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Analysis of the technological perception in entrepreneurial ideas in the process of pre-incubation at the Feevale Techpark: a view through the technology axis

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Executive Summary

The development of new innovative projects and processes in Brazil since the introduction of the CERNE (Reference Center for Business Incubation, *Centro de Referência para Apoio a Novos Empreendimentos*) model aims to provide a platform of solutions to expand the capacity of the technology business incubators of yielding well-succeeded innovative enterprises. At Feevale Techpark, the pre-incubated companies receive advisement in five thematic axes: capital, entrepreneurship, market, management, and technology. This investigation aims to identify the perceptions about the technological status of the business proposals of entrepreneurs participating in the pre-incubation process. This report is based upon the results of five projects that were selected to be analyzed, using the methodology of multiple case studies. The results revealed differences in the scores attributed to some of the technology concepts between those from the auto diagnosis performed by the participants and those from the GUT matrix.

Keywords: Business Incubation. Technology. Feevale Techpark.

Introduction

The Feevale Techpark was created as an autonomous institution in 1998 with a focus on innovation and entrepreneurship, and only in 2012 it started to be managed by the Feevale University. Due to this change, the facilities of the technology park were transferred in 2015, becoming fully integrated to the campus of the Feevale University. Currently, this institution works in two different campi, aiming to promote an academic approach to business, transfer of technology, business competitiveness, and to foster new businesses, products, processes and services, contributing to the local and regional development. In 2016, Feevale Techpark was elected one of the three best technology parks in Brazil.

Located in the Sinos River Valley, it has units in the cities of Novo Hamburgo and Campo Bom, in the state of Rio Grande do Sul, Brazil. Feevale Techpark is the home of consolidated or start-up technology-based companies, as well as of public, private or mixed organizations focused on scientific, technological, economic development and research centers. The areas of concentration of the enterprises placed in the Feevale Techpark include: Technology of Information and Communication; Creative Industry; Materials and Nanotechnology; Health Sciences and Biotechnology; and Environmental Sciences and Renewable Energies. Currently there are 50 resident and incubated companies and 22 pre-incubated companies (data from October 2017) in this institution.

As a member of the ANPROTEC (National Association of Entities Promoting Innovative Enterprises, *Associação Nacional de Entidades Promotoras de Empreendimentos Inovadores*), Feevale Techpark follows the CERNE (Reference Center for Business Incubation, *Centro de Referência para Apoio a Novos Empreendimentos*) model. This model was developed aiming to offer a platform of solutions for the training of technological business incubators in the generation of successful and innovative enterprises. CERNE aims to present good practices to be used by business incubator programs, in which they are associated to the processes of the assisted companies to increase their rate of success.

In order to apply this model, five thematic axes are prioritized to conduct the processes in the companies: capital, entrepreneurship, market, management, and technology. The support provided for new ventures on each of these axes is intended to increase the potential for successful and innovative business development. The proposals for new ventures arise both from the university environment and from the external community in which the technology park and the university are placed, for instance with the generation of spin-offs.

The CERNE model has been used by the Feevale Techpark in Rio Grande do Sul since 2016 and currently this institution offers five free hours of advice in each of the five knowledge axes to all pre-incubated projects in the park. A pre-selection of the projects is performed through a self-completion form on the website of the institution. The second step of the evaluation consists of an area to present the proposal of the project. If the approval is granted, the advisory process begins.

In order to bring the new enterprises even closer to the university community, the consultants are professors of the Feevale University with recognized executive experience and top qualifications in their areas of expertise. The advice sections take place in an individualized way for each enterprise and aim to help the entrepreneurs to develop their ideas, turning them into innovative business plans.

This investigation reports the results of the technology axis taught to the pre-incubated projects. The objective of this research was to identify the perceptions about the status of technology from the entrepreneurs participating in the pre-incubation process by means of an instrument based on self-diagnosis, the GUT matrix, and the Pareto Diagram. These tools are used in the advisory sessions as the basis for the generation of action plans for the incubation phase.

We have selected five projects that participated in the pre-incubation process, with their data being analyzed by means of the methodology of multiple case studies. The five cases were selected based on criteria of accessibility and convenience during the development of this investigation. The applied instrument was developed based on the ideas of technology development oriented by the analysis of technological planning, research and development (R & D), process and strategies of supply chain and distribution (BETZ, 2011; SPESER, 2006). The cases are presented individually and then the cross-analysis of the cases is done. The method applied to advice the technology axis is explained in the sequence.

Methodology

The method employing for collecting the data with the entrepreneurs was divided in four steps: (i) auto diagnosis; (ii) data analyses; (iii) identification of blanks and; (iv) action planning. In this report, the results of the three first steps are presented.

The first step is based on auto diagnosis, a concept employed to enhance the entrepreneurial attitude (TAKIMOTO; ALMEIDA, 2002). The objective auto diagnosis, based on a set of dimensions and indicators, identify the processes that impact technology and that should be developed by the entrepreneurs (VELASQUEZ PRADO; MACÍAS HERRERA, 2001; SERRÃO, 2013). The auto diagnosis step was divided in four macro processes: (i) technological planning; (ii) research and development (P&D); (iii) processes and, (iv) Supply Chain and Distribution strategies (SPESER, 2006; BETZ, 2011).

