

Technological Article**Digital luthiery: Entrepreneurship in the music business**Renato Akira Sakamoto* , and Reynaldo Cavalheiro Marcondes 

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Abstract

Objective of the study: to connect the needs of musicians and practitioners of musical instruments, with those of luthiers and suppliers of tools and accessories of luthiery (production, regulation, repairs and restoration of musical instruments), through a digital platform. **Methodology:** starting from indications of an opportunity, information was gathered about the Brazilian luthiery market and research was carried out to understand the needs of musicians, luthiers and suppliers, which resulted in the proposal, with the definition of resources, action plan, economic feasibility analysis, implementation and evaluation. **Main results:** Its implementation started with the development of the platform, and the incubation of the startup in the lab of a São Paulo consultancy was negotiated. **Methodological contributions:** the method of problem solving and taking advantage of opportunities allowed the elaboration of a viable project to be implemented, for dealing with issues of the reality of a business, such as the startup object of work. **Relevance / originality:** The proposed business model is innovative, as it is unprecedented in the country, since there is still no application in this market connecting musicians, luthiers and suppliers. **Contributions to management:** The complexity in preparing the work was high, as it required the support of several companies and professionals for the development of software in language for mobile devices, which allowed the integration with electronic payment solutions, care with data protection and privacy, hosting services and support of the post-implementation solution, in addition to business disclosure and administration services.

Keywords: Luthiery, Business development, Startup, Digital platform, App.

Resumo

Objetivo: conectar as necessidades de músicos e praticantes de instrumentos musicais, com as de luthiers e de fornecedores de ferramentas e acessórios de luthieria (produção, regulação, reparos e restauração de instrumentos musicais), por meio de uma plataforma digital. **Metodologia:** Partiu-se de indícios de uma oportunidade, levantaram-se informações sobre o mercado brasileiro de luthieria e foram realizadas pesquisas para se entender as necessidades de músicos, luthiers e fornecedores, que resultou em uma proposta para o seu aproveitamento, com a definição dos recursos, do plano de ações, a análise da viabilidade econômica, implementação e avaliação. **Principais resultados:** A sua implementação foi iniciada com o desenvolvimento da plataforma, estando negociada a incubação da *startup* no lab de uma consultoria paulista. **Contribuições metodológicas:** O método da solução de problemas e do aproveitamento de oportunidade permitiu a elaboração de um projeto viável de ser implementado, por tratar com questões da realidade de um negócio, como o caso da *startup* objeto do trabalho. **Relevância/originalidade:** O modelo de negócio proposto é inovador, por ser inédito no país, visto que não há ainda nesse mercado aplicativo conectando músicos, luthiers e fornecedores. **Contribuições para a gestão:** A complexidade na elaboração do trabalho foi elevada, pois requereu o apoio de diversas empresas e profissionais para o desenvolvimento do software em linguagem para dispositivos móveis, que possibilitasse a integração com soluções de pagamentos eletrônicos, cuidados com proteção e privacidade de dados, serviços de hospedagem e sustentação da solução pós implementação, além de serviços de divulgação e administração profissional do negócio.

Palavras-chave: Luthieria, Desenvolvimento de negócio, Startup, Plataforma digital, Aplicativo.

INTRODUCTION

Musical instruments in Brazil have an estimated annual sales volume of 1.5 million units, which, added to those already existing, indicate that there is a potential demand for luthiery services, namely, their regulation, repairs, production, and restoration, to leave them in condition for use by professional and amateur musicians.

This market is characterized by the artisanal work of the luthier whose relations with his clients are established by prior knowledge and mutual trust between them. It is estimated that there are close to 350 professionals scattered throughout Brazil, as there is no organized register that allows easy access to their services.

Therefore, it was noticed that there is a gap between the people who need these services and the luthiers, which can generate a viable enterprise. For the evaluation of the opportunity, surveys were carried out with customers and luthiers, and its viability was evidenced.

The solution presented here is an entrepreneurial initiative to digitally connect the customer, luthier, and the supplier through the creation of a digital platform with an App.

This work is a confirmation of the research by Lima et al. (2015) on the intention of people to become their boss, showing that in Brazil potential entrepreneurs seek to identify market opportunities and make a business plan, with an advantage concerning international practice.

The method adopted in the development of the business was the organizational problem solving and the taking advantage of opportunities, by Marcondes et al. (2017), which adopts the cycle: understanding the opportunity, diagnosis, proposal elaboration, plan of actions, implementation, and evaluation.

UNDERSTANDING THE OPPORTUNITY

The service and the company

The luthiery service is characterized by the construction or maintenance of string instruments, which are popular (classical guitar, viola, electric guitar, bass, chip, banjo, etc) or classics (violin, cello, viola, etc). To get the most out of a string instrument it must be properly tuned, and for that, it is often necessary the intervention of a qualified professional - the luthier - to perform a set of services such as repairs, adjustment, restoration, and even the making of these instruments, as shown in Figure 1.

The service dealt with here is supported by a developing startup that aims to facilitate and make it possible to meet the needs of customers who seek luthiery services, through a digital platform operated through an application.

According to Blank e Dorf (2014, p. XVII), "A startup is a temporary organization in search of a scalable, recurring, profitable business model".

According to Parker et al. (2016, 13), "A platform is a company that enables interactions that create value between producers and external consumers", with the main purpose "to consummate contact between users and facilitate the exchange of goods, services or social currencies, thus creating value for all participants".

The professionals and the market

According to the literature, luthiers are the professionals who construct string instruments by hand, the most common being those of the violin family (viola, cello, and bass) and the guitar (viola, harpsichord, mandolin), as well as ancient acoustic instruments (Roque, 2003). However, two authors from very

different eras, Fètis (1846) and Dourado (2004) consider that the craftsman who builds carnations and woodwind instruments is also a luthier. Dourado (2004) still defends the production of electric guitars and basses as part of the luthiery.

