to change this. So, there is good opportunity to contribute by supporting SMEs to be more sustainable and profitable in the long-term. Therefore, there is a need for developing a service that will enable SMEs to innovate their BMs which is exactly the purpose of this project and this is why we decided to do this project.

From Experiment No. 3, after having interviewed six TRIZ experts, we can conclude that several TRIZ tools can be applicable to each one of the nine building blocks of the BMC. This is a great
validation for the proposed service and opens a great opportunity for TRIZ to be applied in the areas of business and management, specifically in BMI.

The fundamental question raised in the project is more relevant now: “how to develop or improve SMEs BMs and make them differentiated and sustainable by applying TRIZ? From the preliminary validations obtained so far, it seems that it can be concluded that TRIZ does have tools to accomplish this goal. We say, it seems, because we also conclude that more experiments must be done in order to increase the evidence strength to fully validate all hypotheses. So, this master’s degree document has set up the theoretical frame which will be the cornerstone of the doctorate project whose objectives are to find the necessary evidence to answer the fundamental questions we just mentioned and to develop a new service based on TRIZ and BMC that will allow SMEs to develop or improve their BM.

TRIZ might not be the only methodology that can be used in the project. SMEs do have more alternatives, for instance, as Sire suggest (Sire at al. 2019. p. 2), TRIZ can be easily and usefully applied with the Lean canvas when developing new BMs. TRIZ can also be combined with marketing tools and perhaps other innovation methodologies. We encourage TRIZ and BM consultants to further explore these other alternatives and combine them with TRIZ. In fact, next stages of this project will be focused on exploring these alternatives to identify synergies with TRIZ.

The BMC developed by Osterwalder is a powerful tool to describe and understand any BM of any given SME. However, it does not provide problem-solving tools to develop its nine modules. Here is where the big opportunity of this project arises since TRIZ does have problem-solving tools that combined with the BMC becomes an ideal match.

We can conclude that TRIZ has the potential to be successfully applied in Business Modeling. Though some attempts have been made to apply TRIZ in BMI, practical results are still scarce. So, we think this project is innovative because of the way it was conceived, and it is also promissory based on the results achieved. The service is also viable taking into account the information obtained from experiment 4 about the desirability and willingness to pay from potential clients. However, there is still lot of work to get the new service ready. Next steps of this project will be to understand how to apply all identified TRIZ tools in each of the nine modules of the BMC. This will not be an easy task and perhaps it might require a separate project for each module. A lot of iterations and experiments might be carried out until the methodology be refined.

So, based on the results and conclusions achieved so far, we encourage TRIZ practitioners to continue working in this direction that will generate new opportunities for TRIZ in areas that were not obvious for its application like business and management. At the same time, we will contribute with the cause of helping SMEs to be more sustainable in the long-term.

6- NEXT STEPS AND RECOMMENDATIONS

The results and conclusions of this project, obtained so far, are very promising. However, there is still a lot of work to be done because the uncertainty is still high. We suggest deepening the understanding of the application of TRIZ tools, recommended by the experts of this methodology, in each of the BMC’s building blocks. For this, it will be necessary to analyze each of the BMC components separately and understand their operation and relationships with the other modules, where and when problems arise within them and thus detect opportunities for improvement. The next step will be to experiment with each of the selected TRIZ tools in each module and understand how such application can contribute to the development or improvement of each of them.

Another important recommendation that we want to contribute with, is to begin this process with the most important building block of the BMC: Value Proposition. TRIZ has powerful tools to develop this component such as MPVs and the TESE. The application of these two tools generally leads to radical rather than incremental innovations. So, experimentation with them in this building block will be essential for the development or improvement of BMs. The Value Proposition largely defines the
relationship that will exist between the other eight modules of the Canvas, which is why experimentation in this component must be extensive until a sufficient mastery of the TRIZ tools is obtained.

Another key activity that we suggest is carrying out is a compendium and analysis of existing BM patterns. These patterns will allow us to understand which models allow the development of competitive advantages in different industries regardless of the type of technology, products, services or prices (Osterwalder A. et al. 2020). This analysis will make possible to detect which BMs are obsolete or are close to being obsolete and which evolutionary patterns should become more competitive and updated BMs (Osterwalder A. et al. 2020).

