Automation of market evaluation process for online business

THESIS

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ABSTRACT

This bachelor thesis is devoted to the start-up marginality analysis problem. Key market evaluation methods are observed. In order to increase speed and quality of market analysis relevant software solution is presented.

Keywords: Startup, business evaluation, automation

ČESTNÉ PROHLÁŠENÍ

Já, níže podepsaný/á student/ka, tímto čestně prohlašuji, že text mnou odevzdané závěrečné práce v písemné podobě je totožný s textem závěrečné práce vloženým v databázi DIPL2.

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Thanks

I hereby state that this submitted thesis is my original author work and that I elaborated it myself. I properly cite all references and other sources that I used to work up the thesis. Those references and other sources are given in the list of references.

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Contents

Relevance of the topic

In the context of the development of an innovative economy and the use of information technology, the economic issues of a startup enterprise are of particular importance. This is due, in particular, to the significant cost of informatization tools, and without the use of modern information technologies, it is impossible to implement many functions of the enterprise.

Currently, at the current stage of economic development, the online services sector has begun to occupy a large share of the entire market. In this regard, the question arises about the development of online business, including issues of economic profitability and methods of their determination.

A startup becomes an innovative unit in conditions of extreme unpredictability of the market, where conditions are required to create a competitive potential of the organization [1]. The foundations of reporting for innovative projects are being laid, even in situations of extreme uncertainty, where it is difficult or impossible to achieve planning and forecasting, emphasizes entrepreneur and well-known startup consultant Eric Ries in his work [1].

A startup is an innovative institution whose goal is to create a new product or service in conditions of extreme uncertainty [2].

The potential of a startup must be assessed both at the early stages of development and at the stages of a minimum viable product and subsequent stages of project readiness.

Automation of both the service itself and related services is closely related to the concept of online business, which is characterized by many routine tasks - billing, calculating indicators, etc. To implement automation, various classes of applications are being implemented from office, web versions to mobile solutions.

The market is determined by the sales potential, i.e. the possibility of monetization of all emerging new ideas. The size of the market is determined by the annual income that the company will receive in case of sale of the product/service to all potential customers in the selected segment.

Evaluating the market and profitability of a startup is one of the important stages in the development of both a startup and any business. This is the collection and analysis of data for a solution that a future startup implements based on a situation that it develops in a specific

market for a given period of time. In the future, this situation will have an impact on the company's activities and its results.

In this regard, the task arises of assessing the market and profitability of a startup in order to optimize costs, both at the earliest stages of development and subsequent stages. From the early stage of hypothesis testing, the creation of a minimum viable product and up to the first prototype.

Goals and objectives of the work

The purpose of the dissertation is to develop and implement an application that will provide aspiring entrepreneurs and startups with information that facilitates market analysis and business planning.

To achieve the goal of the work, the following tasks must be solved:

1. Consider the current state and implement the task statement;

2. To analyze the methods of evaluating a startup and the market;

3. Review existing solutions to help startups;

4. Explore application development tools;

5. Define the requirements and design the application;

6. Implement and test the application.

1. STARTUP REALIZATION PROBLEM

For a newly created startup, it is necessary to implement executive functions, i.e. the introduction and testing of an experiment in the market. Even for a startup that has only a dozen consumers, it is necessary to raise the question of how much energy should be invested in their service, and how much in attracting new ones [1]. The limited resources available to most startups require more, not less, financial discipline.

From the idea to getting the first investment in a startup, you need to go through several stages. One of them is an adequate assessment of a startup. Usually there are no methods that give an exact figure [2]. But an assessment will be required, both for the investor and for the developer himself. To do this, you will need to analyze both the current state and possible methods applicable to evaluating a startup.

1.1. Current state analysis

It is known that any startup project goes through certain stages of development to its maturity [2,5]. There are quite a lot of these division schemes, the following stages can be noted:

- pre-seed is the very initial stage from the conception of an idea to testing hypotheses with the creation and testing of a minimally viable product on the first customers, that is, demand has been verified, there is a minimally viable product, there is a team You have reliable product information (MVP). Some authors talk about this stage as gaining knowledge about the market and making decisions, the client 's problems. "The trick of a minimally functional product is that while you decide what is "minimally", consumers decide how much it is "workable," writes David Bland, a consultant and one of the first proponents of a lean startup [1].

- seed — there is already the first prototype of the product, a test version of the business model is viable and there is a predictable economy, channels have been tested.

The pressed stage is also called the "seed" stage of preparation for growth.