Figure 1

Photos of the restoration, repair, adjustment, and construction services



Note: Authors' personal collection from the photo bank: <https://br.depositphotos.com/>

On the demand side for luthiery services, customers are students and practitioners of string instruments, popular or classical, as amateur or professional musicians. According to the website Cifra Club (2019), the Order of Musicians of Brazil (OMB), classifies professional musicians as those who use the instrument as their main source of work and income, not necessarily having an academic background in music.

For the luthier, there is a difference in behavior between professional and amateur musicians. For example, for a guitar tuning service, in general, the amateur musician does not know the characteristics of the setup, requiring the luthier more time in explaining the service that will be performed to guarantee its benefits. The professional musician, in addition to knowing the procedures in the setup, knows how to evaluate the services performed, facilitating communication with the luthier.

Regardless of whether they are amateurs or professionals, customers face difficulties in finding and accessing the luthiery services offered in the country in a structured, agile and reliable way, such as:

- Make an adjustment or repair, outside the manufacturer's warranty period;
- Find the nearest luthiers. In the case of customers who need to travel with the instrument, it is common for them to arrive at their destination unregulated due to inadequate transport conditions;
- Pay for services electronically, since most luthiers accept only money cash, causing inconvenience to customers.

Add to that the fact that the offer of luthiery services through an application has become a pioneer in the national territory, as until the end of 2019 there was no glimpse of potential competitors for a business of this nature.

Characterization of the initial opportunity

Because of what has been put so far, it has been understood that on the customers' side: professional musicians, amateurs, students, churches, members of orchestras, etc., are interested in acquiring luthiery services, with convenience, ease, and

security, and on the luthier's side, having this audience come to you in a fluid and direct way.

Technology has significantly transformed the way people buy and relate (Löbler et al., 2010). According to Tidd et al. (Tidd et al. (2008)), technology plays a fundamental role in making radically new options available.

Objectives

The main objective with the offer of integration services between luthiers and customers, was to meet their mutual needs, given the gaps and inefficiencies present in their practices (Marcondes et al., 2017).

In this sense, the position of Priem (2007) was taken into account, for whom the creation of value involves innovation that establishes or increases the evaluation of the consumer regarding the benefits of the service. Thus, connecting the supply and demand of luthiery services in a reliable, easy, and instantaneous way can create value for the customer and the luthier, as summarized in Table 1.

Table 1

Value to be created for customers and luthiers

Para o Cliente	Para o Luthier
Better user experience when consuming luthieria services.	Possibility of getting new services and supplying the idle agenda .
Ease/convenience to find the nearest luthiers.	Space for specialized ads .
Ranking of luthiers based on the quality of other customers.	Access to the history of services realized .
Ease of booking and payment for services .	Offering other payment methods to customers.

Note: Elaborated by authors.

OPPORTUNITY DIAGNOSIS

Procedures adopted in the diagnosis

The survey of the number of luthiers in Brazil was carried out on the internet looking for their location and service offer. Only two sources were found, Luthier Guitars (2018) and 4all Music (2018), which point to about 350 professionals spread across the national territory, but correspond only to estimates.

Luthiers, potential users of the platform, are dispersed throughout the country, concentrated in the South and Southeast regions, the vast majority of them acting more as artisans. Figure 2 illustrates the distribution of luthiers across the country.

Then, the size of the country's stringed instruments market was estimated, considering new and used instruments based on data from 2018, from the electronic magazine Música & Mercado (2018), and the two main buying and selling sites: Mercado livre (2018) e Olx (2018).

Market size

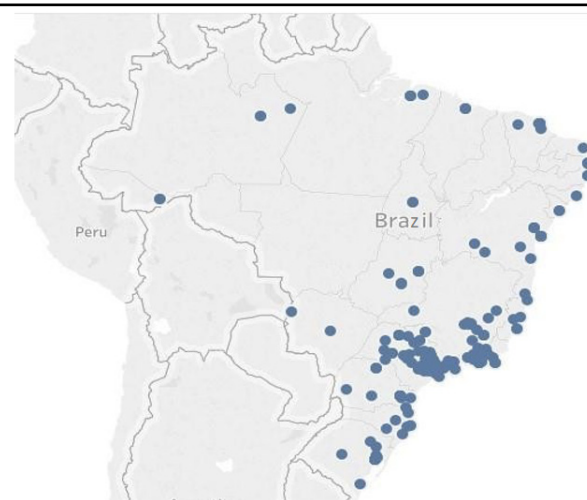
According to the magazine Música & Mercado (2018), the National Association of the Music industry (ANAFIMA) had projected average growth of 5% in sales of musical instruments in 2018, based on the launch of new products and the resumption of the economy.

To deepen the analysis of the potential use of luthiery services, the size of the used instrument market was also considered. For this, the available quantity of string instruments in the two main marketplaces in the country used for the sale of used instruments - Mercado Livre and OLX, were surveyed.

The estimated results of commercialization of new and used instruments, outlined a potential market exceeding 1.2 million string instruments per year, as shown in Table 2 and Figure 3.

Figure 2

Distribution of luthiers in Brazil



Note: Elaborated by the authors based on data from Luthier Guitars (2018) e 4all Music (2018).

