Platform for Supporting Startup Acceleration Programs

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October 2018

Abstract

In this dissertation we developed a platform for the problems of lack of centralization, poor mentoring, and absence of a step-by-step approach in acceleration programs. With the help of "Fábrica de Startups", we designed and developed a functional prototype for their startup acceleration program Entrepreneurs-in-Residence, which meets all the objectives defined. This prototype will also give entrepreneurs an online site to put all the developed artifacts, following the working methodologies in "The Lean Startup", and "Business Model Generation". The platform proposed, FabStart Academy, includes the course FastStart, which is where the methodology of work used in the program is given to entrepreneurs and a place where they can put the artifacts. In this dissertation it is also shown how the prototype was evaluated (through usability tests and interviews) and its relevance to "Fábrica de Startups". The artifact proposed as response to research problem meets both our expectations and the ones of "Fábrica de Startups"', and will be used in future acceleration programs.

Keywords: Startups; Acceleration Program; Platform; Business Model; Entrepreneur.

1. Introduction

In a world in constant change, startups play a very important role in the technology field, especially in the labour market[16][15]. They are not common enterprises, as they differ from them in terms of mentality, culture, and most importantly, in their working methods. Startups are not common consulting, auditing or executive businesses working for a specific client; they are a small group of people willing to investigate, who work in extreme uncertainty and with almost no funds, following a specific business model designed by them and for them, or, as Steve Blank, the startup guru, put it, *"a startup is a temporary organization designed to search for a repeatable and scalable business model"*[2].

Startups' numbers are growing everyday; they are everywhere. Almost every college student with an entrepreneurial spirit, especially in engineering[19], dreams of having his own successful business. Although the most courageous ones tend to venture into business life, this is not an easy task considering that the failure rate of a startup is nearly 80% in its first three years of activity[7].

There are really good ideas that have never come to daylight, but contrary to what most people think, the lack of success of these startups results not only from lack of investment, but also from poor management conditions[6], business model innovation failure[4] or inefficient acceleration programs[9].

Today, there are several online platforms that provide business planning and acceleration programs. Steve Blanks' Launchpad Central[1] or Glidr[2] are some examples of what is available on the web. Such platforms fulfill basic needs of what startups require in their early stages of life and are well structured. They are acceleration programmes, but they lack in-person mentoring. These platforms will be cornerstones of our research.

In this project we will focus not only on acceleration programs and their steps, but also on how to improve them. We investigated entrepreneurs' needs to develop a functional platform, whose main objective is to facilitate, improve, and complement acceleration programs.

1.1. Research Methodology

The research methodology chosen to be applied in this research is Design Science Research Methodology[10]. DSRM incorporates principles, practices and procedures required to carry out such research and meets three objectives: consistency with prior literature, providing a nominal process model for doing design science research, and providing a mental model for presenting and evaluating design science research in information

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[1]https://www.launchpadcentral.com/
[2]https://www.glidr.io/

systems.

DSRM is an iterative methodology and it has 6 stages: Problem Identification and Motivation, Definition of the Objectives for a Solution, Design and Development, Demonstration, Evaluation and Communication[13].
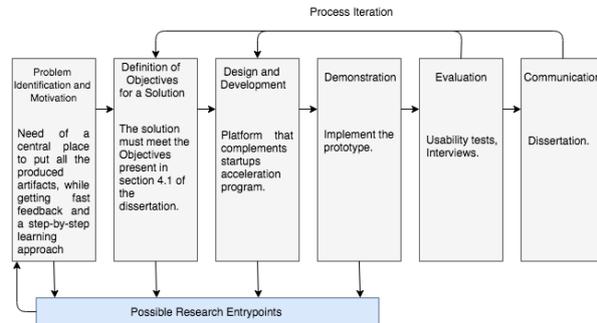

Figure 1: Mapping of research activities using DSRM, adapted from[13]

2. Research Problem

Startup acceleration platforms involve a huge investment, have good programmers and engineers, and require a large amount of know-how; they are businesses that try to make money. These programs provide a place on the web where artifacts can be put into, as well as virtual mentorship to "show you the way", but in most cases such programs are not developed step-by-step; also, it is almost impossible to bring together physical artifacts and digital ones; and finally, the lack of feedback may pose serious risks to entrepreneurs, especially if they do not possess any experience in business.