- series A (B, C) is the stage of active growth. The business model is stable , scalable and predictable. Drivers and metrics of increased growth have been found. The first revenues appear, expenses increase significantly, the company passes the break-even point and enters the market.

The following stages of active startup development C, D, IPO stage (issuing shares) are not considered in this paper.

The main difference between the seed stage and preceed is that at least one reliable and effective product sales channel has appeared. Developers can calculate the revenue and costs of the project. Next, they are already talking about the financial model of a startup, based on which an assessment is made to attract investments.

The process of step-by-step testing and systematic improvement of various products and industries is very important for a new startup [2].

The success of a startup is characterized not by a single and correct development strategy, but by a constant search for new things, using various schemes as a concept of continuous innovation, Ash Maurya "Running" writes in his book "Lean"[5]. Therefore, the process of business modeling, prioritization and testing takes place constantly based on feedback, as follows from the research of this author [5].
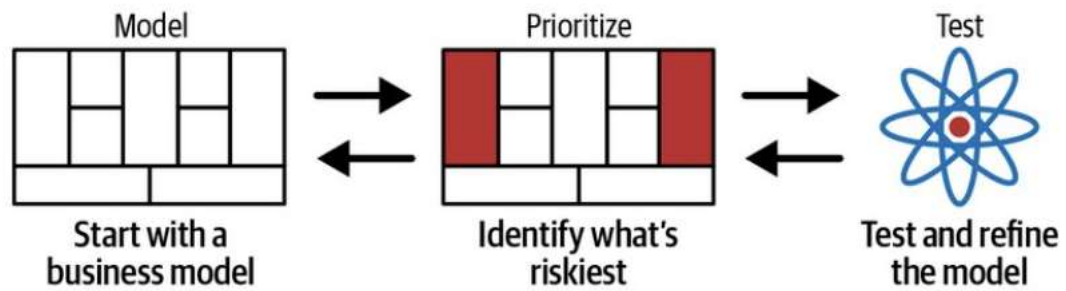
Figure 1. Cycle Model-Priority-Test

The feedback received from testing the model leads us to finalize

the startup's business plan, considering the risks, depending on the priorities set. Thus, the "Model-Priority-Test" cycle allows the team to systematically search for a reproducible and scalable business model [5].

In other words, it is a search and clarification of the problems that a startup solves, and their modification if necessary.

On the other hand, in parallel with the search for the most adequate business model, there is a search for startup financing, says Eric Ries in his work [1]. It occurs at different stages and in different volumes, depending on the adequately presented business model to the investor in the market where the startup is going to enter. To do this, various methods of evaluating a startup and the market are used.

The paper considers financing estimates when the startup's problems are outlined, the market is measured and confirmed, business models are built, and the startup is ready to scale. It is at this stage that the investor is ready to seriously consider investments and valuations of this business model, which become more relevant than ever.

1.2. Startup Evaluation Methods

After the first stages of work on a startup and confirmation of the existence of the problem (the economic task for which the startup was created) and that the proposed solution corresponds to it, it is necessary to proceed to assessing the value of the company using certain methods [1]. In other words, the evaluation of investments at an early stage or before the investment evaluation of a startup. There are a number of methods for this purpose, see Table 1 [6].

Valuation Method	Principle
1 Berkus	Valuation based on the assessement of 5 key success factors
2 Risk Factor Summation	Valuation based on a base value adjusted for 12 standard risk factors
3 Scorecard	Valuation based on a weighted average value adjusted for a similar company
4 Comparable Transactions	Valuation based on a rule of three with a KPI from a similar company
5 Book Value	Valuation based on the tangible assets of the company
6 Liquidation Value	Valuation based on the scrap value of the tangible assets
7 Discounted Cash Flow	Valuation based on the sum of all future cash flows generated
8 First Chicago	Valuation based on the weighted average of 3 valuation scenarios
9 Venture Capital	Valuation based on the ROI exepected by the investor

Table 1. Methods of pre-money valuation

At the seed stage, the goal is to move to the first versions of the product and business model. Therefore, the costs associated with the release of the product should be small. With suboptimal financing, the potential of a startup can collapse for both the investor and the entrepreneur [2].

Of the entire set of methods in the work, it is proposed to focus on the first three methods, as the most accessible, basic and not requiring a large amount of information, and the last method - venture capital.