Table 2

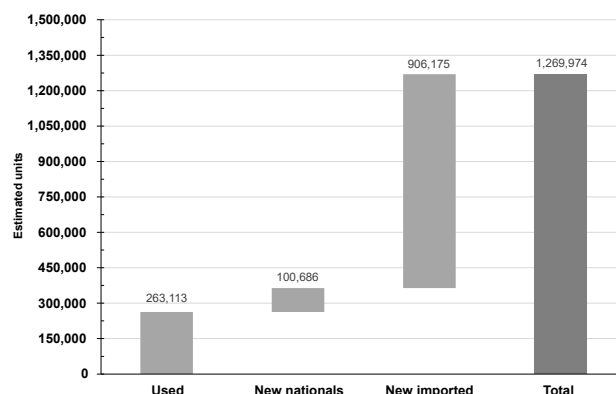
Estimated size of target market for 2019, string instruments

Items	Units
Total string instruments	1,269,974
New imported	906,175
New nationals	100,686
Used (Source, type):	263,113
ML, Classical guitars	108,587
ML, Electric guitars	66,165
ML, Bass	27,184
ML, Others	9,824
ML, Violin	11,969
OLX, Guitar (classical, electric), bass, chip, and violin	39,384

Note: Elaborated by the authors based on data from Mercado Livre (2018) e OLX (2018). ML = Mercado Livre.

Figure 3

Estimated size of target market for 2019, string instruments



Note: Elaborated by the authors based on data from Mercado Livre (2018) e OLX (2018).

Research with customers and luthiers

Two surveys were carried out with the help of Survey Monkey®. The first of them aimed to understand the main difficulties faced by customers and their expectations when searching for luthiery services. The second, on the other hand, was focused on luthiers and sought the difficulties currently faced in the provision of services, raising aspects related to the daily life of the luthier, relationship with suppliers, and their expectations regarding the acquisition of customers.

A third objective was to identify the acceptance of an application to unify the supply and demand of services in digital format, as a tool capable of meeting your needs.

The responses were collected during the months of November and December 2018, having obtained 47 responses from customers and 28 from luthiers, as shown in Figure 4.

Figure 4

Survey Monkey control panel

TITLE	MODIFIED ▼	RESPONSES
Luthieria - Luthiers Created on 11/3/2018	05/29/2019	28
Luthieria - Customers Created on 10/29/2018	12/21/2018	47

Note: Elaborated by the authors from Survey Monkey painel.

Search results

Crossing of Customer and luthiers data

When the musical instruments targeted by luthiery services in Brazil were analyzed, the predominance of the most popular ones (acoustic guitar, guitar, etc.) was noticed in comparison to classical instruments (violin, cello, etc.). Regarding the specialty of luthiery service, it was noted that the vast majority is also focused on popular instruments, but there were a smaller number of luthiers specialized in services for classical instruments, as shown in Figure 5.

When comparing the services sought by customers with those offered by luthiers, it was found that the regulation (better known as setup) is the one with the greatest demand and that it is also offered by most luthiers.

There was a high demand for accessories to carry out improvements and customizations (also known as upgrades or tuning) and for authorized technical assistance services, performed by less than half of the interviewed luthiers.

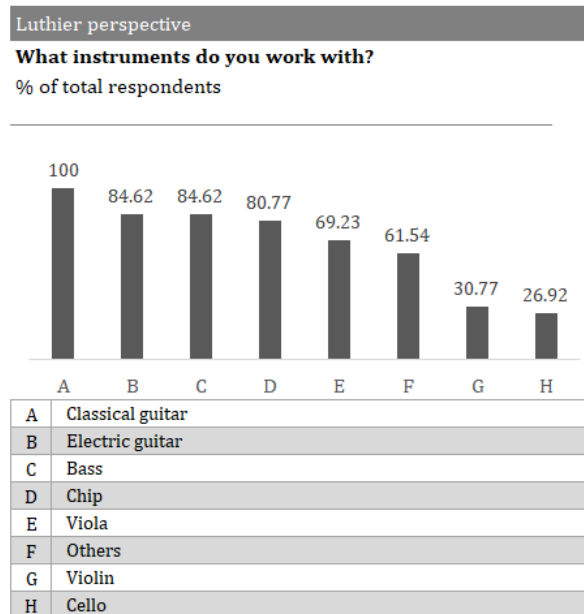
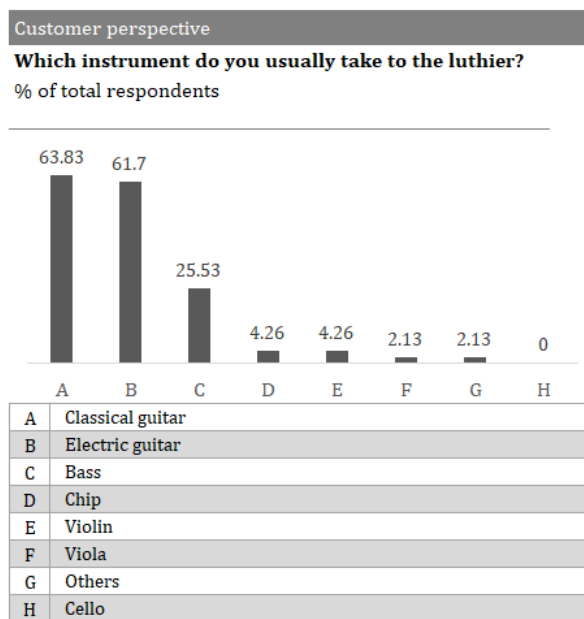
The instrument construction service drew attention in the responses, which despite being offered by more than 80% of the interviewed luthiers, is demanded by only 20% of the customers. Figure 6 details the services offered and demanded.

When comparing the answers related to the main problems faced by customers, it was observed that the biggest one was to find a luthier close to their location (home/work or traveling). On the other hand, such difficulty was not perceived by the luthiers, since the location of the workshop was the aspect that they least mentioned, with just over 7% of the answers, as shown in Figure 7.

The acceptance of the use of an application to connect the offer with the demand for luthiery services was raised in both surveys, with the formulation of two questions aimed at customers and luthiers.

Figure 5

Results of the survey of the target instruments, customer vs luthier



Note: Elaborated by the authors based on Survey Monkey survey.

The results showed that the availability of applications to facilitate the meeting between the demand and the offer of luthiery services was very well accepted, with more than 92% acceptance for customers and 82% among luthiers, as shown in Figure 8 e Figure 9.