On the other hand, there are in-person startups acceleration programs, in which it is necessary to make pitches every week, to prepare your work, and to develop your artifacts. However, they do not provide a central place to put them. Therefore, what most entrepreneurs do is to put their work on Dropbox and on various Google platforms (Drive, Forms, Slides...), or to communicate via Slack, WhatsApp or Facebook Messenger. The most common way of low-cost prototyping is still pen and paper[18].

In order to do our research, we have joined forces with "Fábrica de Startups" to produce a fitted solution to our research problem. A prototype of a startup acceleration platform was created, to assist the acceleration program. The platform was developed for this dissertation and tested during this last spring with engineering students (usability tests), and this summer with entrepreneurs (interviews) in an acceleration program of "Fábrica de Startups", called Entrepreneurs-in-Residence. The platform is named FabStart Academy, and the course in which we tested with entrepreneurs was FastStart. The working methodologies used in this platform aim to meet the following success metrics: to increase the availability in learning, leading to an increase in productivity among startups; to create a step-by-step component which will foster more motivation during all the developed work; to improve the feedback between teams and mentors; and to get a central place to put all the artifacts developed.

3. Related Work

To our knowledge, there is not a complete platform to put all artifacts, with a step-by-step accelerating program, and providing strategic and business advising. Although we have not studied all of them, we are going to focus only on four, which we have tested and consider most relevant to our work. The relevance given is based on the usability[12], working methodology, and the process of teaching. Taken together, these platforms, LaunchPad Central, Glidr, Stratpad, and Liveplan combine the most important features on which this study draws on.

3.1. LaunchPad Central

LaunchPad Central[3] is a platform whose Cofounder and Investor is Steve Blank, the startup guru, possibly the most experienced person in the startup circle. Even if it was not possible to get an account on this platform, its pros and cons were analyzed, namely through YouTube tutorials, in which all functionalities and features available were explored.

This platform has good usability, but there are some aspects that need to be improved.

- **Pros:** good usability of the platform; "Lean Startup"[14] orientation; help provided by topic; performance metrics; being iterative.

- **Cons:** it does not provide a step-by-step approach, which usually leads to lack of pace; it does not combine digital artifacts with physical artifacts; inappropriate feedback channels.

3.2. Glidr

First of all, it is important to mention that this platform is the substitute of LaunchPad Central. Glidr [4] is also owned by LaunchPad, and it was not possible to get an account because it is a new product in the market and it still uses the Beta version (they were still testing it on a small group of entrepreneurs' Startups). However, attending a Glidr webinar, powered by Launchpad, where the main differences and improvements made were publicly presented, has been very helpful to get information about this platform:

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[3]https://www.launchpadcentral.com/
[4]https://www.glidr.io/

- **Pros:** "Lean Startup"[14] orientation; help by topic; performance metrics; iterative; improved communication between team members.

- **Cons:** social network traits; confusing; not providing a step-by-step approach, which usually leads to lack of pace; not combining digital artifacts with physical artifacts; inappropriate feedback channels.

3.3. Stratpad

Stratpad[5] is another type of platform. This platform allows entrepreneurs to plan their business, learn new strategies to boost it, learn through video tutorials how to run the business profitably, and, as regards small businesses, it offers the possibility of connecting with professional business coaches, lenders, bookkeepers and other business professionals.

- **Pros:** step-by-step approach, which facilitates learning; video tutorials synchronized with the different tasks; examples; good support.

- **Cons:** it is not iterative, which leads to absence of change; it does not give any pace; it does not give any feedback; no "Lean Startup"[14] orientation.

3.4. Liveplan

Liveplan[6] is a financial planning software. Liveplan helps people to plan their own finance and to establish goals to their enterprises. Despite all the features that support good financial practices, Liveplan doesn't have a "Lean Startup"[14] orientation, but it is an example of good usability and of a step-by-step online platform.