The entrepreneurs write down, individually, the current status they assign to their innovative ideas, using a Likert scale from 1 to 5 (MALHOTRA, 2008), with 1 meaning that nothing was done and 5 when there is a full implementation of actions. The technological planning analysis aims to identify the perceptions developed by the entrepreneurs about their business proposals, based on the required antecedents for the development of technological solutions (Figure 1).

Figure 1 – Auto diagnosis about the strategy of Technological Planning.

Actions	Auto diagnosis
	Yield radar graphics (1-Nothing done/5-Full Implementation)
Technological Planning	Current status
Is there a clear definition of the problem to be solved with the proposed solution?	
Are the stakeholders defined?	
Are the basic characteristics of the product/service defined (Musts)?	
Are the specific characteristics (differentials) defined (Wants)?	
Are the already patents and registers analyzed?	
Are the products and services currently available in the market (potential or actual competitors) identified?	
Is a technological comparison between the competitor products/services performed?	
Is the concept of the solution elaborated (flowchart, text, etc.)?	
Is a technical specification defined?	
Are the performance criteria of the product/service established?	
Are the performance indicators of the product/service established?	

The auto diagnosis about the Research and Development aims to investigate the knowledge and information of the entrepreneurs about the strategy of R&D (Figure 2).

Figure 2 – Auto diagnosis about the strategy of R&D

Actions	Auto diagnosis
	Yield radar graphics (1-Nothing done/5-Full Implementation)
R&D	Current status
Is the R&D strategy defined (own, third party, shared)?	
Is the R&D sector/team defined?	
Are the Design/Processes defined?	
Is Prototyping (MVP) defined?	
Is the Prototype analysis performed?	
Is the process of development of products/services defined (New)?	
Is the validation of the prototype (real test) elaborated?	
Is the validation of the prototype done?	
Is the analysis about the demand for technology acquisition performed?	

After this step, the entrepreneurs performed the auto diagnosis related to the strategy of Processes (Figure 3).

Figure 3 – Auto diagnosis about the strategy of Processes.

Actions	Auto diagnosis
	Yield radar graphics (1-Nothing done/5-Full Implementation)
Processes	Current status
Is the production strategy (make/buy) defined?	
Are the productive processes (know how) defined?	
Are the productive resources (do from what) defined?	
Is the analysis about the demand for technology acquisition performed?	

Then, the analysis of the current status is related to the strategies of Supply Chain and Distribution (Figure 4).

Figure 4 – Auto diagnosis about the strategies of Supply chain and Distribution

Actions	Auto diagnosis
	Yield radar graphics (1-Nothing done/5–Full Implementation)
Supply chain and Distribution	Current status
Are the suppliers (of raw material, services, resources, technology, etc.) defined?	
Is the information flow with the suppliers defined?	
Is the flow of materials from the suppliers defined?	
Are the criteria of the suppliers defined?	
Are the modes of distribution defined (how will the products/services be delivered)?	
Is the packaging/unitization of the products defined?	
Are the client values that will impact the delivery of the product/service mapped?	

After the auto diagnosis step, the entrepreneurs analyze the same actions, now related to three criteria: (i) gravity; (ii) urgency; and (iii) tendency. This analysis is based on the GUT matrix that aims to establish a relation between these criteria. Gravity targets the identification of the impact of actions regarding deadlines. Urgency establishes relation between the time available and the time demanded to implement those actions. Finally, Tendency investigates the trends of increasing, decreasing, or disappearing of the possible issues related to the required actions. The entrepreneurs have scored each criterion using a scale from one to five (Figure 5). Then, the criteria scores are added (G+U+T) in order to establish an ascending order of action priority (KEPNER; TREGOE, 1997; ENAP, 2006, SOTTILE, 2017).

Figure 5 – Criteria and scale used for grading the problem according to the GUT matrix

Scale	G - Gravity (the harms or difficulties are:)	U – Urgency (is an action necessary?)	T – Tendency (if nothing is done, what will happen to the situation?)
5	Extreme gravity	Immediately	It will worsen immediately
4	Major gravity	With some urgency	It will worsen shortly
3	Average gravity	As soon as possible	It will worsen in medium-term
2	Minor gravity	It might wait a little	It will worsen in long-term
1	Without gravity	There is no hurry	It will not worsen and may even improve

Source: Adapted from ENAP (2006) and Marshall *et al.* (2008).

Figure 6 presents the matrix that resulted from the application of the GUT auto diagnosis to the entrepreneurs.

Figure 6 – Auto diagnosis based on the GUT.

Actions	Gravity	Urgency	Tendency	Total
Is there a clear definition of the problem to be solved with the proposed solution?				
Are the stakeholders defined?				
Are the basic characteristics of the product/service defined (Musts)?				
Are the specific characteristics (differentials) defined (Wants)?				
Are the products and services currently available in the market (potential or actual competitors) identified?				
Is a technological comparison between the competitor products/services performed?				
Is the concept of solution elaborated (flowchart, text, etc.)?				
Is the technical specification defined?				
Are the performance criteria for the product/service established?				
Are the performance indicators of the product/service established?				
Is the R&D defined (own, third party, shared)?				
Is the Sector/team defined?				
Are the Design/Processes defined?				
Is Prototyping (MVP) defined?				
Is the Prototype analysis performed?				
Is the process of development of products /services defined (New)?				
Is the validation of the prototype (real test) elaborated?				
Is the analysis about the demand for technology acquisition performed?				
Is the production strategy (make/buy) defined?				
Are the productive processes (know how) defined?				
Are the productive resources (do from what) defined?				
Is the analysis about the demand for technology acquisition performed?				
Are the suppliers (of raw material, services, resources, technology, etc.) defined?				
Is the information flow with the suppliers defined?				
Is the flow of materials from the suppliers defined?				
Are the criteria of the suppliers defined?				
Are the modes of distribution defined (how will the products/services be delivered)?				
Is the packaging/unitization of the products defined?				
Are the client values that will impact the delivery of the product/service mapped?				