1.2.1. Berkus method

The Berkus method is a method of estimating the cost of critical elements of a startup without the need to analyze projected financial indicators [7]. The figures reflect only the extent to which an investor believes in the company's potential to reach over $20 million in revenue by the fifth year of business. This gives a rough idea of how much our solution box is worth (the so-called preliminary estimate) and what needs to be improved. These figures are the maximum post-deployment cost of up to $2.5 million to generate revenue of $2 million, but also allows the investor to put much lower values in each test, resulting in estimates below this amount [7].

The evaluation is calculated according to the following methodology. An amount is added to each of the five evaluation criteria, if the criterion exists: "basic idea", "prototype", "quality

management team", "strategic market entry relationships" and "start of sales, implementation" see Table 2 [7]. All values are considered as having the potential to implement a startup. The total amount will show up to the investment value of the startup.

If Exists:	Add to Company Value up to:
Sound Idea *(basic value)*	$500 million
Prototype *(reducing technology risk)*	$500 million
Quality Management Team*(reducing execution risk)*	$500 million
Strategic relationships*(reducing market risk)*	$500 million
Product Rollout or Sales*(reducing production risk)*	$500 million
Total a pre-revenue valuation	Up to $2,5 million

Table 2. Estimation by Berkus method [7]

1.2.2. Risk Factor Summation Method

The risk factor summation (RFS) method is a method for summing up risk factors. It is a continuation of the Berkus method. After determining the value of the critical elements of the startup, the specified value for 12 risk factors is adjusted by summing the amount of risk with a sign "-" if the risk increases and "+" if it leads to a decrease in risk. The total is considered a multiple of $250,000, as above $500,000 for very low risk and below 500,000 for very high risk, see Table 3 [6]. The initial value of the estimate is taken from the previous Berkus method (Initial Value) or calculated according to additional criteria.

The Risk Factor Summation Method

INITIAL VALUE			$1,500,000
1. MANAGEMENT RISK	Very low	+$500,000	$2,000,000
2. STAGE OF THE BUSINESS	Normal		
3. LEGISLATION/POLITICAL RISK	Normal		
4. MANUFACTURING RISK	Normal		
5. SALES AND MANUFACTURING RISK	Normal		
6. FUNDING/CAPITAL RAISING RISK	Normal		
7. COMPETITION RISK	Very high	-$500,000	$1,500,000
8. TECHNOLOGY RISK	Low	+$250,000	$1,750,000
9. LITIGATION RISK	Very low	+$500,000	$2,250,000
10. INTERNATIONAL RISK	Normal		
11. REPUTATION RISK	Very low	+$500,000	$2,750,000
12. POTENTIAL LUCRATIVE EXIT	Normal		
BOX VALUATION			$2,750,000

Table 3. Estimated risk factor summation method [6]

1.2.3. Scorecard Valuation Method

Scorecard Valuation Method характеризуется более развернутым подходом и является одной из наиболее предпочтительных методологий, используемых бизнес-ангелами. Этот метод сравнивает стартап (привлечение ангельских инвестиций) с другими финансируемыми стартапами [6].

The starting point, as in the RFS method, is the basic assessment of a startup based on certain factors of a given region, market and stages, focusing on the average, and then the resulting value is adjusted for a certain set of criteria. These criteria are themselves weighted based on their impact on the overall success of the project by the corresponding indicator (range) - its weighted contribution. The total result should be equal to one (100%) (see Table 4, column "range") [6]. The value in the "Target company" column is taken as the level of contribution of this criterion to the project relative to 100%. To get the "Factor" value, multiply the influence of the "range" column in fractions of one by the contribution level in the "Target company" column.

Finally, the initial cost of the project is multiplied by the resulting total coefficient "Sum". We get the value of the startup's valuation relative to the average value.

COMPARISON FACTOR	RANGE	TARGET COMPANY	FACTOR
Strength of Entrepreneur and Team	30% max	125%	0.3750
Size of the Opportunity	25% max	150%	0.3750
Product/Technology	15% max	100%	0.1500
Competitive Environment	10% max	75%	0.0750
Marketing/Sales/Partnerships	10% max	80%	0.0800
Need for Additional Investment	5% max	100%	0.0500
Other factors (great early customer feedback)	5% max	100%	0.0500
Sum			1.0750

Table 4. Estimated Scorecard Valuation Method [6]

The Scorecard Valuation method is subjective, but given the risk that angel investors take on, this approach makes sense for investing in startups at an early stage.

1.2.4. Venture Capital Method

The venture capital method is based on determining the preliminary financial assessment of a startup, both before income is received and for companies already receiving income.

