BREST STATE TECHNICAL UNIVERSITY

Business plan

"Creation of advertising, trading and gaming applications for mobile devices»

Performers: **Nikita Yushkin**

Alexandra Kuptsova

Richard Krasnov

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Content

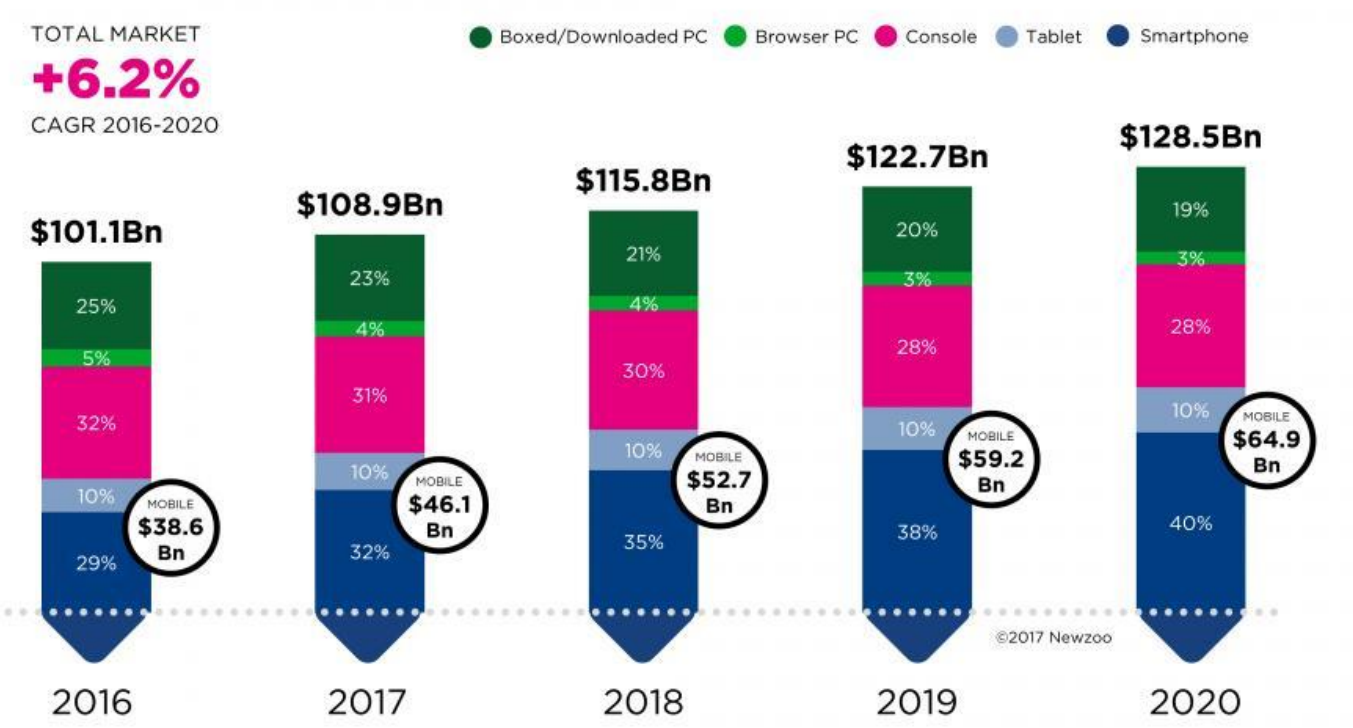
1. Introduction 2
2. Product description 4
3. Sales and marketing 7
4. Calculation of economic indicators 10
Calculation of the scope of the functions of the software module 10
Calculation of the total cost of the software product 12
Calculation of projected profit for the year and selling price 18
Selling subscriptions 18
Selling customization items 21
Price and profit of the software product 23
5. Annex 25

1. Introduction

The goal of our project is to create an advertising, trading and gaming platform that will be interesting and convenient for users and partners, and will also have a positive impact on the environment.

Today, in the age of technology, the entire business is increasingly moving into the online field. The market dictates its own rules, so this process is irreversible. Thus, a large number of businesses require advertising platforms to promote their goods, services and activities.

Therefore, this niche is attractive and very promising.