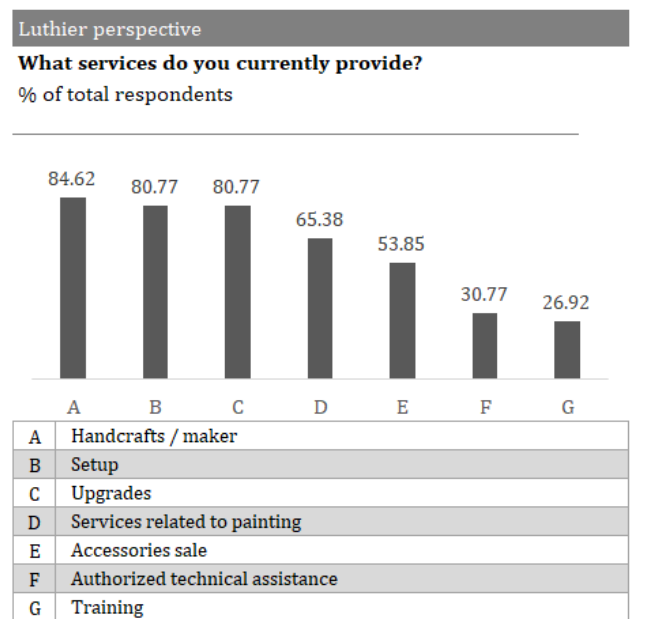
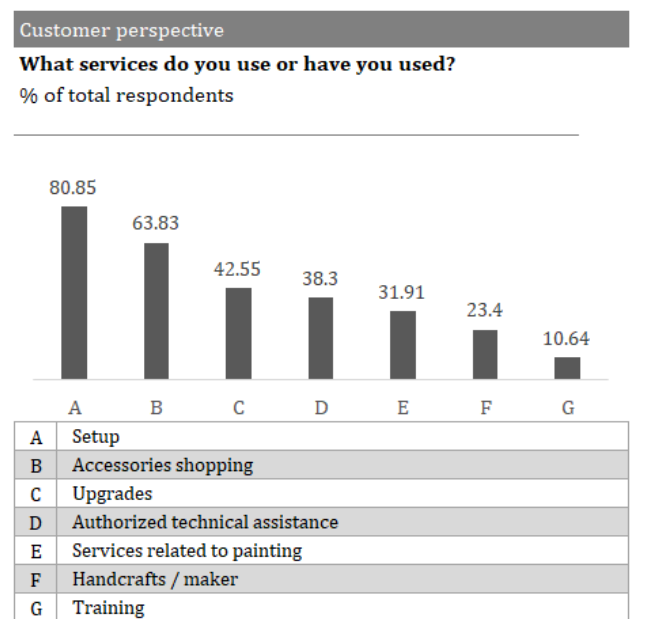
Maintenance of costumers by luthiers

Aspects related to the maintenance of the costumers were raised to identify potential functionalities that should be considered in the application to take advantage of the identified opportunity.

A spreadsheet for categorizing interview reports and other sources of information was used as a tool to summarize the responses and summarize the essence of the content of the luthiers' responses.

Figure 6

Results of the survey of services, customer vs luthier



Note: Elaborated by the authors based on Survey Monkey survey.

The most common form of customer loyalty was that of discounts on the total value of services, followed by the use of social media such as Instagram, Facebook, and WhatsApp to publicize the services. Few luthiers performed more innovative actions such as monitoring services in real-time, using more effective loyalty programs, or consulting on luthiery matters.

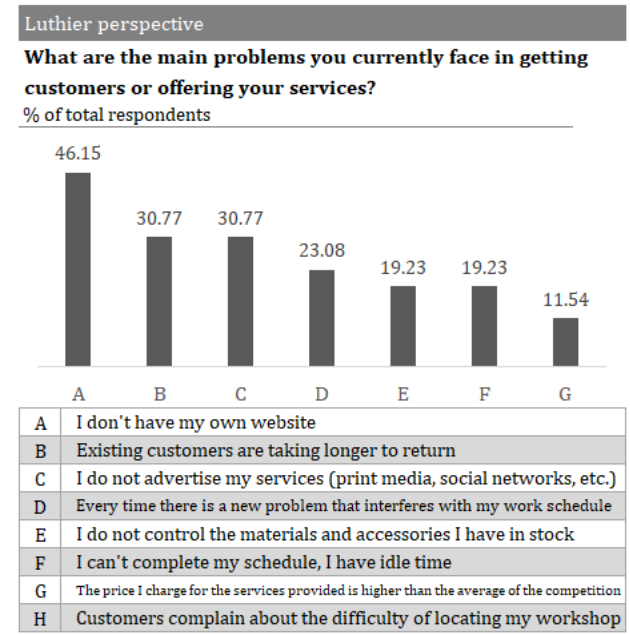
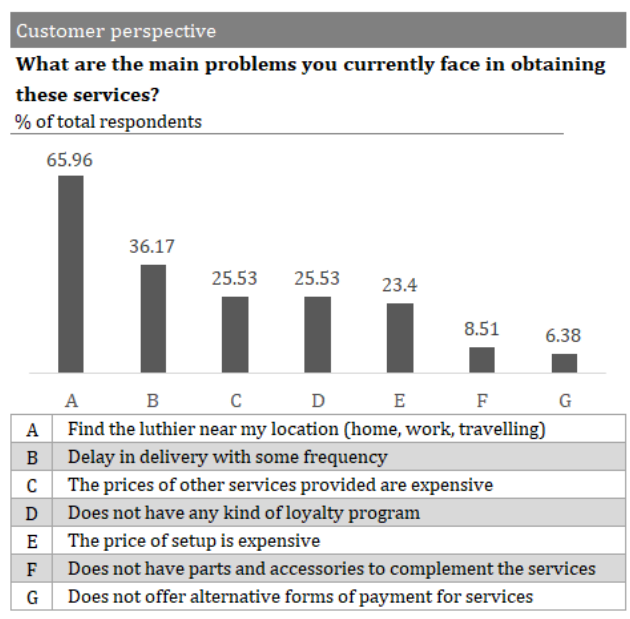
Most luthiers used basic practices (those common to any provision of these services), with emphasis on service quality, good service, and punctuality. In addition, some responses drew attention: such as "faith in the work done", "good conversation" and "return for coffee".