For an investor, such an indicator as return on investment (ROI) is important. If we can assume the cost of a startup after a certain period of time, as a terminal cost (final cost), then we can say ROI is the expected profitability of a startup [8].

This is one of the ways to get a preliminary assessment of a startup before receiving income. In this method of evaluating a startup, the final cost is estimated first. The terminal value is the expected value of a startup in the harvest year, when the investor plans to enter the market. From this point on, it is possible to proceed to the ROI assessment and pre-investment assessment [8] according to the formula :

Return on Investment (ROI) = Terminal (final) cost ÷ Post-investment valuation (Valuation after receiving money) (1)

In practice, investors often set the expected ROI profitability in order to get a startup valuation after receiving the money and then a pre-investment valuation (initial) through an assessment of the final cost of a startup. Then in the case of one investment round, without subsequent investments, formula (1) follows:

Post-investment assessment = The final cost is The expected ROI. (2)

Finally, the formula is used for the pre-investment assessment:

Pre-investment assessment = Post-investment assessment – Investment. (3)

If several rounds of investments are assumed and investments are diluted by 70% and 30%, with a final cost of $100M and ROI = 20x and investments of $1M, then the scheme may look like taking into account the adjustment of the pre-investment estimate by the appropriate percentage, see Fig. 3 [6].
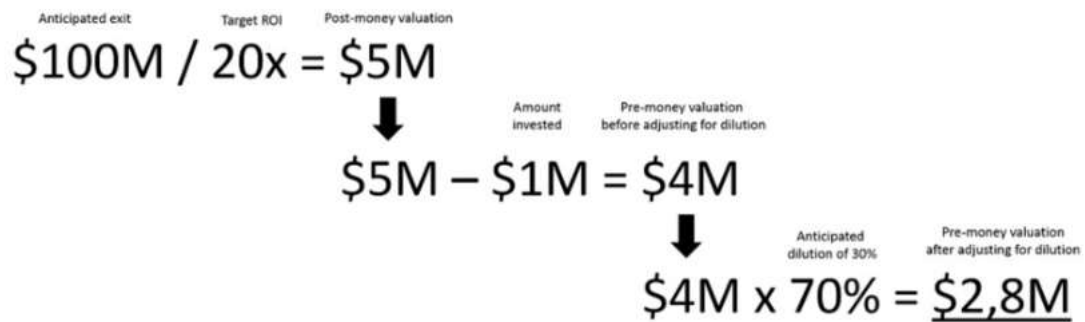

Figure 3. Venture Capital Method

To summarize, we note that estimates are nothing more than a formalized representation, a market model of the project. Estimates do not show the true value of the company. Estimates demonstrate how poorly the market is ready to invest in a startup and how poorly the team/developers are ready to accept it.

1.3.   Market Evaluation Methods

To analyze online-business market the clear market-size structure is necessary. There are many frameworks for this purpose, but most of them focus on market size and structure in statics. Methodology based on calculation of Total Addressable Market (TAM), Serviceable Addressable Market (SAM) and Serviceable Obtainable Market (SOM) helps company to assess the whole market, formulate long-term and short-term goals.

	Start of business	Short-term goals	Long-term goals
SOM	+		
SAM		+	
TAM			+

Table 5. Application of SOM, SAM, TAM [2]

These metrics based on calculation of annual value per customer (ACV) and multiplication it on relevant market size.

This methodology gives an opportunity to estimate market of the certain product on different stages of its development – at the early beginning, in short-term prospective and after its successful scaling. This is useful for business strategy and growth planning.

However, it gives no certain instructions how to estimate ACV for TAM, SAM, SOM, market share for SAM and SOM, and how to connect them with commonly used account and investment metrics such as revenue, EBITDA, net profit, etc. Also break down of market size metrics is necessary.

Since one of the key targets of these theses is to create software to calculate convenient market size automatically using open data, our attention is focused on the optimal choice of parameters available from these datasets.

To formulate the appropriate for software online business valuation methodology we need:
1) Define key product economy's parameters
2) Define key market size parameters
3) Connect market size parameters with appropriate open-data statistics
4) Connect market size and business revenue parameters
5) Calculate NPV based on net income figures
6) Calculate free cash flow of business at 5-year prospective
7) Estimate online business value

Definition of key parameters

Product economy metrics

Key metrics of product economy is average revenue per user (ARPU). Using ARPU we can both estimate market size by multiplication it on relevant number of users and define effectiveness of product by subtracting costs.

ARPU

ARPU for goods market

ARPU for good is simply certain product or average product price.