After this step, the Pareto Chart was elaborated, in order to express graphically the actions that should be prioritized by the entrepreneurs in the elaboration of the plan of actions to be executed during the incubation period (24 months). The Pareto chart displays the actions/causes quantified in terms of their contribution to the problem. These actions/causes are disposed in a decreasing order of influence or incidence (FALCONI, 2004).

In order to understand the use of this method, a set of five projects that participated in the pre-incubation process with the Feevale Techpark were selected. The use of the methodology in each case is presented in the sequence.

Presenting the cases

Case 1

The first presented case was an idea elaborated by five entrepreneurs for a platform of beauty services. This group, as well as the original idea, was created from an event called *Startup Weekend*. Figure 7 shows the indicators yielded by the auto diagnosis about the macro processes that are part of the technology axis.

Figure 7 – Indicators of the auto diagnosis of macro processes: Case 1

After presenting these indicators, the results of the GUT analysis and the Pareto chart are shown in Figure 8.

Figure 8 – GUT analysis and the Pareto chart: Case 1
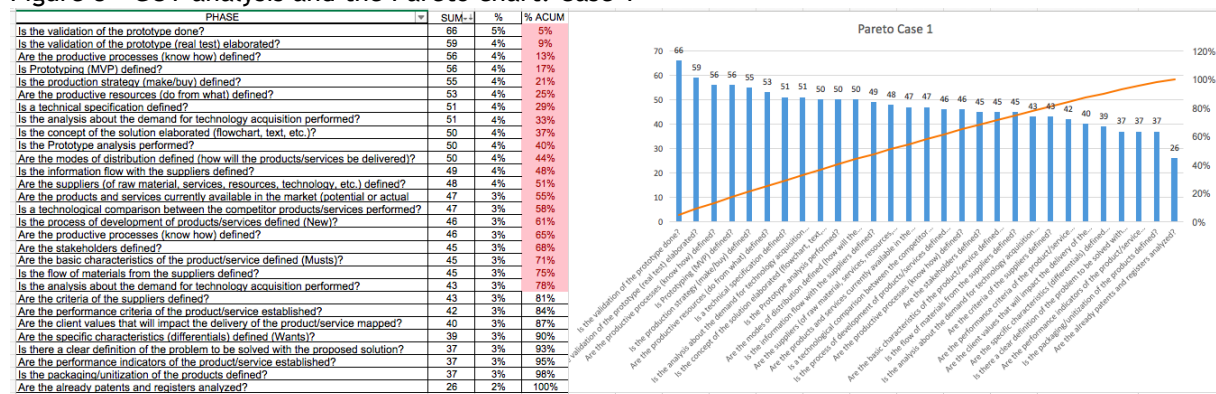
Case 2

This case is based in an idea centered in the services of bars and restaurants, aiming to offer a platform of integration and fidelization based on gamification. The idea was developed by two entrepreneurs. Figure 9, presents the results of the au diagnosis of macro processes.

Figure 9 – Indicators of the auto diagnosis of macro processes: Case 2

Figure 10 displays the results of the GUT analysis and the Pareto chart elaborated by the entrepreneurs.

Figure 10 – GUT analysis and the Pareto chart: Case 2

PHASE	SUM	%	% ACUM
Is there a clear definition of the problem to be solved with the proposed solution?	29	8%	8%
Are the stakeholders defined?	24	6%	14%
Are the basic characteristics of the product/service defined (Musts)?	24	6%	20%
Are the modes of distribution defined (how will the products/services be delivered)?	23	6%	26%
Is the flow of materials from the suppliers defined?	22	6%	32%
Are the basic characteristics of the product/service defined (Musts)?	20	5%	37%
Is a technical specification defined?	20	5%	42%
Is the concept of the solution elaborated (flowchart, text, etc.)?	17	4%	46%
Are the products and services currently available in the market (potential or actual	16	4%	51%
Are the performance criteria of the product/service established?	16	4%	55%
Is the validation of the prototype (real test) elaborated?	16	4%	59%
Is a technological comparison between the competitor products/services performed?	15	4%	63%
Is the process of development of products/services defined (New)?	15	4%	67%
Is the validation of the prototype done?	14	4%	70%
Are the productive processes (know how) defined?	14	4%	74%
Are the productive resources (do from what) defined?	14	4%	78%
Is the analysis about the demand for technology acquisition performed?	13	3%	81%
Are the performance indicators of the product/service established?	11	3%	84%
Is the analysis about the demand for technology acquisition performed?	11	3%	87%
Are the suppliers (of raw material, services, resources, technology, etc.) defined?	11	3%	90%
Are the criteria of the suppliers defined?	11	3%	92%
Is the production strategy (make/buy) defined?	9	2%	95%
Is Prototyping (MVP) defined?	8	2%	97%
Are the already patents and registers analyzed?	6	2%	98%
Is the packaging/unitization of the products defined?	6	2%	100%
Are the Design/Processes defined?	0	0%	100%
Is the Prototype analysis performed?	0	0%	100%
Is the information flow with the suppliers defined?	0	0%	100%
Is the flow of materials from the suppliers defined?	0	0%	100%
Are the client values that will impact the delivery of the product/service mapped?	0	0%	100%
		0%	100%