Difficulties encountered by luthiers with suppliers

The main problems faced by luthiers in the relationship with their suppliers were also raised, as they use a wide variety of inputs to perform their service.

Figure 7

Results of the survey of the problems faced, customer vs luthier



Note: Elaborated by the authors based on Survey Monkey survey.

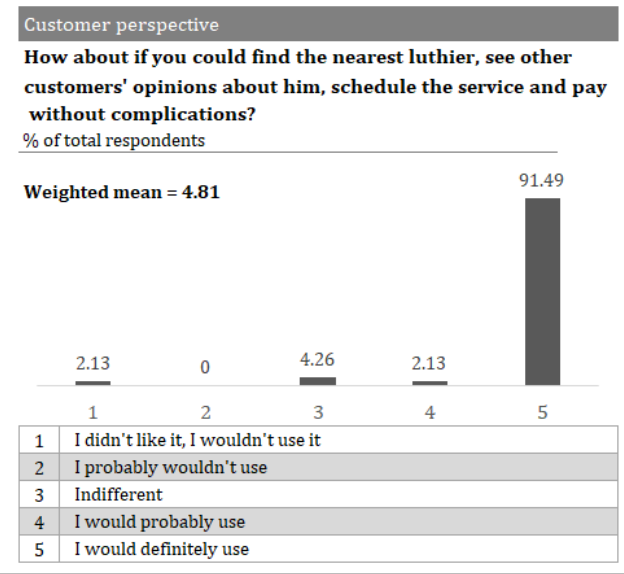
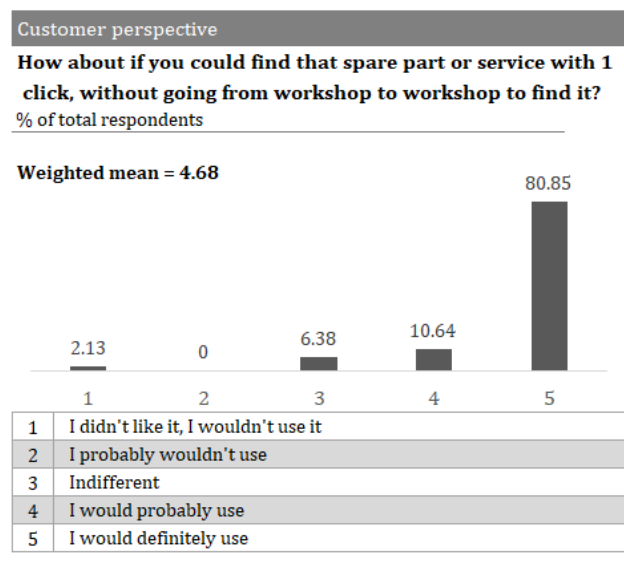
It was found that the luthiers faced several difficulties in the acquisition of parts and accessories (such as bridges, tuners, pickups), wood for construction and restoration of instruments (rosewood, fir, etc.), and specific tools for luthiery. These materials were being distributed by only one national supplier, Music Tools, recognized for lower prices, but with deficiencies in delivery and product quality. These tools are illustrated in Figure 10.

Defined opportunity

With the results of the research, the opportunity initially characterized was complemented with the inclusion of the Supplier - a new actor who will also be able to benefit from the solution.

Figure 8

Results of the survey of acceptance of the use of the App, customer



Note: Elaborated by the authors based on Survey Monkey survey

Figure 10

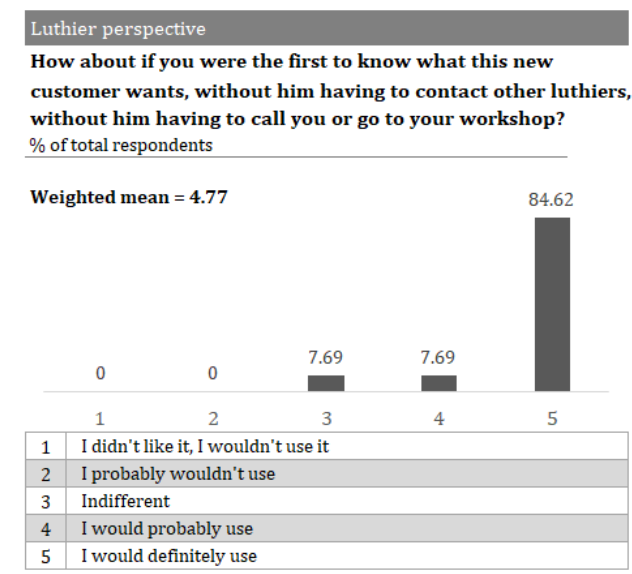
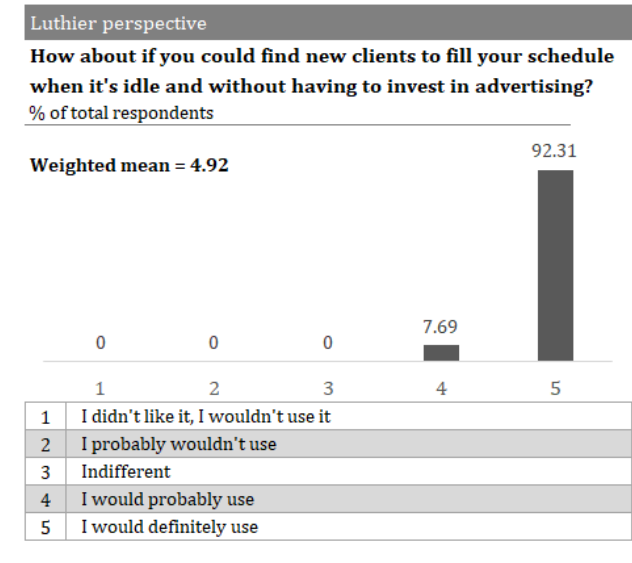
Examples of tools offered by Music Tools



Note: Authors' personal collection. Company website (accessed on 13/Dec./2019).