Prices can be parsed from marketplaces and aggregated. The more appropriate marketplaces are in the sample – the more reliable sampling is.

Consider sneakers market as an example. We assume, that a company from Czech Republic wants to enter the local market in short term and become a part of European footwear market in midterm prospective.

To get ARPU on annual basis we need first to parse price data from the top marketplaces in EU and in Czech Republic. Then we can either get average price of all sneakers or divide them by several segments and figure out average price for each of them.
Finally, we assume about the duration of one pair of sneakers. For example, each pair of sneakers lasts for 3 years. It means that on yearly basis one customers spends one third of sneakers' price.

For TAM ARPU is the price for EU market. For SAM and SOM ARPU is the price for Czech Republic sneakers' market.

ARPU for service

ARPU for service is the price for this service or price of the periodical subscription.

Customer acquisition cost

We assume that customers of online business are attracted also mostly via online channels.

Customer acquisition cost (CAC) shows the costs to attract one customer that buys product or service.

CAC = Total cost of attraction/Number of attracted customers/(1 – churn rate).

CAC can be taken from marketing and e-advertisement platforms as a price of one lead divided by the conversion ratio for certain category (e.g. sneakers).

Market size parameters
Quantitative market size parameters are based on population of a region, country or city/town which bounds market geographically.

Population data is usually open-sourced, often reviewed and provided by sound sources. It can be easily parsed and renewed on non-stop basis.

The population parameter can be adjusted and clarified by taking the share of target stratum from the population. For instance, share of youth in the population of target region.

For TAM metric in our example population is the population of EU or the target stratum share in population multiplied by population.

For SAM metric in our example population is the population of Czech Republic or the target stratum share in population multiplied by population.

For SOM metric in our example population is the population of town, which is first target of the sneakers' online-shop, or the target stratum share in population multiplied by population.

Calculation market size in terms of money

After calculation of ARPU and market size in terms of physical value we are ready to figure out market size in terms of monetary value.

To get TAM market value in our example we multiply ARPU by the population of the EU.

To get SAM market value in our example we multiply ARPU by the population of the Czech Republic.

To get SOM market value in our example we multiply ARPU by the population of the target town, which is the start location of the online sneakers shop.

Market size (i) = ARPU (i) x Population (i), where (i) is either total market (TAM), serviceable market (SAM) or obtainable market (SOM).

Calculation of the online business value

Started with market size then we approach costs' calculation.

We formulate costs on per-customer basis. First, we consider CAC. Then we add other costs (starting costs, fixed costs, other variable costs those we do not count in CAC) adjusted to per-customer basis.

	How to adjust	How to use in CF calculation
CAC	Take as it is	Use on per-customer basis
Starting costs	Divide by number of customers in first year	Use on per-customer basis, plug in CF only in first year
Fixed costs	Divide by number of customers in 5-year prospective	Use on per-customer basis
Other variable costs		Use on per-customer basis

Table 6. Costs' calculation guidance. Designed by author.

Total costs per customer (TCPC) = CAC + Starting costs/(N of customers per first year) + Fixed costs/(N of customers in 5 years) + other variable costs on per-customer basis.

Net income per year = (ARPU (i) – TCPC(i)) x Population (i) x Product market share, where Product market share is share of the product in target market at that period.

Product market share in the moment of the launch can be stated based on results of advertisement campaign and on pre-orders amounts. Or can be stated by the expert assumption.

Product market share in next periods can be figure out as (starting market share) x (growth rate of the period) x (1 – churn rate of the period).

Churn rate = (churned buyers or subscribers)/(beginning buyers or subscribers), could be stated by expert's opinion.

Growth rate is the geometrical average rate calculated root power 5 of ratio of revenue in year 5 and revenue in the moment of start.

Cash flow = sum of net income per year for forecast period.

Forecast period is period when business grows either from SOM to SAM or from SOM to significant share in TAM. We assume that online business growth period is 5 years.
For quick calculation of profitability, we can calculate net income per year which is (ARPU – TCPC).

Note that we should use ARPU and TCPC for the appropriate market. For example, if we calculate profitability at the beginning point, we should take ARPU and TCPC for SOM, etc.

Let's consider numerical example for online sneakers shop, which first target area is Ostrava (SOM), Czech Republic. Next target is Czech Republic sneakers market (SAM). The final point is EU market (TAM).