Finally, we suggest continuing the bibliographic review of other innovation methodologies, including Design Thinking and SIT, in order to understand how they can contribute to the purpose of this project, which is to develop or improve BMs for SMEs in Colombia.
7- ANNEXES

Graphic No. 4.1.1

Experiment 1

Objectives:
- Desirability
- Viability

Hypothesis 1

Discovery Survey

Customer Interviews

2 weeks 2 weeks
Experiment No. 1

**Test Card**

**Test Name:** Discovery Survey

**Deadline:** April 16, 2021

**Assigned to:** Juan Mejia

**Duration:** One week

**STEP 1: HYPOTHESIS**

We believe that:

SME top managers do not apply business model innovation. Some of them do not even understand the concept of Business model.

**Critical:**

**STEP 2: TEST**

To verify that, we will

Ask the following questions:

1. Have new business models been developed in your organization?
2. Does your organization have a systematic method in place to develop new business models?

**Test Cost:**

**Data Reliability:**

**STEP 3: METRIC**

And measure

1. The percentage of surveyed that answered question No.1 negatively.
2. The percentage of surveyed that answered question No.2 negatively.

**STEP 4: CRITERIA**

We are right if

1. More than 50% of surveyed answered negatively to the question: "have new business models been developed in your organization?"
2. More than 50% of surveyed answered negatively to the question: "does your organization have a systematic method in place to develop new business models?"

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The makers of Business Model Generation and Strategyzer
Graphic No. 4.2.1: Experiment 2

Experiment 2

Objectives:
- Desirability
- Viability
- Feasibility

Hypothesis 2

Concierge

Results Analysis

6 weeks

1 week

Below you will find the test cards of this experiment:
### Experiment No. 2

#### Test Card

<table>
<thead>
<tr>
<th>Test Name:</th>
<th>Concierge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assigned to:</td>
<td>Juan Mejia</td>
</tr>
<tr>
<td>Deadline</td>
<td>April 30, 2021</td>
</tr>
<tr>
<td>Duration</td>
<td>6 weeks</td>
</tr>
</tbody>
</table>

#### STEP 1: HYPOTHESIS

**We believe that:**

The application of TRIZ methodology, along with Business Model Canvas (designed by Alex Osterwalder), has the potential to develop new business models or improve current ones.

#### STEP 2: TEST

**To verify that, we will**

Run an experiment by applying TRIZ on a real Colombian SME and develop or improve at least one component of the Business Model Canvas.

#### STEP 3: METRIC

**And measure**

- Customer satisfaction with the results achieved.
- Time spent to analyze on SME’s business model component and develop or improve at least one business model component, cost to develop or improve at least one business model component.

#### STEP 4: CRITERIA

**We are right if**

Customer is satisfied with the solution developed: at least one component of the Business Model Canvas is developed or improved, and client is willing to implement it.
Below you will find the test cards of this experiment:
Experiment No. 3

Test Card

Test Name: Partner & Supplier Interview
Assigned to: Juan Mejia

Deadline: May 9, 2021
Duration: Four weeks

STEP 1: HYPOTHESIS
We believe that:

Critical:

Step 2: TEST
To verify that, we will

1. The feasibility of successfully applying TRIZ methodology to develop or improve Business Models.
2. Find out which TRIZ methodologies TRIZ Masters recommend being applied in each of the nine (9) components of the Business Model Canvas.

STEP 3: METRIC
And measure

We want to number:

Critical:

STEP 4: CRITERIA
We are right if

We are right if we can validate the following:

Some TRIZ tools can be applied to develop or improve Business Models. We want to confirm with TRIZ experts (in this case with TRIZ Masters) the following:

1. Which components of the Business Model Canvas do they think TRIZ Methodology can be successfully applied to develop or improve it?
2. Which TRIZ tools do they think can be successfully applied in each of the nine (9) components of the Business Model Canvas?
3. Do they have insights or recommendations to applying TRIZ tools to develop or design Business Models?

To verify that, we will:

1. Find out which TRIZ methodologies TRIZ Masters recommend being applied in each of the nine (9) components of the Business Model Canvas.