Case 3

Case 3 aims to develop a platform for the use of medications with a close shelf life. The idea was developed by five entrepreneurs and also came from the *Startup Weekend* event. Figure 11 presents the results of this case.

Figure 11 – Indicators of the auto diagnosis of macro processes: Case 3

Figure 12 presents the results of the GUT analysis and the Pareto chart from Case 3.

Figure 12 – GUT analysis and the Pareto chart: Case 3

ETAPA	SOM	%	% ACUM
Are the specific characteristics (differentials) defined (Wants)?	67	5%	5%
Is the concept of the solution elaborated (flowchart, text, etc.)?	66	5%	10%
Is there a clear definition of the problem to be solved with the proposed solution?	64	5%	14%
Are the products and services currently available in the market (potential or actual competitors) identified?	62	5%	19%
Are the basic characteristics of the product/service defined (Musts)?	61	4%	23%
Is a technological comparison between the competitor products/services performed?	59	4%	28%
Are the stakeholders defined?	53	4%	31%
Are the client values that will impact the delivery of the product/service mapped?	51	4%	35%
Are the Design/Processes defined?	50	4%	39%
Are the productive resources (do from what) defined?	49	4%	42%
Are the performance indicators of the product/service established?	48	3%	46%
Is the production strategy (make/buy) defined?	47	3%	49%
Are the performance criteria of the product/service established?	46	3%	53%
Is the validation of the prototype (real test) elaborated?	46	3%	56%
Are the productive processes (know how) defined?	45	3%	59%
Is the validation of the prototype done?	44	3%	63%
Is Prototyping (MVP) defined?	43	3%	66%
Is the analysis about the demand for technology acquisition performed?	43	3%	69%
Are the suppliers (of raw material, services, resources, technology, etc.) defined?	43	3%	72%
Are the modes of distribution defined (how will the products/services be delivered)?	42	3%	76%
Is the process of development of products/services defined (New)?	41	3%	78%
Is a technical specification defined?	40	3%	81%
Is the Prototype analysis performed?	40	3%	84%
Is the analysis about the demand for technology acquisition performed?	40	3%	87%
Is the flow of materials from the suppliers defined?	39	3%	90%
Are the criteria of the suppliers defined?	39	3%	92%
Is the packaging/unitization of the products defined?	39	3%	95%
Are the already patents and registers analyzed?	34	2%	98%
Is the information flow with the suppliers defined?	31	2%	100%
		0%	100%
		0%	100%

Case 4

This case also had its origin in the *Startup Weekend* event. Its goal is to speed up and qualify the laboratorial exams through the *Block chain*. The group is formed by five entrepreneurs. Figure 13 presents the results of the auto diagnosis for this case.