Shop starts with 100 customers per month or 1200 customers per year, revenue of 200 EUR per pair of sneakers, TCPC without starting costs equals to 90 EUR, starting costs of 50 000 EUR, churn rate of 10% and final target of 10% of SOM sneakers market. 1200 customers per year is a SOM market. Since sneakers market is very competitive, we assume that shop will operate for 5 years and then will be closed. Risk-adjusted WACC is 20%.

SAM market is Ostrava agglomeration. Its population is 1,2 m. We assume, that 10% of Ostrava residents buy sneakers each 3 years, so SOM has 40 000 customers annually. 10% of it is 4000 customers per year. So, the annual growth in first 5 years is 27%.

Starting number of customers (SOM)	people	1200
Number of customers at the end of year 5 (SAM)	people	4000
CAGR (cumulative growth rate) in first 5 years		27%
Churn rate		10%
ARPU	EUR	200
TCPC except starting costs	EUR	90
Starting costs	EUR	15000
Adjusted TCPC	EUR	102,5
Discount factor (WACC)		20%

Table 7. Inputs for numerical example

Period		1	2	3	4	5
Revenue	EUR	298 808	372 026	463 185	576 681	717 987
growth rate	%	25%	25%	25%	25%	25%
TCPC	EUR	137 404	174 814	222 408	282 961	360 000
TCPC growth rate	%	27%	27%	27%	27%	27%
Net profit	EUR	161 404	197 213	240 777	293 720	357 987
Discount factor		91%	76%	63%	53%	44%
DCF	EUR	147 341	150 025	152 638	155 167	157 598
Sum of DCF		**762 769**				

Table 8. Results of calculation.

The calculations shew that the value of online business is EUR 0,8 m.

Next step is to perform the scheme for software product which can help investors to get preliminary market size and value of the business.

Inputs section:

In inputs section we provide figures that should be filled by user or parsed from the open source.

Metric	Source	Comment
Name of the product	Filled by user	
Product group	Chosen by user from the list	Software should have a list of relevant groups of goods and adjustable list of goods in each group. E.g. group of goods – footware, product name – sneakers.
Starting number of customers	Filled by user	
		Software should give an option for user – either user fills the target number or chooses the name of town, city or country as a target SAM market and share of it
Option 1		
Target number of customers	Filled by user	
Option 2		
Name of town, city or country	Chosen by user from the list	Software should have list of towns, cities and countries or could parse it immediately from the Internet
Population	Parsed by software	Population of the chosen town, city or country
Share of the customers from the population	Filled by user	
Share of market, which user wants to have	Filled by user	No more than 100%
Churn rate	Filled by user	
ARPU		
ARPU filled by user	Filled by user	
ARPU found by software	Parsed and calculate by software	Software should find ARPU by parsing marketplaces and online shop price of relevant product. First software

		prepare sample of prices. Then it takes average price. User should be able to click on this figure, that software calculate. When user click on it, this figure should be automatically filled into cell "ARPU filled by user"
TCPC	Filled by user	
Discount rate	Chosen by user from the list	List should have figures from 5% to 20%

Table 9. Inputs for software section

Calculations section

In calculations section we provide all processes, that should software perform.

Metric	Calculation formula	Comment
CAGR	=(Target number of users/Initital number of users)^(1/5) - 1	
Market size	= ARPU x Target number of customers (for option 1) or = ARPU x Population x Share of the customers from the population x Share of market, which user wants to have (for option 2)	
Number of customers per each year	= Previous year number of customers x (1 + CAGR) x (1 – Churn rate)	For the first year: Initial number of customers x (1 + CAGR) x (1 – Churn rate)
Revenue growth rate	= Growth rate x (1 – Churn rate)	
Revenue per each year	= Initial number of customers x ARPU x (1- Revenue growth rate)	
TCPC per year	= Initial number of customers x TCPC x CAGR	
Net profit per year	Revenue per each year – TCPC per each year	
Discount factor per each year	= 1 / ((1+discount rate)^i)	i = from 1 to 5, i means number of the year
DCF per each year	= Net profit per each year x discount factor per each year	

Company value	= Sum of DCF per each year for all years	

Table 10. Calculations section

Dashboard section

In dashboard section we determine figures that should be demonstrated for user as a result of calculations.

Metric	Where it should be taken from	
Market size	Result of Market size calculation in section Calculations. In EUR	
Number of customers	Added to interactive graph with Revenue per each year and Net profit per each year. Result of Number of customers per each year in section Calculations.	
Revenue per each year	Interactive graph with figures in EUR. Figures should be taken from the Revenue per each year in Calculation sections.	
Net profit per each year	Interactive graph with figures in EUR. Figures should be taken from the Net profit per each year in Calculation sections.	
Company value	Result of Company value from Calculations section.	
Number of customers in year 5	Separate table below or to the right of the interactive graph	
Net profit in year 5	Row in separate table, where the number of customers in year 5 is.	