And measure:

We want to number:

We are right if we can validate the following:

2. Key Activities: FA, FOS, TESE, Trimming.
4. Value Proposition: Main Parameters of Value (MPV), FA, TESE, Engineering Contradictions (EC), Physical Contradictions (PC), FOS, Reversed Function Oriented Search (RFOS).
5. Cost Structure: Trimming, FOS, TESE, FA, Problem Solving Tool (EC, PC, Inventive Standard Solutions (ISS), Algorithm for Inventive Problem Solving (ARIZ)).
7. Customer Segments: RFOS.
8. Channels: N/A.
9. Customer Relationships: N/A.
### Table 4.1. TRIZ tools recommended by experts:

**Experiment No. 3**

<table>
<thead>
<tr>
<th>Component of BMC:</th>
<th>Partner Interviewed:</th>
<th>Description:</th>
<th>TRIZ Tools Recommended:</th>
</tr>
</thead>
</table>
| **Partner & Supplier Interview** | **Sergei Ikovenko:** | Function Analysis - to understand core competencies, CECA-to find the roots of issues, FOS-to find needed technologies, Inverse FOS - to find potential markets for your core competencies. And MPV discovery, of course. | - Function Analysis  
- CECA  
- FOS  
- RFOS  
- MPV Discovery |
| **1. Key Partners** | **Simon Litvin:** | For strategic alliances. Such TRIZ tool as Function Analysis, Trends of Engineering System Evolution (TESE), and Innovation Portfolio Analysis may help partners to evaluate and assign the most effective areas of responsibility for each partner. 2. For Joint Ventures such TRIZ tools as TRIZ Benchmarking, Reverse Function-Oriented Search, and Failure Anticipation Analysis may help JV to reduce risk of developing new products and technologies. | - Function Analysis  
- TESE  
- Innovation Portfolio Analysis  
- TRIZ Benchmarking  
- RFOS  
- Failure Anticipation Risk |
| **Valeri Souchkov:** | RCA+, Inventive Principles, Function Analysis, Inventive Standard Solutions for Business, Multi-Screen Analysis. Comment: this area mostly deals with relationship analysis and problem solving, as well as with finding future key partners | - RCA  
- Function Analysis  
- Standard Solutions for Business  
- Multi-screen Analysis |
| **Alex Lyubomirskiy:** | Comment: MPV Analysis is applicable in all cases, named in this survey  
1. Non-competitors: Resource Analysis, FOS, Inverse FOS, Adjacent Market Identification technique can help to find each other. S-Curve Analysis + GEN TRIZ Benchmarking and Long Term Forecast technique can help to select a right partner. To make integration more effective, all analytical and problem tools are applicable (most of all - Process Analysis). I would recommend to pay attention to TESE (especially Flow Analysis).  
1.2 Competitors: there is no problem of searching each other. S-Curve Analysis + GEN TRIZ Benchmarking and Long Term Forecast technique can help to make a smart choice and later on share markets. Other recommendations are the same. Also I would recommend to pay attention to Patent Circumvention Technique. And, of course, Feature Transfer should be applied very intensively  
1.3 Joint ventures: Long Term Forecast is the first priority  
1.4 Buyer-supplier: S-Curve Analysis + GEN TRIZ Benchmarking and Process Analysis, Flow Analysis. | - MPV  
- Resource Analysis  
- RFOS  
- S-Curve Analysis  
- GEN TRIZ Benchmarking  
- Process Analysis  
- TESE (Flow analysis)  
- Long-term Forecast Technique  
- Patent Circumvention Technique  
- Feature Transfer |
| **Adi Kavitsky:** | 1. Thinking in space and time ("9 windows") while writing at the left instead of System, Sub and up: Our Category, Any unit of existing competitors and not established yet, and at the top line: Potential other categories. One could also relate here not only at the level of products services - but also at the level of functions.  
2. FOS and RFOS looking for matching partners in trivial and adjacent markets  
3. Maybe a new tool: SOS - Sources Oriented Search - instead of looking through the functions - looking through the Resources of optional partners. including Human resources, levels of salaries and more "soft" resources (even the existence of a union for the workers, or not). and it can work in 2 ways. (And this toll will be: RSOS Reverse sources Oriented Search): I'm looking for a company that has same characteristics like me, and I'm looking on the opposite to partners who have the opposite: I have Money and no workers, they have workers and no money. And of course that all the TRIZ's physical resources can be used here also. as relevant. And if not relevant - we can establish the right list of resources to be used here. | - Multi-Screen Analysis  
- FOS  
- RFOS  
- Source-Oriented Search |
| **Victor Fey:** | Function modeling, flow analysis, cause-effect analysis, trends of evolution | - Function Modeling  
- Flow Analysis  
- CECA  
- TESE |
<table>
<thead>
<tr>
<th>Component of BMC:</th>
<th>2- Key Activities</th>
<th>TRIZ Tools Recommended:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviewed:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sergei Ikonenko:</td>
<td>Flow Analysis - to understand flows of raw material, information, etc., CECA to identify Ke Problems and TRIZ problem-solving tools to solve Key problems.</td>
<td>- Flow Analysis, - CECA, - TRIZ problem-solving tools (EC, PC, ARIZ, ISS).</td>
</tr>
<tr>
<td>Simon Litvin:</td>
<td>Multiple TRIZ tools are applicable to processes/activities improvement - Function Analysis, Flow Analysis, Cause-Effect Chain Analysis, Trimming, etc. Using these tools allow companies to identify key problems that prevent them to make their activities more productive. TRIZ problem solving tools such as Function-Oriented Search, ARIZ, Principles of resolving contradictions, Standard Solutions, etc. helps to solve identified key problems.</td>
<td>- Function Analysis, - Flow Analysis, - CECA, - Trimming, - TRIZ problem-solving tool (FOS, ARIZ, Inventive Principles, ISS).</td>
</tr>
<tr>
<td>Adi Kavitsky:</td>
<td>1. Instead of calling it “Critical tasks” we can call it “Contradictions”. And get to 2 lists: Contradictions solved that the company had related to (and then we see if solved or not) and Contradictions Not solved (Or not dealt with yet) The tools to get there: Function Analysis, And then CECA and all needed. 2. Benchmarking</td>
<td>- Function Analysis, - CECA, - TRIZ Benchmarking</td>
</tr>
<tr>
<td>Victor Fey:</td>
<td>All TRIZ tools that allow for streamlining processes</td>
<td>N/A</td>
</tr>
</tbody>
</table>
**Experiment No. 3**