- **Pros:** iterative; step-by-step approach, which facilitates learning; good usability; easy to learn how to use.

- **Cons:** does not give any pace; doesn't give any feedback; no "Lean Startup"[14] orientation; financial planning software which is not useful to early stages of ideation.

3.5. Summary

In this section all the pros and cons of the platforms which we consider more relevant to this research are compared. All these platforms have been considered for a specific purpose. All of them have interesting features to take into account in our future work.

In LaunchPad Central and Glidr, which are the ones with a "Lean Startup" orientation, it is more important to identify the cons, in order to avoid

them in the future. Stratpad and Liveplan, despite not having a "Lean Startup" orientation, are included in this list not only because of their strategic, planning, and step-by-step approach, but also because of being user-friendly.

4. Research Proposal

In this section we present what we consider to be the best solution to the problem described in section 2. The objectives of this solution, as well as its description, are also presented in this section.

4.1. Objectives

There are some objectives that we would like to have accomplished by the end of this dissertation. The objectives of the solution studied in this research are listed below:

- **Objective 1:** to propose a platform that assists a startup acceleration program.

- **Objective 2:** to have a central spot where entrepreneurs get all artifacts accessible on the web.

- **Objective 3:** to improve communication between mentors and all subscribed entrepreneurs in order to get better and faster feedback.

- **Objective 4:** to increase the availability in the learning process.

- **Objective 5:** to give pace to the process, giving a step-by-step approach and a better assistance.

Basically, the general aim of this research is really simple: to get the best of both the physical and the digital worlds and to bring them together in the same platform. In this platform there will be a site to put all the artifacts, while professional assistance and a step-by-step approach will also be provided, so that the users' motivation and pace will not be lost.

4.2. Proposal Description

In order to reach the solution to the problem stated above, we worked with some entrepreneurs in a bootcamp held in Lisbon and broadcast to other 12 cities in Portugal by "Fábrica de Startups". By the end of the bootcamp, all entrepreneurs that participated had answered to our survey questions. Based on the 56 responses obtained, it became clear that a few problems needed to be fixed:

- **Different channels of communication**;

- **Different tools of cloud storage**;

- **Necessity of a support central spot**;

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[5]https://www.stratpad.com/
[6]https://www.liveplan.com/

One of the questions in our survey was: "Do you think that a major assistance given by an online platform to this acceleration program would bring more dynamics to your startup?". To this question, 66.1% answered "yes" and 33.9% answered "maybe"; considering this sample of 56 entrepreneurs as reliable data, we confirmed our hypothesis and therefore decided to venture into prototyping the platform.

Also, based on our own experience and on what we observed, all entrepreneurs use pen and paper[18] when they are planning or carrying out a task for the first time, which shows that the "old fashion way" is still very important in the early stages of a project. When possible, all the artifacts were outlined using pen and paper, then delivered to the mentor to be analyzed and to obtain feedback. This poses a problem, though: what if it gets lost or damaged? Besides, using such a process takes more time than if it was automated.

Therefore, after this bootcamp, we analyzed the data and we came to the conclusion that a central spot was necessary, where entrepreneurs could store their artifacts (even if displayed as a photography) and we could also facilitate the process. Considering this, we came up with the idea of creating a platform that can assist an acceleration program. This platform is called FabStart Academy and it is available online on www.fabstartacademy.com.

4.3. FabStart Academy

In accordance with the objectives stated above, the platform must be grounded in a set of contents which give a useful background for entrepreneurs to develop their work in a more efficient way. The working methodology (FastStart), although it was not developed by us, was inserted in FabStart Academy with the purpose of automation and also due to the high availability of the learning process.

In addition, there was a constant concern about UI. During the design and development phase, we always intended to create an artifact that would be not only functional, where entrepreneurs could learn and work freely, but also visually appealing. Hence, design played a really important role, since proposing something that would not fit in with the stereotype of an innovative entrepreneur was not an option.