Table 11. Dashboard section

1.4. Up-to-date solutions

In the market for the promotion and automation of online services dedicated to startups, there are WEB sites, mobile applications, and solutions for automating the calculation of startup profitability using office desktop applications such as Excel, etc.
Many applications are dedicated to motivational and news topics, gamification of the company or in the form of a game simulator.

1.4.1.   Startup tracker

Starup tracker provides information about startups from MVP to IPO. It helps investors to find appropriate startup and waiting for appropriate phase to enter.
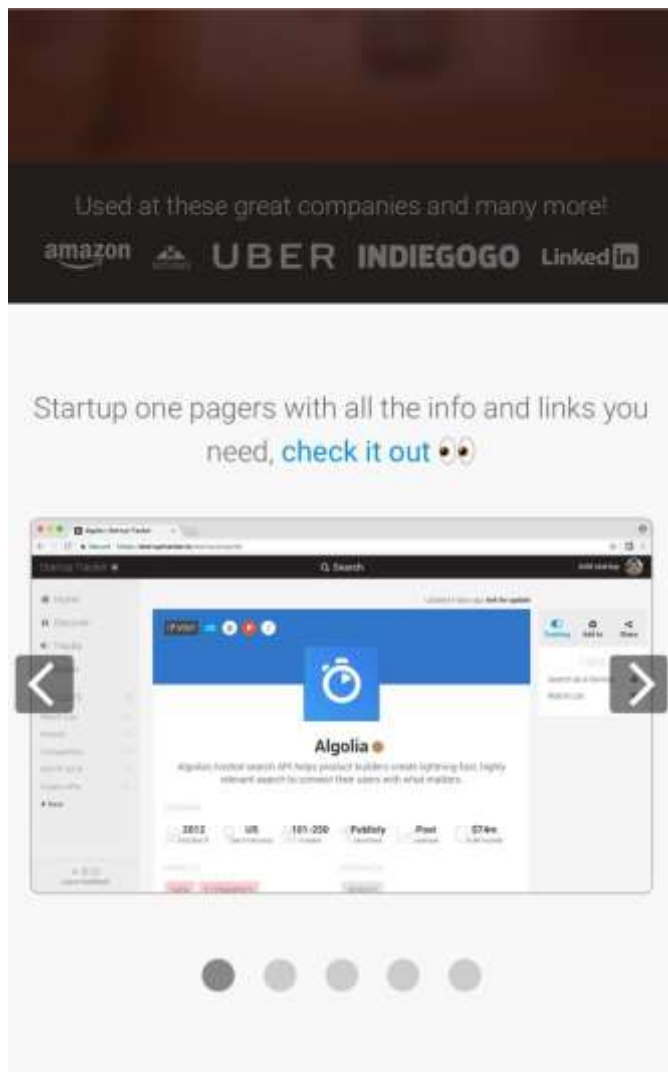

Figure 5. Startup tracker [9]

1.4.2. Startup Calculator

Startup calculator is a web service helps investors and project owners to calculate project's profit based on its revenue per user and number of users. Also it takes into account various types of costs, including initial costs.

Startup Calculator gives an opportunity to analyze project based on subscription or e-commerce business model on weekly, monthly and annual basis. As a currency it uses EUR and USD.

For subscription business model this web service uses launching users, price per period (e.g. per year), user growth during the period, user churn rate, variable costs per user, fixed costs per user and staring costs as inputs.

For e-commerce business model Startup Calculator as inputs uses launching customers, average revenue per user (ARPU), customer growth, customer churn, average costs per customer, fixed costs per customer and starting costs.

Using these inputs web service calculates profit, customer lifetime value and average retention. Startup calculator tells user, in which period project becomes profitable, how much it earns in final period, how many customers will be at the end of forecasting period, how much money is needed initially to launch the project.

Also, this service automatically plots the graph with "Profit" and "Users" lines on it. This simplifies the perception of financial information about the project.

User can share the results of calculation in LinkedIn, X (Twitter) and Whatsapp. And also, he or she can export the calculation into Google Sheet.

This is tool to estimate the project's efficiency. However, it does not give the information about market of the project and has no option to use investor's own market hypothesis to get advanced calculation.