<table>
<thead>
<tr>
<th>Component of BMC:</th>
<th>3- Key Resources</th>
<th>Description:</th>
<th>TRIZ Tools Recommended:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviewed:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Sergei Ikonenko:  |                  | MPV analysis to find contradictions among MPVs, identical, Function Analysis to find repetitive, sequential and opposite functions in the supply/production chain, Resource Analysis. | - MPV  
- Function Analysis  
- Resource Analysis |
| Simon Litvin:     |                  | TRIZ possesses a tool - Resources Analysis specially designed for identification resources in a system and its super-systems. Also Function-Oriented Search (FOS) allows finding resources all over the globe in different industries and branches of science. | - Resource Analysis  
- FOS |
| Valeri Souchkov:  |                  | Function Analysis, System and Process Trimming, RCA+, Inventive Principles. Comment: this area mostly deals with resources analysis for optimization/idealization and problem solving | - Function Analysis  
- Trimming  
- RCA+  
- Inventive Principles |
| Alex Lyubomirskiy|                  | Resource Analysis, FT, FOS, IFOS, Adjacent Market Identification technique, Long Term Forecast technique | - Resource Analysis  
- Feature Transfer  
- FOS  
- RFOS  
- Long-term Forecast Technique |
| Adi Kavtsky:      |                  | 1. Thinking in space and time ("9 windows") while writing at the left instead of System, Sub and up: Our Category, Any unit of existing competitors and not established yet, and at the top line: Potential other categories. One could also relate here not only at the level of products services - but also at the level of functions.  
2. FOS and RFOS looking for matching partners in trivial and adjacent markets  
3. Maybe a new tool: SOS - Sources Oriented Search - instead of looking through the functions - looking through the Resources of optional partners. including Human resources, levels of salaries and more "soft" resources (even the existence of a union for the workers, or not). and it can work in 2 ways  
(And this tool will be: RSOS Reverse sources Oriented Search): I’m looking for a company that has same characteristics like me, and I’m looking on the opposite to partners who have the opposite: I have Money and no workers, they have workers and no money.  
And of course that all the TRIZ’s physical resources can be used here also. as relevant. And if not relevant - we can establish the right list of resources to be used here. | - Multi-Screen Analysis  
- FOS  
- RFOS  
- Source-Oriented Search |
| Victor Fey:       |                  | Function modeling, resource analysis | - Function Modeling  
- Resource Analysis |
## Experiment No. 3