4.3.1 Users Description

At this point we already know our platform users and what they seek for their entrepreneurial work. Despite having weekly deadlines to meet in their work, entrepreneurs like to be able to innovate[11]. Feeling motivated and useful, while being able to focus on quality and receiving individual feed-back based on their work, are also very important premises to take into account.

Getting the entrepreneurs in the platform was a quite easy task; since we are working together with "Fábrica de Startups", they provided us the entrepreneurs to the whole research. However, making them stay was more difficult. Since gamification produces quite accurate results[8], one thing that was initially planned was to develop two gamification features: "progress bar", to let them know how much of the course they have completed; "notifications", which is used alongside "progress bar" and "mark as complete" features, to show which lessons have already been completed.

To conclude, this platform was created with the major purpose of assisting entrepreneurs' acceleration program. As shown in section 7.1.2, most of the entrepreneurs were employed, and to attend all the bootcamps organised by "Fábrica de Startup" was not a simple task due to their schedule. Considering that the entrepreneurs are very busy people, this platform also offers an advantageous component in their learning process, since it is always available.

4.3.2 FastStart

The course FastStart is the most important part of the platform, not only for entrepreneurs, because it allows them to learn the concepts that they will use, but also for mentors, because it provides them the first contact with the artifacts produced, and they can also save their time when it comes to explaining concepts.

FastStart course is an adaptation from a "Fábrica de Startups'" FastStart acceleration methodology. The course follows all steps presented but, in order to cluster all the bootcamps videos in a more practical way, it was divided into 13 sections instead of 9.

All the videos presented in the course were also taken from "Fábrica's" previous Tourism Explorers bootcamps, which also follow FastStart methodology, and all the contents were equally provided by them.

4.3.3 User Interface

Since the beginning of the design and development phase of the platform UI was a constant worry. Everything was planned to be functional and eye-catching, but due to our limitations as designers, some aspects had to be changed after the usability tests (as explained in section 7.1.1). All the design and development were done together using Word-Press specific plugins for the task. The plugins had their limitations, but with the help of customizable themes we completed the platform interface.

Not all the lessons have the feature "Submit Files", only the ones predefined by "Fábrica de Startups" where entrepreneurs have assignments to do. In this specific lesson it is shown how we design the lesson: a video; the content, in this case an editable PDF; "Submit File" feature; "Mark as Complete" feature; and the buttons to advance or reverse the course lesson (step-by-step).

The majority of the lessons did not have an editable PDF or a "Submit File" feature, mainly because they were introductory lessons to the ones with such features. These simpler lessons only got a video to explain the concepts, the "Mark as Complete" feature to show in the progress bar that one more lesson has been completed, and the buttons to advance or reverse the course lesson.

A really important part of UI in FabStart Academy is undoubtedly the FastStart course section. If the lessons are not intuitive for the user to learn, then our platform will not have utility. So, in the design and development phase, we tried to put a simple and intuitive design in both types of lessons (lessons with PDF and lessons without it) in order to keep the platform users learning.

5. Design and Development

In this chapter we will describe our choices to design and develop this platform. All the process of design and development was done simultaneously using specific tools as explained below.

5.1. Using WordPress

At the beginning of the research several options were considered; we thought that developing this platform using JS, HTML, and CSS would be a good option. However, due to lack of time, in view of all the implementation and tests that needed to be done before the usability tests and interviews, WordPress[17] was considered the best choice to develop this artifact in a more agile way.

When using WordPress, all the design and development tasks were done simultaneously. WordPress is a free and open-source content management system based on PHP and MySQL; features include a plugin architecture and a theme system, which makes both design and development quicker and easier. In other words, WordPress is a really powerful tool.