Game market condition 2016-2020

The main advantage for partners (shops, cafes, etc.) will be to effectively attract new customers and retain existing customers. Thanks to this application, partners will be able to effectively advertise their product or service and be confident in their sale, as the user will be personally interested in buying.

Our application can attract users by the fact that trips to the store, hairdresser and other places are becoming more fun and interesting, because of the reward system. Received points for purchases can be spent on customization and development of your profile. Participation in avatar fights between users will stimulate character improvement.

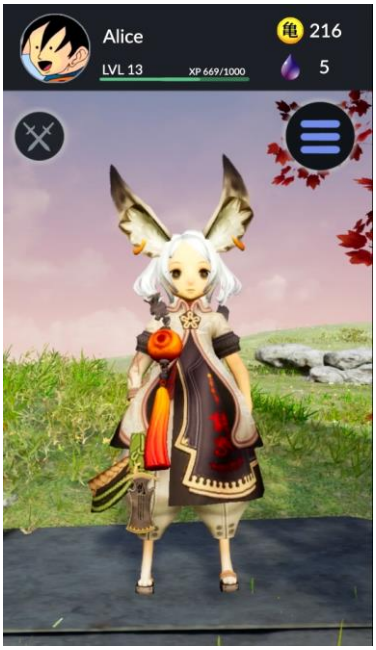
This app will encourage environmental care. Since today the issue of pollution is very acute, therefore, we offer a way to solve this problem. Reward user for

- Refusal to purchase disposable plastic products
- Garbage sorting
- Purchase a refillable bottle
- Participation in events
- Active lifestyle

A percentage of the profits will be transferred to Foundation for Ecological Security.

The amount of the initial investment is 6 736 €
Development time 2 months.
The break-even point is reached for 12 months of operation.
Profit for the first year is 324 733 €.
The target audience is 16 - 30 years old.

2. Product description



Our product is an advertising, trading and gaming platform, which not only introduce the product to customer, but also encourage its purchase, and allow to fight with other users.
Interest for customers will be caused by a unique virtual character, which will be influenced by actions in real life. Performing ordinary actions, the user will receive points. For example, when user make a purchase, a check with a qr-code will be issued at the cashbox,. If the user scan it, he will get points. They can be spent on character development or on purchase the in-game items (clothing, furniture, Pets).

Customer must comply with certain conditions, for the purchase and improve some items. For example: visit a coffee shop with his thermocup, go 240 000 steps per month, take a pet from the animal shelter. Our partners will also be able to set their own conditions for customers, for the implementation of which their will receive unique skins. Improved items will give a discount on goods or services from our partners.

Another aspect of our application is the event system. The organization of which will be engaged in both third-party organizations and we. Event variants can be as follows:

- cleaning of cities/beaches/forests from garbage
- organization of sports marathons
- attending social events

Part of the profits will be allocated to charity: forest conservation and restoration, assistance to animal shelters (disabled).

To keep the audience there is a system of duel avatars. Users meet in real life and fight, checking whose avatar is stronger. The player will be able to get the skills and abilities that will be generated specifically for each user, based on his actions in real life.

Application feature:

1. **Advertising and trading part**

   for users:

   - QR-code for accrual (on cash receipt)
   - Create a personal profile (3D avatar model)
   - Tab with offers from our partners
   - The tab with the item shop character customization
   - The "statistics" tab of the profile
   - Chat tab
   - Search engine
   - Events tab
   - The inventory of the avatar
   - Account settings
   - News feed (ability to add your posts, share them with other users)
   - Ability to add to friends
   - A function of the interaction of avatars
   - Physical activity counting function
   - Synchronization function with other platforms
   - Possibility to buy in-game items