<table>
<thead>
<tr>
<th>Component of BMC:</th>
<th>4- Value Proposition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interviewed:</strong></td>
<td><strong>Description:</strong></td>
</tr>
<tr>
<td>Sergei Ikovenko:</td>
<td>Customer MPV Analysis, Supersystem Analysis - to understand customer/supersystem needs.</td>
</tr>
<tr>
<td>Simon Litvin:</td>
<td>The main TRIZ tool for developing Value Proposition is Main Parameters of Value (MPV) Discovery. MPV is an attribute of a product or service that is unsatisfied on the market yet and defines the customer’s purchasing decision. In addition to well-known in marketing tools of Voice of the Customer (VoC), TRIZ has several tools (Function Analysis, TESE, CECA, etc.) that allow to identify a Voice of the Product (VoP).</td>
</tr>
<tr>
<td>Valeri Souchkov:</td>
<td>Key (Main) Parameters of Value, Multi-Screen Analysis, Value-Conflict Mapping, Product/Competitor benchmarking, Trends of Business Systems Evolution. Comment: this area mostly deals with understanding customer needs</td>
</tr>
<tr>
<td>Alex Lyubomirskiy:</td>
<td>MPV Analysis is the primary tool. Benchmarking, Long Term Forecast technique</td>
</tr>
<tr>
<td>Adi Kavitsky:</td>
<td>1. MPV the way we are working is marketing-driven. It also suits here.  2. I recommend strongly (even though it is not a TRIZ tool) to merge it together with Kano Model. By the way, I think we should look at the Kano model (In our regular search for MPV’s) and also try to help kano with TRIZ tools, or ways of TRIZ’s of thinking, believe).</td>
</tr>
<tr>
<td>Victor Fey:</td>
<td>Ideality, function modeling, cause-effect analysis, formulating and resolving conflicts (contradictions), trends of evolution</td>
</tr>
</tbody>
</table>

Objectives:

- Feasibility
## Experiment No. 3

### Component of BMC: Cost Structure

<table>
<thead>
<tr>
<th>Interviewed</th>
<th>Description</th>
<th>TRIZ Tools Recommended:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sergei Ikovenko:</td>
<td>Function- and Cost Analysis, Value Analysis (Function-Cost Diagram)</td>
<td>- Function Analysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Cost Analysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Value Analysis (Function-Cost Diagram)</td>
</tr>
<tr>
<td>Simon Litvin:</td>
<td>All TRIZ tools are focused on value driven cost structure. From TRIZ standpoint Value is a ratio between the product/service's functionality and its cost. TRIZ tools allow to increase value by improving of critical functional parameters and disruptively reducing costs. The major tools for achieving it are Trimming, Feature Transfer, MPV Discovery, TESE, and FOS.</td>
<td>- Trimming</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Feature Transfer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- MPV Discovery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- TESE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- FOS</td>
</tr>
<tr>
<td>Valeri Souchkov:</td>
<td>Function Analysis, System and Process Trimming, Value-Conflict Mapping, FOS, Trends of Business Systems Evolution. Comment: this area mostly deals with cost analysis for optimization/idealization and finding new ways to deal with costs.</td>
<td>- Function Analysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Trimming</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Value-Conflict Mapping</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- FOS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- TBSE</td>
</tr>
<tr>
<td>Alex Lyubomirskiy:</td>
<td>MPV Analysis, Benchmarking, CECA</td>
<td>- MPV Discovery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- TRIZ Benchmarking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- CECA</td>
</tr>
<tr>
<td>Adi Kavitsky:</td>
<td>Oleg Abramov is using the QEA tool. I think inserting this cost structure as a parameter (1 of 3) with 2 other relevant parameter could help analyzing the situation. I tried to use it and show the match between a company and our marketing launch in Israel market, and this parameter of Savvy company was used there as one of the needed parameters. It might be a good beginning to think about the subject. And maybe take it to the table that is derived from the above QEA and see consequences. Warning!! I’m not an economic or mathematician and not sure about the compatibility to this subject. You much better check it with Oleg Abramov. It may be not useful at all here, and maybe it is just a bad guess. Anyway I think that since it is a tool that checks how things are matching - it may help.</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- TESE (Ideality)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- EC/PC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- CECA</td>
</tr>
<tr>
<td>Victor Fey:</td>
<td>Idiality, formulating and resolving conflicts (contradictions), cause-effect analysis, trends of evolution</td>
<td></td>
</tr>
</tbody>
</table>