5.1.1 Plugins

WordPress plugin architecture allows users to extend the features and functionality of a website. Each plugin offers custom functions and features enabling WordPress users to tailor their sites to their specific needs. These customizations range from search engine optimization to client portals used to display private information to logged in users, content management systems, content displaying features, and learning management system, which is the main plugin of our proposal. All the plugins used are below:

- **LifterLMS - Learning Management System**;
- **Elementor - Design**;
- **UpdraftPlus - Backup/Restore**;
- **WP Super Cache - Caching**;
- **Really Simple SSL - Security**;
- **Contact Form 7**;

5.1.2 Themes

Themes allow us to change the look and functionality of a WordPress website without altering the core or site content. Every WordPress website requires at least one theme to be present and every theme should be designed using WordPress standards with structured PHP, HTML, and CSS. Themes may be directly installed using the WordPress "appearance" administration tool in the dashboard, or theme folders may be copied directly into the themes directory, for example via FTP. The PHP, HTML, and CSS found in themes can be directly modified to alter theme behavior.

5.2. Platform Features

Each feature has a specific purpose, which leads either to a specific task or to a set of relevant ones that entrepreneurs need to complete. The main objective of these features is to motivate entrepreneurs and to facilitate their work. These features are:

- Progress bar;
- Notifications;
- Mark as Complete;
- Submit Files;
- Step-by-Step Lessons;

5.3. Platform Sections

All the platform design and development rely on a small number of sections for users to access information and to perform their tasks. The sections are:

- Home Page;
- About us;
- Courses;
- Member's Dashboard;
- Contacts;
- Sign In;

6. Demonstration

This chapter focuses on the demonstration phase of the DSRM. The process of demonstration explains if the artifact can solve one or more instances of the research problem.

6.1. Research Context

To demonstrate the efficiency of FabStart Academy, we collaborated with a Portuguese startup incubator and accelerator, "Fábrica de Startups", to support all the development process. "Fábrica de Startups" has a great number of qualified professionals and startups, which provided our research with a lot of material to study and test. Despite not developing a new acceleration program, our work consisted of automating FastStart (a "Fábrica de Startups'" acceleration program methodology) in a new way so as to make the acceleration program happen. This new way aims to bring together the know how presented in FastStart, in an ordered, central and always available internet platform with presential mentoring, in order to correct all mistakes made by entrepreneurs while developing their ideas.

6.2. Activity Plan

This first DSRM iteration includes analysis and observation activities. All the demonstration activities are meant to test and evaluate the platform, with the main purpose of improving and correcting it.

The first iteration of DSRM is usability testing with engineering students. This activity, as explained below, aids us to analyze errors that, although evident, were often overlooked or unnoticed due to too many hours of work.

After correcting all the errors unveiled by this first iteration, the second iteration of DSRM, interviews with entrepreneurs, allowed us to determine whether the prototype met their expectations. This was an important part of this dissertation, since this is where we actually see the importance of the platform.

In addition, an interview with the lead acceleration manager of "Fábrica de Startups" was carried out in order to check if all the expectations were met. The aim of this interview was to get a more informal opinion from which we could understand what went well and what did not during the development and usage of the platform.

7. Evaluation

In this section we will evaluate how well the artifact meets the solution and if it solves the research problem. This activity consists of comparing the proposal objectives and the results obtained in the demonstration phase of DSRM, to confirm if they are the same.

7.1. Result Analysis

In the context of our research, there are two strategies we considered relevant to evaluate the artifact[5]:

- Goal-free evaluation: Interviews.

- Criteria-based evaluation: Usability tests.

Since we are evaluating an IT system with students and entrepreneurs, we chose, as for "what to evaluate", "IT-System in use" for both strategies. IT-systems in use means to study a use situation where a user interacts with an IT-system.

On first iteration of DSRM, with students we used the Criteria-based evaluation of IT-System in use. This combination means that the evaluation is performed according to some predefined general criteria and that the object of evaluation is the IT-System in use. Usability tests fit perfectly since the main objective of this strategy is to gain a deeper and broader understanding of the IT-system and the users' perception of the IT-system.

On the other hand, on second iteration of DSRM, with entrepreneurs we used the Goal-free evaluation of IT-System in use. This combination means that evaluation is performed open minded and that the object of evaluation is the IT-System in use. Interviews seemed the most appropriate form of evaluation in this case, since entrepreneurs had already used the platform and we intended to check if the role of artifacts in the business met the objectives.