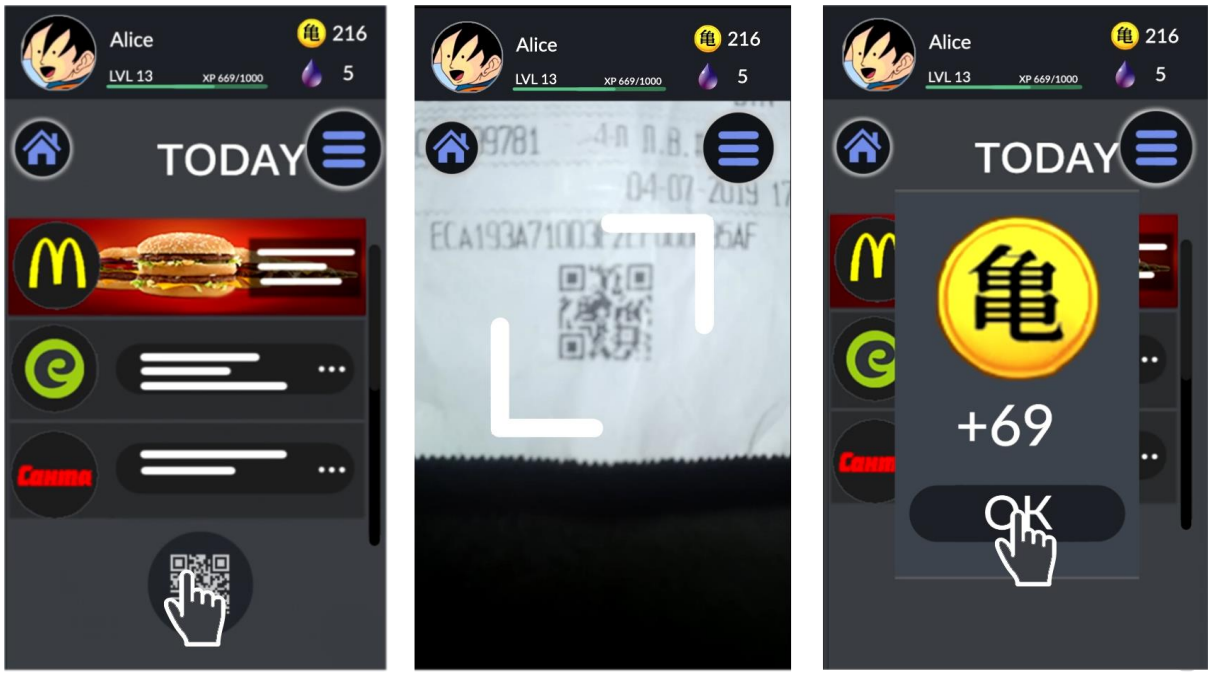
   For partners:

   - View product promotion statistics
   - In-game item ordering feature
   - Monitoring the number of users in the partner region
   - Account settings
   - Profile tab
   - The ability to make posts

2. **Game part**

   For users:

   - Battle mode between users
   - System of distribution of skills and abilities on the basis of actions in real life
   - Points system for winning matches
   - Function to improve the skins
   - The function of streaming fights
   - Achievement system
   - MMR
   - Improving the characteristics of skills and abilities
   - Ability to form alliances
   - Participation in weekly quests



a) b) c)

Image 1 - QR scanning

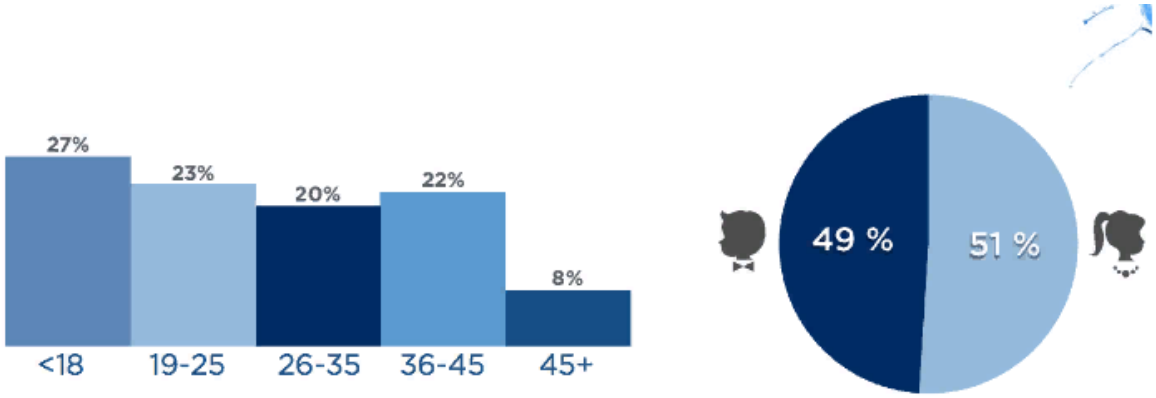
Image 1 shows the principle of scoring. In the screenshot

a) The user selects the QR code scanning function. Then on the screenshot
b) The qr code is scanned.
c) The program analyzes the information about purchases and on the basis of the information received calculates points and/or an item