Figure 13 - Indicators of the auto diagnosis of macro processes: Case 4

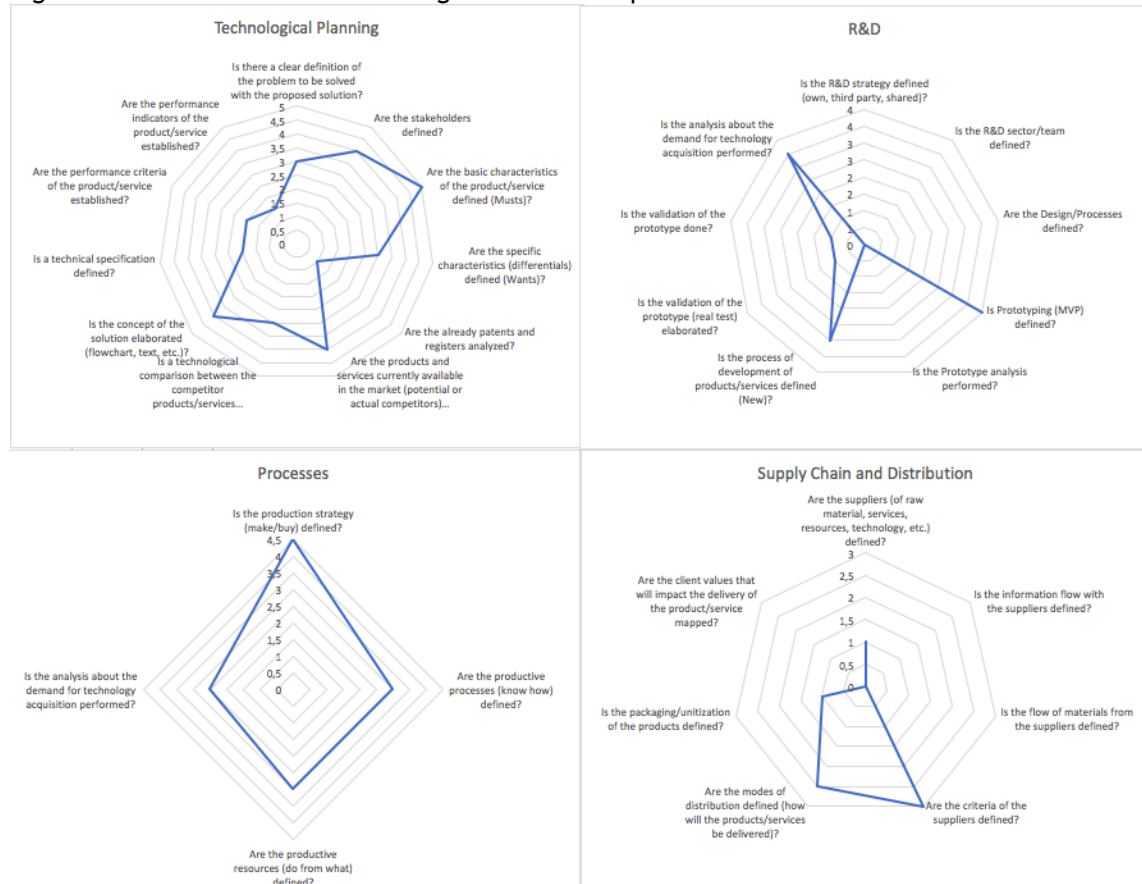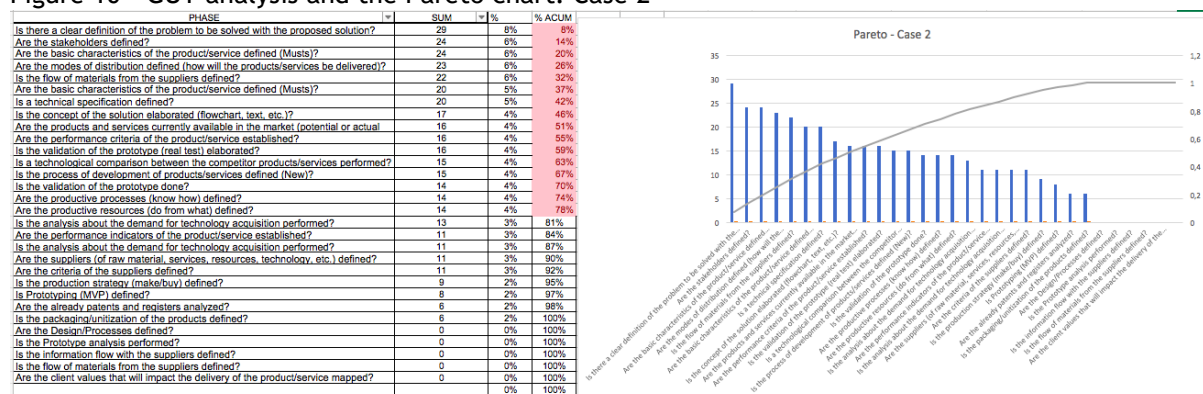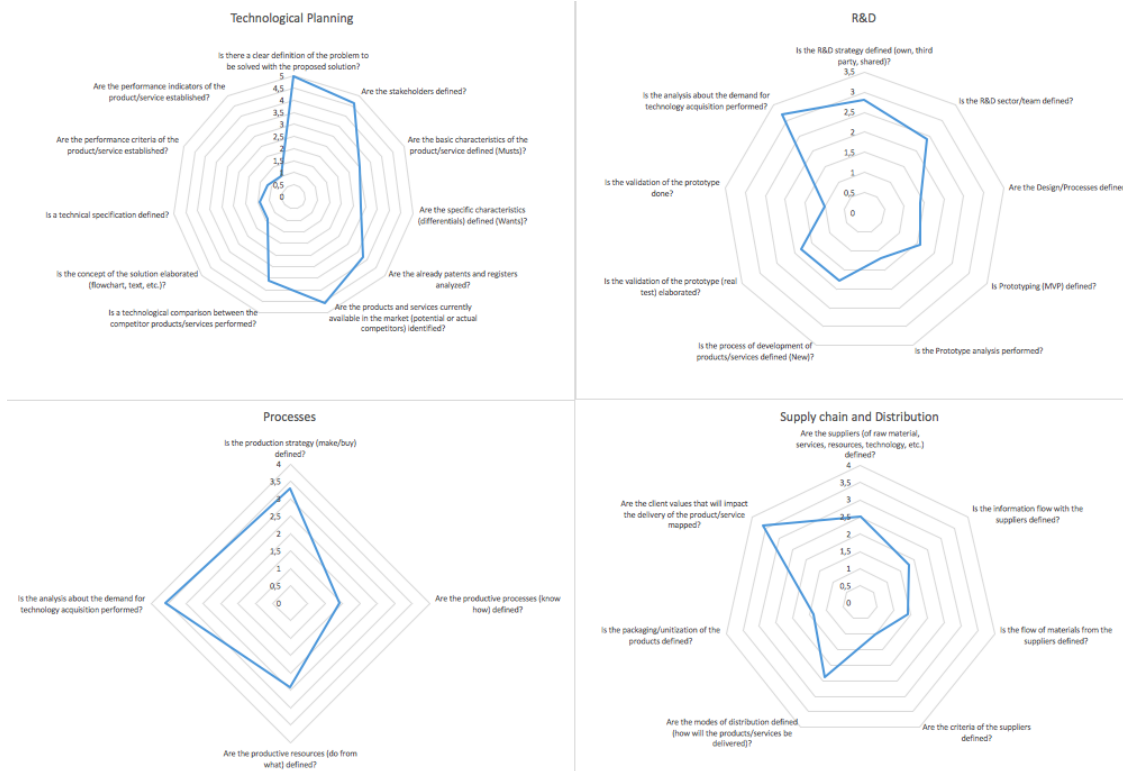