7.1.1 First DSRM Iteration

On the first DSRM iteration, the UI was evaluated through usability tests applied to 12 engineering students, all aged between 18 and 25 years old, 58.3% of them doing their bachelor degree and 41.7% their masters; all of them were knowledgeable of internet use.

During the usability tests, through observation and data analysis, it became clear that some changes needed to be made. To help us to understand what was wrong, we checked if the expected time in seconds and the number of errors for each task fitted in the interval with confidence of 95%. The results are in table 1 and table 2.

Before starting to interpret the results shown in table 1 and table 2, two concepts need to be explained, efficiency and effectiveness. In usability testing, efficiency is related to the time that it takes to complete the task, and effectiveness is related to the number of errors made through the task.

In task 1, in terms of efficiency we can see that the platform had good results; the expected time is above the interval of confidence. In terms of effectiveness, we cannot come to any conclusion, since

	Interval	
	Time	Errors
Task 1	[34,00 - 42,62]	[-0,16 - 0,49]
Task 2	[12,39 - 36,53]	[0,30 - 1,36]
Task 3	[27,30 - 37,54]	[0,54 - 1,29]
Task 4	[12,28 - 31,41]	[-0,15 - 0,98]
Task 5	[23,17- 29,03]	[-0,08 - 0,25]

Table 1: Confidence interval for time (in seconds) and number of errors for each task.

	Expected	
	Time	Errors
Task 1	45	0
Task 2	7	0
Task 3	25	0
Task 4	5	1
Task 5	30	0

Table 2: Expected time (in seconds) and number of errors for each task.

the expected number of errors is within the confidence interval and the sample of students is small.

In task 2, the platform failed in both efficiency and effectiveness metrics. Both the expected time and the number of errors are below the confidence interval; it was clear that some changes needed to be made. So, in order to make the platform more intuitive for future users, we put an enroll button in the home page to make the process of subscription more intuitive.

In task 3, which has also failed in both efficiency and effectiveness metrics, we realized that students had difficulty in understanding that the link to PDF was present in the lesson, confusing it with the title of the video. So, in order to improve the artifact, we changed it to an icon, to expose it in a more obvious way.

In task 4, effectiveness presented a surprisingly good result, since it was the only task in which we expected 1 error and the confidence interval was below the expected number of errors. In terms of efficiency, the result was not so good, but despite the outcome no changes were made since this task was only intended to check if locking a lesson of a course was functioning well.

In task 5, the time expected was above the confidence interval, so in terms of efficiency the platform showed good results. In terms of effectiveness we could not draw any conclusion because the expected error number is within the confidence interval and the sample of students is small.

To conclude the usability tests and to measure the satisfaction of usability of FabStart Academy, we used SUS[3]. SUS is a Likert scale including 10 statements. The respondent indicates the degree of agreement or disagreement with each of 5 point scale statements .

Then, after classifying each statement on a scale of 1 (strongly disagree) to 5 (strongly agree), we then proceeded to score SUS. To calculate the SUS score, for items 1,3,5,7 and 9, the score contribution is the scale position minus 1. For items 2,4,6,8 and 10, the contribution is 5 minus the scale position. Then, we multiply the sum of all scores by 2.5 to obtain the overall value of system usability. SUS scores have a range of 0 to 100 and the score for our artifact is a final SUS score of **83.125**.

7.1.2 Second DSRM Iteration

In order to complete the evaluation of the developed artifact, a sample of 10 entrepreneurs doing the Entrepreneurs-in-Residence program was interviewed by us. Before the interview, all the platform had already been corrected from first DSRM iteration, and the 10 entrepreneurs were already using it in the program. The results are described below:

- 50% of the entrepreneurs are women, 50% of the entrepreneurs are men;

- 80% of the entrepreneurs are aged between 18 and 24 years old, and 20% between 25 and 34 years old.

- 10% of the entrepreneurs are high school graduates, 60% of the entrepreneurs have a bachelor degree and 30% of the entrepreneurs a masters.