3. Sales and marketing

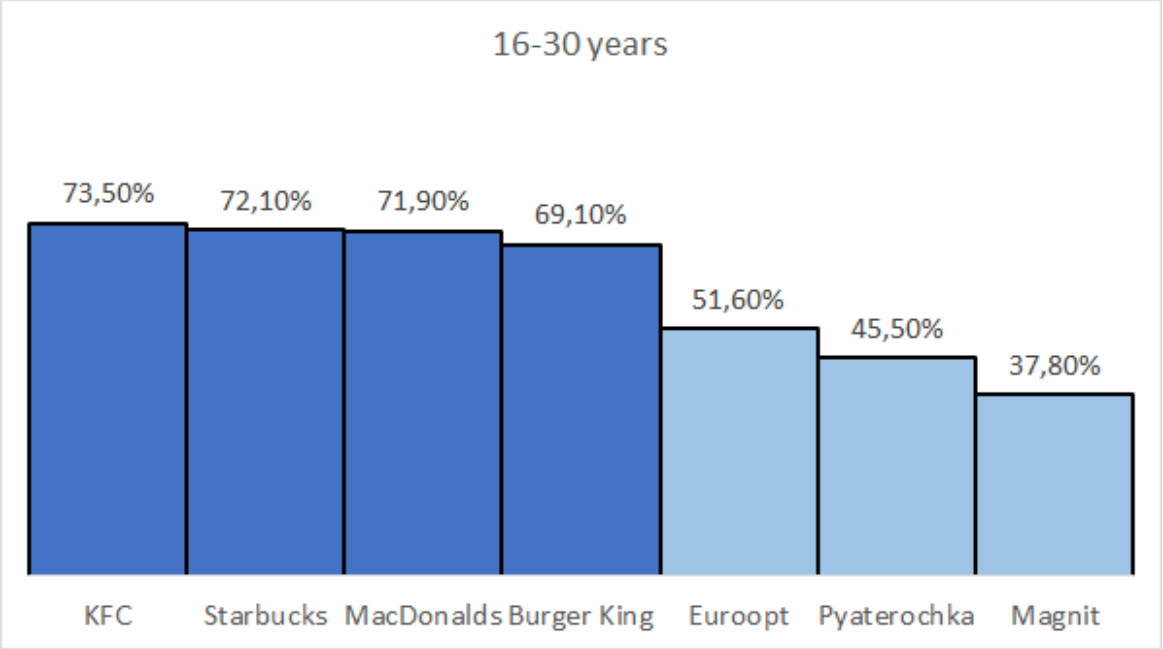
Target audience

Based on the statistics of agencies Insight ONE, Newzoo, App Annie on the state of the gaming industry in 2018, we can see that today there are more than 2.3 billion active players in the world, of which 46%, or 1.1 billion, spend money on Games. The game market reached $ 137.9 billion in 2018, with digital revenues accounting for 91% of the market, or $125.3 billion for the first Time, Mobile games will bring more than half of all revenues, and smartphones and tablets will grow by 25.5% year-on-year to $70.3 billion. Also, after analyzing the users of mobile games and applications, we found that about 70% of all users are people aged 16 to 30 years.



Active game players in the world

In addition, the concept of our application implies the presence of partners from various stores, organizations providing services, restaurants, catering and gastronomic institutions. After analyzing the customers of catering restaurants and gastronomic establishments (such as: McDonald's, KFC, Starbucks, Burger King), we found that 73.2% of all visitors to such places are people from 16 to 30 years. The same age group accounts for only 44.6% of the total number of supermarket visitors (Europt, Pyaterochka, Magnit).