Figure 9

Results of the survey of acceptance of the use of the App, luthier



Note: Elaborated by the authors based on Survey Monkey survey.

Thus, it came to be considered that customers (professional musicians, amateurs, students, churches, members of orchestras, etc.) demand luthiery services, with convenience, ease, and security, luthiers the need to directly attract this audience, in a continuous flow, its volume increased and the supplier would have facilitated the offer of products used by luthiers, through the application, which was favorably evaluated as a means of making the connection between the interested parties.

A Table 3 summarizes the expected benefits for the three stakeholders.

PROPOSAL TO SEIZE THE OPPORTUNITY

Proposal preparation process

It was carried out in the stages that follow in detail, to make its procedures clear.

Table 3*Offering value to interested parties: customers, luthiers, and suppliers*

Para o Cliente	Para o Luthier	Para o Fornecedor
Melhor experiência do usuário no consumo de serviços de lutheria	Possibilidade de conseguir novos serviços e suprir a agenda ociosa	Espaço para anúncio de madeiras, acessórios, ferramentas
Facilidade/comodidade para encontrar os luthiers mais próximos	Espaço para anúncios especializados	Acesso a uma base nacional de luthiers atualizada
Ranking dos luthiers com base na qualidade de outros clientes	Acesso ao histórico dos serviços realizados	
Facilidade de agendamento e pagamento dos serviços	Oferta de outras formas de pagamento aos clientes	

Note: Elaborated by the authors.

Integrating the needs of the three audiences

The needs raised in the diagnosis with customers, luthiers, and suppliers, were the starting point to identify the crucial aspects to direct the design of the solution, with the following questions: What incentive would create value for the customer? What incentives for the luthier? And what incentives for the supplier?

According to the Nova Escola de Marketing website (2019), the current phase of marketing is more personal with objectives that go beyond selling products or services, to generate meaning and add real value in the lives of consumers, making them feel part of the brand.

According to Kotler et al. (2017), three important changes marked the migration to marketing 4.0: the Google effect, the social networks effect, and the effect of the services, which are summarized below, to take advantage of the opportunity in question:

- a) Google effect: as almost everything that people want, they end up finding it on Google, it is essential to understand what customers are looking for on the internet, to obtain their commitment and regularity of use (Parker et al., 2016). Because of this, the digital luthiery platform will present a website linked to the search engine of Google and other competitors, to make the search results for content prominently available, using isolated or combined keywords, which are:
 - Services: luthiery, setup, instrument adjustment, restoration, repair, painting, etc.
 - Instruments: guitar, acoustic guitar, bass, etc.
 - Accessory and instrument brands: Seymour Duncan, Dimarzio, Floyd Rose, Gotoh, Fender, Gibson, Ibanez, Cort, Takamine, Rozini, Del Vecchio, etc.
 - Tools and supplies: luthiery tools, br tools, stewmac, rosewood, fir, cedar, mahogany, etc.
- b) Social networks effect: insertion in the main networks used by target audiences, such as Facebook, Instagram, among others, will be promoted and, applying the concepts of influence marketing strategy to accelerate the capture of customers for the platform (Nova Escola de Marketing, 2019). The use of social media profiles has the potential to make the platform's fun page a true media channel, allowing the formation and use of digital influencers, such as luthiers and famous musicians with a large presence in the digital world.

- c) Services effect: in the context where smaller companies are creating innovations in more specific markets such as luthiery, other opportunities related to luthiery services will be sought, observing the experiences of Amazon, iTunes, Netflix, Uber, Airbnb, Spotify, iFood, among so many others.

Loyalty strategy for the three audiences

- a) Customer loyalty: as the customer considers the price of luthiery services to be high and especially the regulation currently practiced, this often prevents the instrument from being adjusted with the recommended frequency. Thus, the promotion for use and customer loyalty in the application will be in offering a lower price than the average charged by the market. This isolated measure, however, will not be sufficient for customer loyalty, since there is a great risk of boycotting the solution by the luthiers themselves, as they may harass the customer after the first visit, offering him the same amount paid in-app, since they would no longer pay commission to the app.
- b) Luthier loyalty: the measure envisaged to mitigate the risk mentioned above, should be the luthier's loyalty through the use of the gamification concept in the application to rank the best luthiers and remunerate them according to their degree of loyalty to the application. Luthiers will be ranked based on a score that will reflect this loyalty, considering in their calculation:
 - Number of services: measured through setups and requests for budgets per click carried out within a pre-established period;
 - Quality of services: average grade given by the customer after the service has been performed for a pre-established period;
 - Generated revenue: that which occurs during a pre-established period.
- c) Loyalty of the supplier: advertising spaces must be commercialized both on the website and in the app so that he can offer his products, materials, tools, accessories, or any other product and service of interest to the luthier community. The platform will provide suppliers with access to the results of research and studies on the market for materials, tools and accessories pointed out by luthiers, etc.

Strategy for the development of the platform

For the operation of the digital platform, two alternatives were considered, namely, make or buy. The make decision was adopted for items classified as core, given the internal execution capacity. For items on which internal capacity was not available or was not classified as core, the decision was made by buy.