- 80% of the entrepreneurs' study field is "Economy, Management and Accounting", 10% of the entrepreneurs' study field is "Technology" and 10% of the entrepreneurs' study field is "Humanities, Secretariat and Translation".

- 50% of the entrepreneurs had a full-time job, 30% of the entrepreneurs were students, 10% of the entrepreneurs had a part-time job, and 10% of the entrepreneurs were self-employed.

- 90% of the entrepreneurs think that the contents displayed in FastStart course are useful and relevant.

- 100% of the entrepreneurs think the most negative aspect in course is video edition, specifying the sound and size of videos.

- 40% strongly agree, 50% agree and 10% neither agree nor disagree that FastStart would help them in their business ideia.

- 100% of the entrepreneurs think that joining the FabStart Academy courses with presential mentoring is really good and very helpful.

- 30% strongly agree, 40% agree and 30% neither agree nor disagree that FabStart Academy would meet their needs as entrepreneurs.

- As regards the strong points of FabStart Academy, 40% of the entrepreneurs consider the usability of the artifact, 30% of the entrepreneurs consider the way the content is organized, 10% of entrepreneurs consider the step-by-step approach, 10% of entrepreneurs consider the feature "mark as complete", and 10% of entrepreneurs consider the feature "submit files".

- In terms of the weak points of FabStart Academy, 40% of the entrepreneurs point out the usability of the artifact, 10% of the entrepreneurs point out how the contents are edited, 10% of the entrepreneurs consider it has too much text, 20% of the entrepreneurs point out the lack of an introductory text in each lesson, while 20% think that FabStart Academy has no weak points.

7.2. Interview with Acceleration Manager

To complement the previous analysis and to clarify some of the retrieved results, we conducted an interview with the "Fábrica de Startups" Acceleration Manager, Madalena Clara. We prepared a semi-structured interview, so the interviewee could share with us the perspective of "Fábrica de Startups" in this project.

Madalena Clara has a bachelor degree in management from NOVA School of Business and Economics and a masters degree in management with major in marketing from Católica Lisbon School of Business and Economics. For the past 3 years she has been working as Acceleration Manager at "Fábrica de Startups", being responsible for managing the acceleration programs, from the relationship with partners to the communication and operation of the programs, and for developing and implementing new methodologies.

This year, Madalena became in charge of implementing the FabStart Academy with us at "Fábrica de Startups". In her opinion, FabStart Academy, which brings a blended learning approach to "Fábrica"'s programs (the online and offline support to help people develop their business) achieved its main goal. The manager says that to create a platform that supports all the programs, either as the main tool to promote and teach entrepreneurship all around the world, or as a supporting tool to the existing programs, giving all the content in a format participants can view and review at their own pace, was a success.

Also, Madalena mentions that the best aspects about FabStart Academy are having good quality content organized in a course that follows the main steps to develop and validate the business model and the feedback system implemented, where participants can upload their work and quickly receive direct feedback, which helps them to keep pace with the program, to keep their motivation high and to help them with specific questions about their business. In addition, since the program is online based, FabStart Academy helps people who want to develop their own project but want to do it in parallel with their job, and it can also help people wherever they are located, eliminating any geographical restriction.

For "Fábrica de Startups", FabStart Academy is strategic to its mission of helping people become successful entrepreneurs. Through this online tool, "Fábrica" can spread its courses all around the world, helping more and more people in their dream to have their own business. In addition, "Fábrica" can reduce its teaching time, since participants have the opportunity to learn online, which makes the bootcamps much more directed at each group's project and questions.

7.3. Conclusion

To conclude, results were quite good considering the initial objectives. Despite having a small group of entrepreneurs, most of the opinions converge with what we think the platform was constructed for.

On first DSRM iteration, usability tests showed us that only minor changes had to be made and SUS questionnaires had really good results; considering that for a web interface the mean SUS score is 68.2[1] and that we got an average SUS score of 83.125 (which is classified as "Good" or as school grade of "B"), we can conclude that we are in the right way to the "perfect" platform, in terms of usability.