The percentage of the age group from 16 to 30 years in relation to the rest of the customer base organization

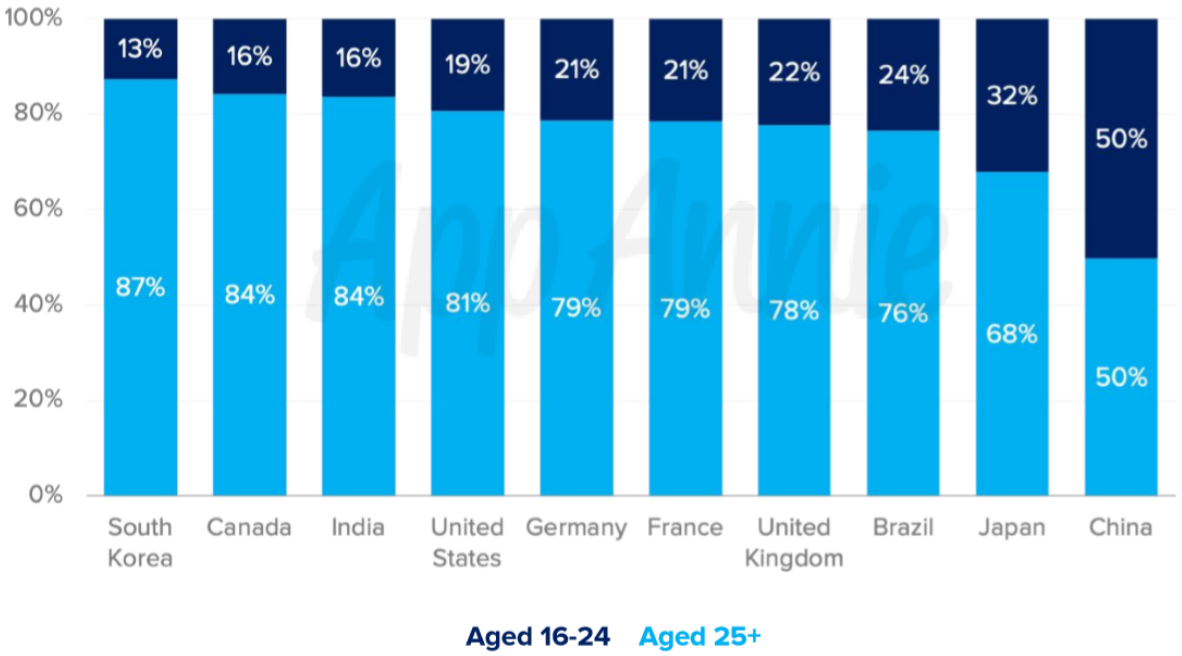
Based on all this, we can say that our target audience is from 16 to 30 years. And our potential partners are gastronomic establishments, restaurants of public catering and the organizations providing services.

Strategy for the acquisition of partner base:

Cold calls, participation in business meetings, various forums, conferences — all this will allow us to Express ourselves and attract attention. The first months we will offer to test our platform, ask for feedback to improve the quality, convenience and attractiveness of the application. Thus, we will already have a base, and the site will begin to be filled with goods.

In the future, buying ads from Google, Yandex, social networks, we will be able to attract even more attention to our application.

The process of attracting partners and users, as well as work to promote the application to the top will be continuous. Using all of the above PR methods, we will quickly enter the break-even zone.



The percentage of time spent in games

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4. Calculation of economic indicators

The calculation sequence:

1. calculation of the scope of functions of the software module;
2. calculation of the total cost of the software product;
3. calculation of selling price and net profit.

4.1. Calculation of the scope of functions of the software module

Project name - “Virtual Me”

Development environment - PyCharm

The total volume of software (V_0) is determined based on the number and volume of functions implemented by the program, according to the formula:

$$V_0 = \sum_{i=1}^{n} V_i$$

Vi – volume of a separate software function;

n - total number of functions.

The calculation of the total amount of software involves the definition of the code for each function. Most often it is impossible to calculate the scope of functions at the stage of product feasibility study, then this volume can be obtained on the basis of an indicative assessment of the available evidence for similar projects that have been performed previously, or by applying the standards for the catalogue of functions.

The definition of the specified volume of software is based on information about the functions of the developed software in the function catalog, the volume of functions and the total volume of software is determined. Depending on the organizational and technological conditions in which the software is developed, the volume was adjusted on the basis of expert assessments.

The refined volume of software (Vy) is determined by the formula:

$$V_y = \sum_{i=1}^{n} Vy_i$$

Vyi – clarified the size of the individual functions in the source code lines (LOC)

The list and scope of software functions are presented in table 1.