Solution adopted

Based on what was previously presented, the solution adopted was to meet the needs of the three audiences in an integrated manner, through a platform, with the characteristics defined throughout the business development process, with mutual gains for all of them.

Expected results

Table 4 illustrates the expected results for the different audiences, based on the proposed solution to take advantage of the defined opportunity.

Table 4

Expected results with the seize the opportunity

Defined objectives	Expected results	Beneficiary	Deadline (month)
<ul style="list-style-type: none"> Improvement of the user experience in the consumption of luthiery services Ease/convenience to find the nearest luthiers Ranking of luthiers based on the qualifications of Ease of scheduling and paying for services 	1. Obtain a customer satisfaction index, at least 90%, with the app and the purchase process	customer	6
<ul style="list-style-type: none"> Possibility of obtaining new services and supplying the idle agenda Access to the history of services performed Offering other forms of payment to customers 	2. Conversion of visits by 80% into setup services in luthiery workshops 3. Conversion of visits by 50% into effective purchases at luthiery workshops (budgets per click)	Luthiers	6
<ul style="list-style-type: none"> Espaço para anúncios especializados 	4. Obtain a sales amount greater than 30% of the average practiced before the app	Supplier	6
<ul style="list-style-type: none"> Return on investment 	5. Remunerate investors with an IRR greater than 60% after the 5th year 6. Membership of at least 25 luthiers in the first year; reaching at least 70 luthiers in the 5th year 7. Performing at least 4 setups per day by luthier Investors	Investor	60 12 12

Note: Elaborated by the authors.

Table 5

Resources and capacities for the implementation of the proposal

	Existing	To develop	To acquire
Resources	Tangible	<ul style="list-style-type: none"> Service structure and support to customers, luthiers, and suppliers in case of doubts or problems with the app 	<ul style="list-style-type: none"> Coworking space with necessary infrastructure for operation (internet, printer, jobs, etc.) Cloud hosting service (hosting) Digital marketing services
		Intangible	<ul style="list-style-type: none"> 5 partner luthiers for pilot execution in SP
Capacities	<ul style="list-style-type: none"> Manager with knowledge in luthiery and administration, without full dedication to the project 	<ul style="list-style-type: none"> Support team (error correction and improvements) with knowledge of the language that the App and Site were developed for support 	<ul style="list-style-type: none"> Market professional capable of taking actions to attract customers, luthiers, and suppliers Suppliers with luthier tools and accessories

Note: Elaborated by the authors.

Required resources and capabilities

For the implementation of the strategies presented above, resources and capacities are necessary for their fulfillment (Marcondes et al., 2017). Resources are classified as tangible (those that are easy to identify due to their materiality) and intangible (difficult to assess, considering that it is something more abstract). The capacities are evaluated according to the “deliveries” made, which can be understood as the skills of people to create, acquire, expand and modify the company’s resources, to obtain a competitive advantage (Barney & Hesterly, 2017).

The project is from a startup that does not yet have all the resources and capacities sufficient for the implementation and operation of the platform, as indicated Table 5.

ACTION PLAN

Planned actions

Based on the availability and needs identified in terms of resources and capacities, the action plan was designed to make resources and capacities available to enable the platform, as shown in Table 6.

Table 6

Action plan to take advantage of the opportunity

Action	How to do	Responsible	Deadline (days)
<ul style="list-style-type: none"> Identify partner for the development of the app and website under the vesting modality 	<ul style="list-style-type: none"> Use the network of contacts of SW development companies or incubators and make a selection of the supplier 	Renato	30
<ul style="list-style-type: none"> Identify the best way to support and support the App and website 	<ul style="list-style-type: none"> Compare support estimates made at home or outsourced 	Renato	30
<ul style="list-style-type: none"> Hire company and carry out website and App development 	<ul style="list-style-type: none"> Structure the development in phases so that improvements apply to each new summer released for production 	Partner	60
<ul style="list-style-type: none"> Hire a company to host the cloud solution 	<ul style="list-style-type: none"> Make quotes with TIVIT, UOL Diveo, among others 	Incubator	45
<ul style="list-style-type: none"> Hire a company to make payments intermediation in the App 	<ul style="list-style-type: none"> Make quotes with PayPal, secure page, and Moip 	Incubator	30
<ul style="list-style-type: none"> Hire a company to carry out the actions to publicize the brand, attract customers, luthiers and suppliers 	<ul style="list-style-type: none"> Identificar empresas especializadas em marketing digital Make quotations with 3 bidders 	Renato	45
<ul style="list-style-type: none"> Identify physical space to accommodate company members 	<ul style="list-style-type: none"> Identify physical space and management support to house the startup’s members Check if the ModalGR incubator offers physical space and facilities Perform quotations also with co-workings such as We work 	Renato	60
<ul style="list-style-type: none"> Identify and select the partner luthiers to start the operation 	<ul style="list-style-type: none"> Engage the luthiers who will participate in the first round of launch and tests 	Renato	90
<ul style="list-style-type: none"> Perform structural actions to open the company 	<ul style="list-style-type: none"> Create and register the brand. Hire accounting office 	Renato	45

Note: Elaborated by the authors.



Investment, cost, and return forecast

To assess the economic and financial potential of the startup, the discounted cash flow technique was applied, with a 5-year projection.

The analysis of feasibility indicators for the platform implementation included the indicators: Net Present Value (NPV) and Internal Rate of Return (IRR) and the Investment Recovery Period (Pay-Back). The IRR sought to match the present value of expected cash flows with the present value of project costs, and the payback time calculated the return on investment.

Pre-operational investment needs, sources of financing were analyzed and the cost of capital was calculated from the definition of the capital structure. The statements could not be presented for reasons of business confidentiality, but the premises and projected results of this analysis are presented below.

a) Analysis premises:

The platform will be the operational base of the startup, which, according to Ries (Figure 3, p. 17), "is a human institution designed to create a new product or service under conditions of great uncertainty". Therefore, it is necessary to recognize that it is a high-risk undertaking, making it necessary to substantiate the decision with as much information as possible, clarity on the value proposal, take advantage of the target market, requirements for operation, and the ability of the entrepreneurs to carry it out.