On second DSRM iteration, through the interview process, we can clearly see that entrepreneurs like the idea of joining the online course, which represents the old bootcamp, with presential mentoring. Availability and easy accessibility to the content is something that we considered as very valuable from the beginning, and entrepreneurs, specially those who have a full time job, confirm it.

To conclude, although we had an interview with "Fábrica de Startups" acceleration manager, this was not considered as a third iteration. To consider it as an iteration, we would have to make any alteration in case something went wrong; however, due to lack of time to make further improvements, the purpose of this interview was only to show "Fábrica's" point of view in our work together.

8. Conclusion

The output of this research consists of a platform that allows practitioners to keep boosting their entrepreneurship, easily accessing the contents of the acceleration program through a computer, and improving communication between them and their mentors. The structure of this platform was designed and developed to be easy to use and, in case of failure, the data is always saved.

Two DSRM iterations were done in the demonstration phase, as well as in the evaluation phase. In the first demonstration of DSRM, a set of simple tasks was proposed to 12 engineering students, in order to check all usability errors and to evaluate the quality of the interface through a satisfaction test (System Usability Scale). In the second demonstration of DSRM, an interview was conducted with 12 entrepreneurs, which allowed all our questions concerning FabStart Academy to be answered.

8.1. Lessons Learned

During all the design and development process, the website would always crash due to cache problems. The problem was solved using a WordPress cache plugin. This had a huge impact on the platform availability, which had been offline for several days without solution. More WordPress practice would be needed before the beginning of the project.

While usability tests are efficient to identify new problems in a software artifact, they may also be a source of wasted time. Only 7 out of 12 students knew what an acceleration program was. This kind of tests aim to check if the interface is correctly built, but if tests had been done with entrepreneurs instead of studentss, a lot of explanation time would have been saved.

Although all the interaction between "Fábrica de Startups'" manager and us was constant, some appointment dates had to be postponed due to her professional commitments. This situation had a serious impact on our schedule, delaying all the tests, which led to new dates. A better planning would have saved us a lot of time.

8.2. Limitations

During development, WordPress can save a lot of time since it is really intuitive and easy to work with, but it presents restrictions as some aspects cannot be changed or customized. Some WordPress plugins documentation is not always clear, which increases the difficulty in the development process.

Also, when using LifterLMS as the plugin to make the courses, loading videos from a localhost to the platform becomes really slow, due to the excessive size and number of videos. Hence, the solution encountered was to put them in a YouTube channel as a non-listed video (only visible with link access) so as to use the platform without any problems. Another limitation of LifterLMS was the lack of customization options, specifically in development. We could not alter the dashboard screen. Even using Elementor plugin to edit, LifterLMS does not allow us to change anything, so we could not align all the members' dashboard options vertically and take a second button that is not needed.

Another problem we faced was having only 10 entrepreneurs participating in the program; to get better results, a higher number of entrepreneurs would be needed. At the beginning, one FastStart program was planned, but due to lack of enrollments it had to be postponed. To get results to complete this research, interviews were done with Entrepreneur-in-residence program, following the same methodology (FastStart) but with fewer entrepreneurs. They work with "Fábrica de Startups" in an idea designed and developed by them for a big Portuguese entreprise.

Lastly, mentors received entrepreneurs' artifacts through a default e-mail, a "Fábrica de Startups" e-mail, which, with a bigger sample of entrepreneurs, may lead all mentoring to a state of disorganization. As the platform was tested in an acceleration program with only 10 entrepreneurs, this problem was mitigated naturally, but it still requires a solution in the future.

8.3. Future Work

Every section and feature of the FabStart Academy works perfectly, but in order to improve the platform to its full potential, some features need to be added. During the design and development process, we considered some further features to complement the initial plan, but due to the need to meet deadlines and also because of their complexity, these features have not been implemented yet. They are the following:

- **Chat for team members to communicate among themselves**;

- **Mentors' area to better organize all the content produced by the entrepreneurs**;

- **Summary of the lessons in course index**.

- **Implement peer review system**.

- **Quizzes**.

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