### Objectives:

- Feasibility
### Experiment No. 3

**Component of BMC:** 6- Customer Relationships

<table>
<thead>
<tr>
<th>Interviewed</th>
<th>Description</th>
<th>TRIZ Tools Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sergei Ikovenko</td>
<td>Life Stage Function Analysis, Supersystem Analysis - to confirm customers MPV and what the customers value beyond the immediate product value.</td>
<td>- Life stage Function Analysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Supersystem Analysis</td>
</tr>
<tr>
<td>Simon Litvin</td>
<td>None</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- RCA+</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Value-Conflict Mapping</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- TBSE</td>
</tr>
<tr>
<td>Alex Lyubomirskiy</td>
<td>MPV Analysis, TRIZ Benchmarking</td>
<td>- MPV Analysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- TRIZ Benchmarking</td>
</tr>
<tr>
<td>Adi Kavitsky</td>
<td>1. WOW!!!! We should look here at Su-Field !!!! What is Su-Field if not a description of relationships!!!! With all kinds of interactions between company and it’s Customers. Su-field look like a perfect carpet to run on (A little bit of new-naming needed it, and it is ready for academic and practical trial and research) Maybe you will need some adjsasments, but it looks like a potetialaly good beginning</td>
<td>- ISS (Su-Field)</td>
</tr>
<tr>
<td>Victor Fey</td>
<td>Trends of evolution, function modeling, cause-effect analysis, formulating and resolving conflicts (contradictions)</td>
<td>- TESE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Function Modeling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- EC/PC</td>
</tr>
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</table>
Experiment No. 3

<table>
<thead>
<tr>
<th>Interviewed</th>
<th>Description</th>
<th>TRIZ Tools Recommended:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sergei Ikovenko</td>
<td>Flow Analysis - to analyze the channels of information flows.</td>
<td>- Flow Analysis</td>
</tr>
<tr>
<td>Simon Litvin</td>
<td>None</td>
<td>N/A</td>
</tr>
<tr>
<td>Valeri Souchkov</td>
<td>FOS, Function Analysis, Value-Conflict Mapping, FOS, Trends of Business Systems Evolution. Comment: this area mostly deals with relationship analysis for optimization/idealization and finding new channels.</td>
<td>- FOS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Function Analysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Value-Conflict Mapping</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- TBSE</td>
</tr>
<tr>
<td>Alex Lyubomirskiy</td>
<td>MPV Analysis, Benchmarking, Flow Analysis</td>
<td>- MPV Analysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Benchmarking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Flow Analysis</td>
</tr>
<tr>
<td>Adi Kavitisky</td>
<td>I'm not sure, But maybe Stream analysis</td>
<td>- Flow Analysis</td>
</tr>
<tr>
<td>Victor Fey</td>
<td>Trends of evolution, function modeling, cause-effect analysis, formulating and resolving conflicts (contradictions)</td>
<td>- TESE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Function Modeling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- CECA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- EP/EC</td>
</tr>
</tbody>
</table>