In the business project, the main premise is that there is effective value creation for each of the platform's beneficiaries.

Another premise is regarding the monetization model, that is, that:

- 1) customers will be willing to pay for the setup;
- 2) that luthiers will pay for budgets per click and agree to give up a percentage of revenue to attract more customers, and
- 3) that suppliers will pay for advertising on the platform.

A third premise is implicit, that partnerships with software developers, payment gateways, and other partners should occur as unforeseen.

b) Initial investments:

The development of the website and the application should be done by a specialized professional under a "vesting" contract, a contractual instrument popularized by startups that provide for progressive acquisition of rights over the business.

Other investments are associated with awareness of luthiers and suppliers of tools, accessories, other entities related to music, also being considered the disclosure through press relations, in addition to social networks, search engines, and other digital media.

Pre-operational investments are also planned, such as expenses with documentation, contracts, records, intellectual property, to give impetus to the operation, which should be maintained at a constant level and eventually expanded as the platform grows.

Thus, although it is expected that investments will initially be minimized, resources for investments after the launch of the project are estimated, estimated at R\$ 294 thousand.

c) Projected results:

To prepare the financial projections, the following conditions were preliminarily established:

- 1) 25 luthiers using the app in the 1st year, each serving 4 customers per day;
- 2) Territorial expansion starting at the State of São Paulo, in the 1st year, and increasing by region until reaching the whole country in the 5th year;
- 3) Conservative growth in the number of luthiers over 5 years, reaching a portfolio of 70 luthiers in the 5th year;
- 4) Progressive increase in revenue per commission, on appointments through the platform (R\$ 30), a fee per click on budgets and sale of advertising and services;
- 5) Initial investment considering sources of funding equity and a third party capital, with a weighted average cost of 15.3% a.a;
- 6) Taxation under the startup special regime.

Risk analysis

To assess exposure to the risk of losses with the project, the Monte Carlo Simulation Method was used, which uses a large amount of random sampling to arrive at results close to reality (Ragsdale, 2015).

To apply to Monte Carlo, the software Risk@. The variables with the highest volatility and low level of control chosen for the simulation were the portfolio growth rate, average luthiery service, and minimum attractiveness rate.

Once the simulations were processed with the software Risk@, a graph of the distribution of the IRR and NPV response was generated for analysis, which indicated that there was a 5% probability of occurring losses with the operation of the platform, that is, Negative NPV. Thus, based on the estimates currently foreseen, the result of the financial projection indicates that the project would have the potential to become a viable business.

IMPLEMENTATION

The project will be implemented in stages, starting its operation in the State of São Paulo, where there is the highest concentration of luthiers and demand for luthiery services, as shown in Figure 3. This is because the registration of the first luthiers in the application must be accompanied by visits to obtain feedback and insight to improve the model.

The project will be carried out in partnership with Consultoria ModalGR, which is specialized in the management and development of solutions, based in Santos - SP. The company has about 70 employees, having a lab with the objective of incubating startups that create innovative businesses and with potential for effective financial return, offering an appropriate infrastructure for the development of the startup, as illustrated in Figure 11.

The implementation of the app and the website will occur in partial deliveries, since it will use all the knowledge in the agile development of the ModalGR team, based on the SCRUM framework (Schwaber & Sutherland, 2014).

At the beginning of the implementation, feedback from customers and luthiers involved in the first version will be collected, to adjust the development of the application in the other versions and improve the user experience.

The financial intermediation and hosting companies will be hired during this period since the tests integrated with all payment scenarios offered by the app are also part of the first version.

In parallel with the development of the application, structuring actions for opening the company, creating and registering the brand, and hiring the marketing office will occur simultaneously with the development of the solution so that they are ready at the time of launching the app on the market.

Figure 11

Physical facility of the ModalGR incubator



Note: Authors' personal collection.

EVALUATION

The receptivity of this project, throughout its development, is effective since the consultancy ModalGR has analyzed the economic viability of the solution to incubate the startup in its lab in Santos.

The first evaluation of the results will be made to know the platform's consistency and operability during the first four months of operation of the first version, on an experimental basis, to identify the need for adjustments and improvements, aiming at its productivity.

During this period, the hosting services of the solution, financial intermediation, and the correction of errors (support), necessary for the maintenance of the platform's operation, will also be evaluated.

After the first 12 months, the results obtained will be evaluated in terms of the expected value created for customers, luthiers, and suppliers, and investing shareholders, quantitatively and/or qualitatively.

FINAL CONSIDERATIONS AND CONTRIBUTIONS

The methodology applied in the development of the project allowed a reasoned analysis of the opportunity in practical and objective terms. The complexity found had to do with the digital technology adopted for hosting and financial intermediation among stakeholders.

The gap found in the market, due to the lack of competitors and the possibility of using the application as a lever in the provision of services, culminated in the proposal that could generate new sources of revenue and benefits for users of the Brazilian luthier market.

The project presented a proposal for an innovative solution in the Brazilian market for connecting the interests of the customer, the luthier, and the supplier, in an effective supply chain, with the offer of luthiery services through digital media, with prospects for scalability and profits in the medium deadline.

Conflict of interest statement

The authors declare that there is no conflict of interest.

Authors' statement of individual contributions

Roles	Contributions	
	Sakamoto RA	Marcondes RC
Conceptualization	■	
Methodology		■
Software	■	
Validation	■	■
Formal analysis		■
Investigation	■	
Resources	■	
Data Curation	■	
Writing - Original Draft	■	
Writing - Review e Editing		■
Visualization	■	
Supervision		■
Project administration	■	
Funding acquisition	■	

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