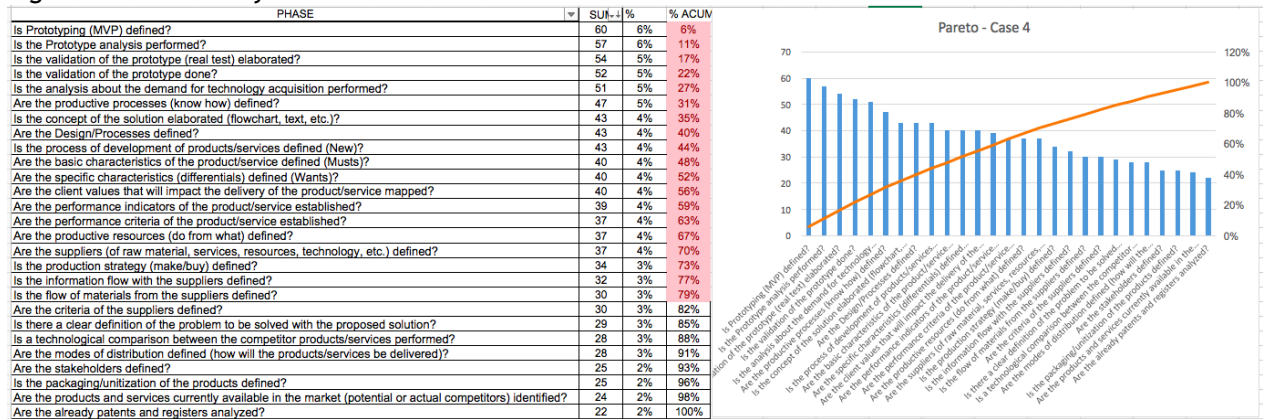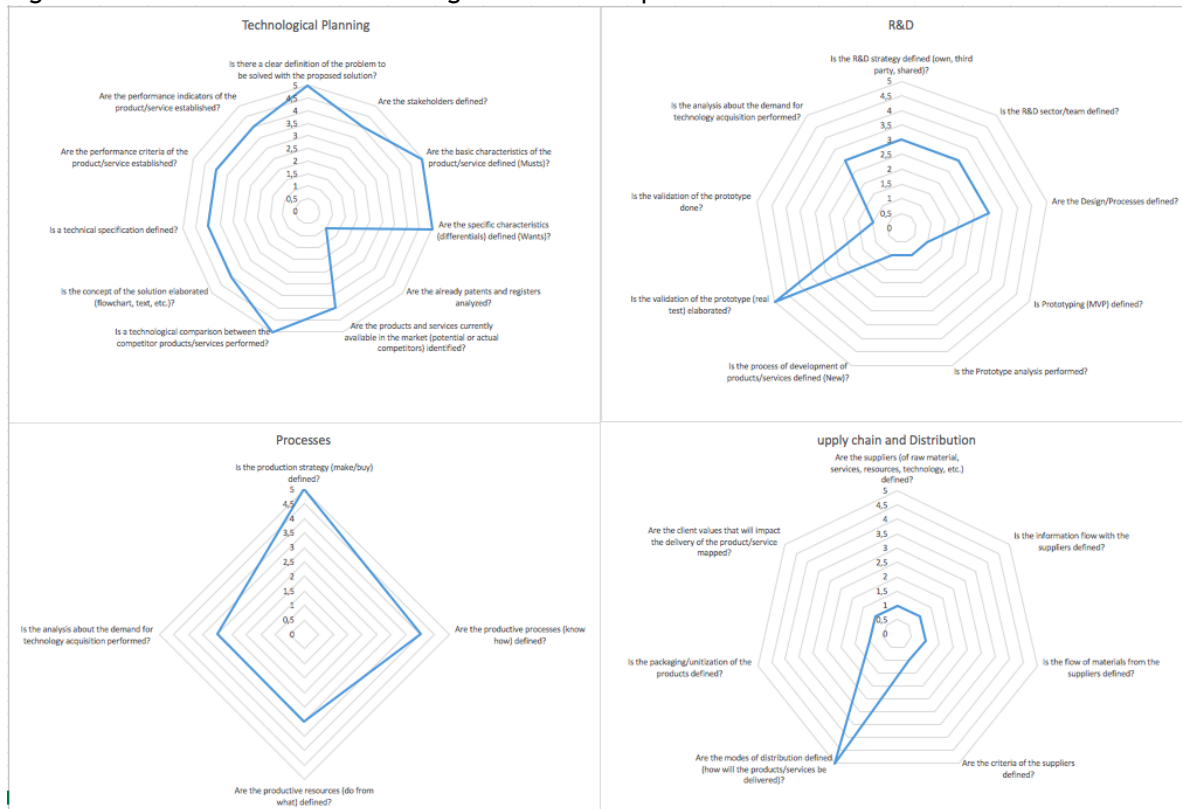The results of the GUT analysis and the Pareto chart are displayed in Figure 14.