This is the reason to use a Startup calculator as a basis to design author's own app, which helps to detect appropriate counts both market size and project value.
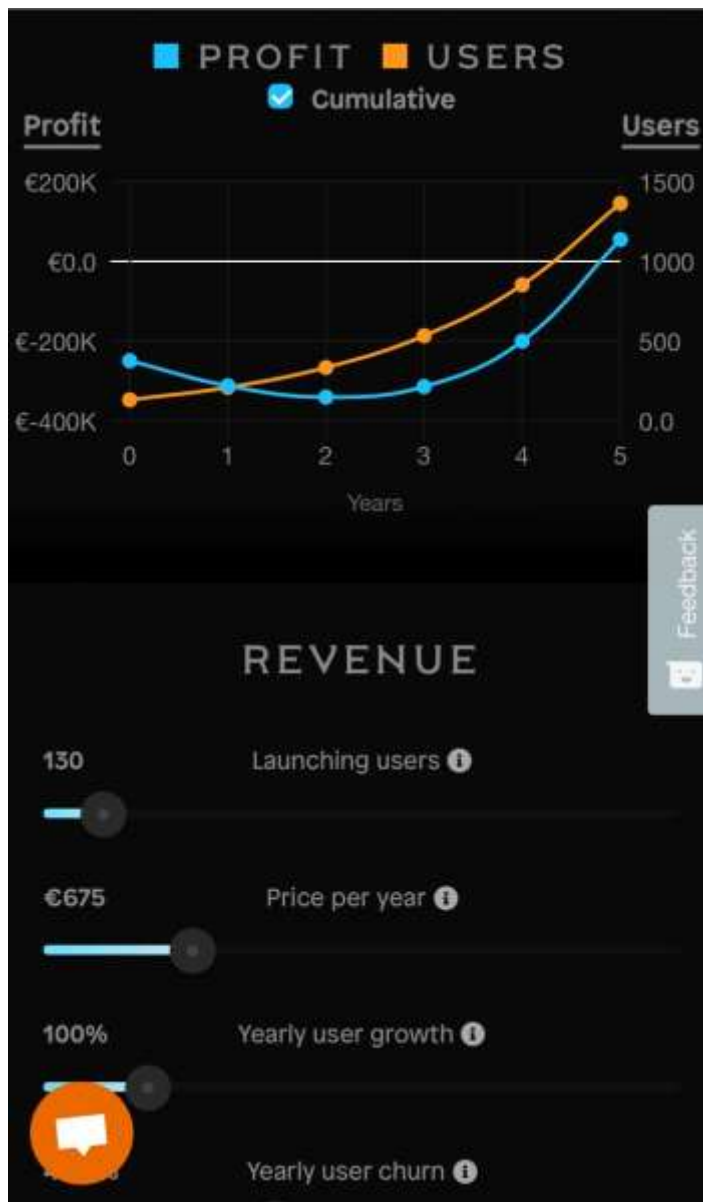
Figure 6. Startup Calculator [10]

1.4.3. Istartup Application

The startup service and application is designed for the preparation of business plans, financial modeling of startups and existing businesses [11]. Feasibility studies of plans and financial and economic activities.
The analysis of investment programs, as well as the forecast of current activities for small, medium and large businesses.

In the demo version, you can enter the indicators of your startup / business and get data on the effectiveness of investments for the year: payback period, Fig. 8. Startup 101. Lean Canvas example [10] net income, profitability index, break-even point, fixed and variable costs, etc.

There are demo examples of ready-made business plans and calculations of startups.

An interesting indicator is how to calculate the sensitivity of a startup to changes in the market [11]. In the service, you can edit your business plan in text form, as well as operate on the main financial indicators with the output of available profitability indicators, and plot diagrams [11].

In the project analysis section, based on the calculation of the annual activity of the enterprise, you can use reports in the form of: financial indicators, liquidity,
turnover, financial stability and profitability, similarly as the mentioned sensitivity indicators.
Balance sheet indicators and profit-loss indicators are used for accounting information, etc.

Among the disadvantages, it can be noted that the service is too overloaded with information for a novice startup, although it is already useful for an existing enterprise. It also does not consider the specifics of online business.

Conclusion

To summarize, it can be noted that there are not many solutions and applications in the automation market to help create and manage a startup. The niche for calculating the main indicators for a startup and market analysis is insufficiently represented.
The prospect of creating a new application or automated service
is to combine startup evaluation information and preliminary market assessment with its profitability for analysis. How much the volume of the available market will correlate with the pre-investment assessment of a startup for its successful launch at the earliest stage.

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