Objectives:
- Feasibility
## Component of BMC: 8- Customer Segments

<table>
<thead>
<tr>
<th>Interviewed</th>
<th>Description</th>
<th>TRIZ Tools Recommended:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sergei Ikonenko</td>
<td>MPV Analysis to understand the needs of different customer groups</td>
<td>- MPV Analysis</td>
</tr>
<tr>
<td>Simon Litvin</td>
<td>The major TRIZ tool for identification and selection of customer segments or market niches is MPV Discovery.</td>
<td>- MPV Analysis</td>
</tr>
<tr>
<td>Valeri Souchkov</td>
<td>Trends of Business Systems Evolution. Comment: So far in my practice no TRIZ has been used in this area</td>
<td>- TBSE</td>
</tr>
<tr>
<td>Alex Lyubomirsksky</td>
<td>MPV Analysis, TRIZ Benchmarking</td>
<td>- MPV Analysis</td>
</tr>
<tr>
<td>Adi Kavitsky</td>
<td>1. I saw in few places the use of &quot;RADAR&quot; schemes. Like in the TESE. Maybe you could integrate a way of clustering the different customers, and then show it on such a Radar to see which are the &quot;Customer niches&quot; which are still open and not red-oceans already. 2. Darrell Mann is working for may Years on his theory of &quot;TendDNA&quot; and he is pushing a way of segmenting crowds by their ages and &quot;waves&quot; of birth. You may find some Ideas there. warning: I don't know if it is TRIZ. Ps. ask the professionals.</td>
<td>N/A</td>
</tr>
<tr>
<td>Victor Fey</td>
<td>Trends of evolution, function modeling, cause-effect analysis, formulating and resolving conflicts (contradictions)</td>
<td>- TESE</td>
</tr>
</tbody>
</table>

### Objectives:

- Feasibility
## Experiment No. 3

### Component of BMC: 9- Revenue Streams

<table>
<thead>
<tr>
<th>Interviewed</th>
<th>Description</th>
<th>TRIZ Tools Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sergei Ikovenko</td>
<td>None</td>
<td>N/A</td>
</tr>
<tr>
<td>Simon Litvin</td>
<td>None</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- ISS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Value-Conflict Mapping</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- FOS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- TBSE</td>
</tr>
<tr>
<td>Alex Lyubomirsky</td>
<td>MPV Analysis, TRIZ Benchmarking</td>
<td>- MPV Analysis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- TRIZ Benchmarking</td>
</tr>
<tr>
<td>Adi Kavitsky</td>
<td>1. Maybe IFR? Though it may sound weird, this is why businesses are created for. To make money. The Main object. So why not use this super tool here???</td>
<td>N/A</td>
</tr>
<tr>
<td>Victor Fey</td>
<td>Trends of evolution, function modeling, cause-effect analysis, formulating and resolving conflicts (contradictions)</td>
<td>- TESE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Function Modeling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- CECA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- EC/PC</td>
</tr>
</tbody>
</table>
Below you will find the test cards of this experiment:
Experiment No. 4

Test Card

<table>
<thead>
<tr>
<th>Test Name:</th>
<th>Explainer Video</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assigned to:</td>
<td>Juan Mejia</td>
</tr>
<tr>
<td>Deadline</td>
<td>May 12, 2021</td>
</tr>
<tr>
<td>Duration</td>
<td>Four weeks</td>
</tr>
</tbody>
</table>

**STEP 1: HYPOTHESIS**

*We believe that:*

Some SMEs will be interested in hiring the service of Business Model development or improvement by combining TRIZ with Business Model Canvas.

**STEP 2: TEST**

*To verify that, we will*

1. Submit through email two explainer videos of the proposed service.
2. Ask SME managers to answer a short survey based on the explainer video to get some feedback.

**STEP 3: METRIC**

*And measure*

1. The percentage of surveyed that understood the proposed service.
2. The percentage of SME managers think the proposed service to be developed will be useful.
3. The percentage of surveyed that answered they might hire the proposed service.

**STEP 4: CRITERIA**

*We are right if*

1. More than 60% of surveyed answered positively to the question: "After having seen the two videos, is it clear to you that the proposed service that is being developed?"
2. More than 60% of surveyed answered positively to the question: "How useful do you think the proposed service to be developed will be?"
3. More than 60% of surveyed answered positively to the question: "Would you be interested in hiring the proposed service that is being developed, either to improve/strengthen your current business model, or to develop a new business model?"
8- BIBLIOGRAPHY