Figure 14 – GUT analysis and the Pareto chart: Case 4

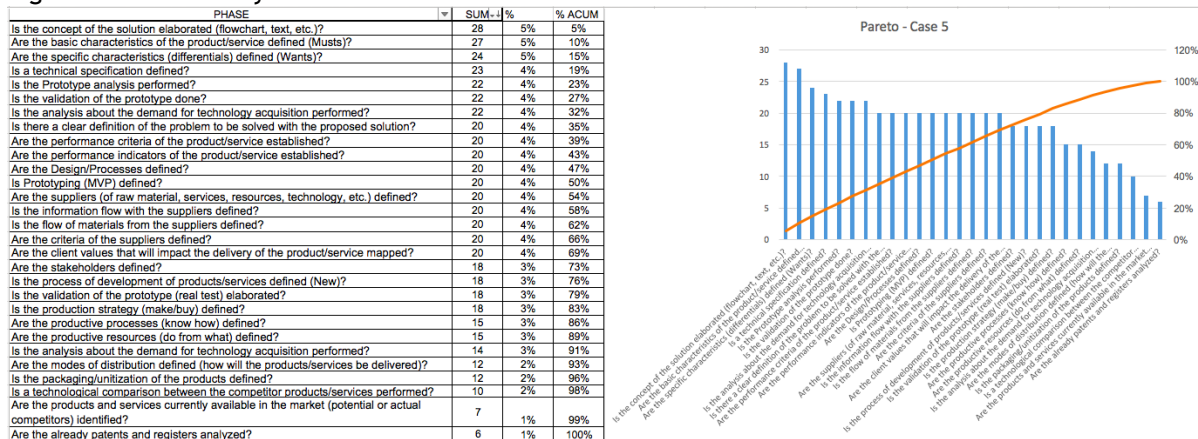| PHASE	SUM	%	% ACUM
Is Prototyping (MVP) defined?	60	6%	6%
Is the Prototype analysis performed?	57	6%	11%
Is the validation of the prototype (real test) elaborated?	54	5%	17%
Is the validation of the prototype done?	52	5%	22%
Is the analysis about the demand for technology acquisition performed?	51	5%	27%
Are the productive processes (know how) defined?	47	5%	31%
Is the concept of the solution elaborated (flowchart, text, etc.)?	43	4%	35%
Are the Design/Processes defined?	43	4%	40%
Is the process of development of products/services defined (New)?	43	4%	44%
Are the basic characteristics of the product/service defined (Musts)?	40	4%	48%
Are the specific characteristics (differentials) defined (Wants)?	40	4%	52%
Are the client values that will impact the delivery of the product/service mapped?	40	4%	56%
Are the performance indicators of the product/service established?	39	4%	59%
Are the performance criteria of the product/service established?	37	4%	63%
Are the productive resources (do from what) defined?	37	4%	67%
Are the suppliers (of raw material, services, resources, technology, etc.) defined?	37	4%	70%
Is the production strategy (make/buy) defined?	34	3%	73%
Is the information flow with the suppliers defined?	32	3%	77%
Is the flow of materials from the suppliers defined?	30	3%	79%
Are the criteria of the suppliers defined?	30	3%	82%
Is there a clear definition of the problem to be solved with the proposed solution?	29	3%	85%
Is a technological comparison between the competitor products/services performed?	28	3%	88%
Are the modes of distribution defined (how will the products/services be delivered)?	28	3%	91%
Are the stakeholders defined?	25	2%	93%
Is the packaging/unitization of the products defined?	25	2%	96%
Are the products and services currently available in the market (potential or actual competitors) identified?	24	2%	98%
Are the already patents and registers analyzed?	22	2%	100%

Case 5

This case focuses on an energetic efficient solution for great size industrial facilities. The group is formed by two entrepreneurs. The results of this case are presented in Figure 15.

Figure 15 - Indicators of the auto diagnosis of macro processes: Case 5

The results of the GUT analysis and the Pareto chart are shown in Figure 16.

Figure 16 – GUT analysis and the Pareto chart: Case 5

PHASE	SUM	%	% ACUM
Is the concept of the solution elaborated (flowchart, text, etc.)?	28	5%	5%
Are the basic characteristics of the product/service defined (Musts)?	27	5%	10%
Are the specific characteristics (differentials) defined (Wants)?	24	5%	15%
Is a technical specification defined?	23	4%	19%
Is the Prototype analysis performed?	22	4%	23%
Is the validation of the prototype done?	22	4%	27%
Is the analysis about the demand for technology acquisition performed?	22	4%	32%
Is there a clear definition of the problem to be solved with the proposed solution?	20	4%	35%
Are the performance criteria of the product/service established?	20	4%	39%
Are the performance indicators of the product/service established?	20	4%	43%
Are the Design/Processes defined?	20	4%	47%
Is Prototyping (MVP) defined?	20	4%	50%
Are the suppliers (of raw material, services, resources, technology, etc.) defined?	20	4%	54%
Is the information flow with the suppliers defined?	20	4%	58%
Is the flow of materials from the suppliers defined?	20	4%	62%
Are the criteria of the suppliers defined?	20	4%	66%
Are the client values that will impact the delivery of the product/service mapped?	20	4%	69%
Are the stakeholders defined?	18	3%	73%
Is the process of development of products/services defined (New)?	18	3%	76%
Is the validation of the prototype (real test) elaborated?	18	3%	79%
Is the production strategy (make/buy) defined?	18	3%	83%
Are the productive processes (know how) defined?	15	3%	86%
Are the productive resources (do from what) defined?	15	3%	89%
Is the analysis about the demand for technology acquisition performed?	14	3%	91%
Are the modes of distribution defined (how will the products/services be delivered)?	12	2%	93%
Is the packaging/unitization of the products defined?	12	2%	96%
Is a technological comparison between the competitor products/services performed?	10	2%	98%
Are the products and services currently available in the market (potential or actual competitors) identified?	7	1%	99%
Are the already patents and registers analyzed?	6	1%	100%

Results

The understanding of the auto diagnosis of macro processes by the entrepreneurs had a positive effect regarding the scores in the GUT, since it emphasizes, beyond the characteristic events of each tool, the inconsistencies regarding the auto diagnosis. The inconsistencies are presented in colors according to their level of gravity: red for high inconsistency (need of review) and yellow when further analysis is required. The focus was in the technology concepts, such as the technological analysis of the competitors, the input of differential points into their products/services, and in the development of prototypes to be presented to funding agencies and investors (Figure 17).

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Figure 17 – Presenting the inconsistencies of the auto diagnoses.

Case	Step	GUT	Auto diagnosis
1	Are the Design/Processes defined?	56	4.0
1	Are the productive resources (do from what) defined?	53	3.0
1	Are the modes of distribution defined (how will the products/services be delivered)?	50	4.0
1	Are the suppliers (of raw material, services, resources, technology, etc.) defined?	48	4.0
1	Are the products and services currently available in the market (potential or actual competitors) identified?	47	3.8
1	Is the process of development of products/services defined (New)?	46	3.0
1	Are the productive processes (how to) defined?	46	3.0
1	Is the flow of materials from the suppliers defined?	45	4.0
1	Are the client values that will impact the delivery of the product/service mapped?	40	4.0
2	Are the stakeholders defined?	24	4.0
2	Are the specific characteristics (differentials) defined (Wants)?	24	3.0
2	Is the flow of materials from the suppliers defined?	22	4.0
2	Are the basic characteristics of the product/service defined (Musts)?	20	4.0
2	Is the concept of the solution elaborated (flowchart, text, etc.)?	17	4.0
2	Are the products and services currently available in the market (potential or actual competitors) identified?	16	3.0
2	Is the production strategy (make/buy) defined?	9	4.5
2	Is the packaging/unitization of the products defined?	6	1.0
3	Is the concept of the solution elaborated (flowchart, text, etc.)?	66	2.0
3	Are the performance indicators of the product/service established?	48	1.4
3	Are the criteria indicators of the product/service established?	46	1.2
3	Is the validation of the prototype (real test) elaborated?	44	1.4
3	Is the analysis about the demand for technology acquisition performed?	40	1.2
3	Is the flow of materials from the suppliers defined?	39	1.2
4	Is the analysis about the demand for technology acquisition performed?	51	3.2
4	Are the basic characteristics of the product/service defined (Musts)?	40	3.0
4	Are the specific characteristics (differentials) defined (Wants)?	40	2.8
4	Are the client values that will impact the delivery of the product/service mapped?	40	3.6
4	Is there a clear definition of the problem to be solved with the proposed solution?	29	5.0
4	Is the packaging/unitization of the products defined?	25	1.4
5	Is the concept of the solution elaborated (flowchart, text, etc.)?	28	4.0
5	Are the basic characteristics of the product/service defined (Musts)?	27	5.0
5	Are the specific characteristics (differentials) defined (Wants)?	24	5.0
5	Is the technical specification defined?	23	4.0
5	Is there a clear definition of the problem to be solved with the proposed solution?	20	5.0

5	Are Designs/Processes defined?	20	3.0
5	Is the process of development of products/services defined (New)?	18	1.0
5	Is the packaging/unitization of the products defined?	12	1.0

As a result, difficulties were recorded regarding the perceptions of the entrepreneurs about the technology concepts, the technological analysis of the competitors, the input of differentiating points into their products/services, as well as about the emphasis on the development of prototypes to be presented to the developers and investors. Since it was the application of a self-diagnostic tool, it was possible to follow the perceptions of the entrepreneurs about their business ideas. These opinions do not reflect necessarily an analysis of the enterprise by the advisor.

The innovative aspect of this paper relies in the presentation of a method that was developed to support the analysis of the technological development of new projects in a pre-incubation phase. This method must be regarded as a tool to support the development of new ventures. Since it started to be used in 2016 new improvements will still be required, based on the results of its application. Our goal sharing this method in a scientific publication is to present it as tool for other incubators, believing that its use by other incubators and the sharing of their results will provide it with a better opportunity to be perfected.

The main limitation of this paper is the fact that we have not presented an extensive literature review that could support the development of the method. Instead, we have chosen to focus on its application in the five cases. As these cases were selected due to convenience, we understand that this is another limitation of this article.

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