Table 1 - The list and scope of functions of the software

Function Code	Name(content) of the function	The amount of source code line functions (LOC)	
		by catalogue	refined
1	2	3	4
101	Organization of information input	130	60
102	Control, pre-processing and data entry	490	450
107	Organization of information input/output in interactive mode	280	130
202	The formation of databases	1980	400
203	Processing of sets of database records	2370	200
207	Organization of search and database search	4720	460
506	Handling error and failure situations	1540	250
507	Providing an interface between components	1680	480
707	Graphical output of results	420	340
801	Simple portal content search	55	50
806	Collection of statistics about site visitors	95	70
808	The creation of a system of internal advertising	58	58
Total:		13818	2948

Based on the information about the functions of the developed software, the volume of functions was reduced and the updated volume of SOFTWARE (Mu) amounted to 2948 lines of source code (LOC) instead of 13818.

4.2. Calculation of the total cost of the software product

The cost estimate of the software tool from the developer involves the preparation of cost estimates, which includes the following items of expenditure:

- salary of performers (basic - Sb and additional - Sa);

- deductions on social needs (Esoc);

- materials and components (Em);

- special equipment (Es);

- machine time (Emt);

- expenses for scientific trips (Est);

- other direct costs (Eodc);

- overhead (Eo);

- costs of development and exploitation of the software (Ed and Eex);

- marketing (Ema);

The total cost of software development (Ct) is calculated as the sum of expenses for all items, taking into account the market value of similar products.

The main item of expenditure on the creation of a software product is the salary of the project (main and additional) developers (performers) (Sb + Sa), among which it is accepted to include software engineers, project managers, system architects, designers, database developers, Web-masters and other specialists needed to solve special tasks in the team.

Calculation of wages of software developers begins with the definition of:

· duration of development time = 2 months;

· number of software developers = 4 people. Technical Director, software engineer, mobile developer, tester.

The salary of developers is defined as the sum of the main and additional salary of all performers.

The basic salary of each performer is determined by the formula:

$$Sb = 1/ 22 * Fwt * Rpr,$$

22 – average number of working days per month;

Fwt – Fund of working time of the contractor (duration to develop a software product, the days);

Rpr – the ratio of premiums (1,3).

Thus, based on the table, the salary of technical Director is 612 €, software engineer 468 €, mobile developer 416 €, tester 112 €, marketer 280 €

Additional salary of each performer (N add. s) – it is possible to accept - 10%:

Calculated from the basic salary according to the formula:

$$Sa = Sb * N \text{ add. } s/100.$$

The results of the calculations are included in table 2.

Table 2 - Payroll accounting

Category of workers	The duration of the software development (days)	The ratio of premiums (Rpr)	Normative additional salary, Nd%	Salary, Euro		
				Basic	Additional	In total
Technical Director	60	1,3	10	612	61,2	673
Engineer-programmer	60	1,3	10	468	46,8	515
Developer mob. applications	60	1,3	10	416	41,6	458
Tester	15	1,3	10	112	11,2	123
Marketer	30	1,3	10	235	23,5	259
Total				1843	184,3	2028

Table 3 - Payroll after product release 12 months

Category of workers	The duration of the software development (days)	The ratio of premiums (Rpr)	Normative additional salary, Nd%	Salary, Euro (per year)		
				Basic	Additional	In total
Engineer-programmer	360	1,3	10	1656	165,6	1821,5
Developer mob. applications	360	1,3	10	1278	127,8	1405,8
Tester	360	1,3	10	732	73,2	805,2
Marketer	360	1,3	10	2125	212,5	2337,5
3D Designer	84	1,3	10	725	72,5	797,5
Total				6516	651,6	7167,6

Deductions for social needs (Esoc) are determined in accordance with the current legislation according to the standard (34% - deductions to the Federal tax service + 0.6% deductions for compulsory insurance):

$$Esoc = (Sb + Sa) * 0,346$$

$$Esoc = (1843 + 184,3) * 0,346 = 701,5 €$$

$$Esoc12 = (6516 + 651,6) * 0,346 = 2479,9 € \text{ (after entering the market, 12 months)}$$

Since the acquisition of special equipment, materials and components is not required, the data on the costs are not taken into account.

The amount of expenditure on consumables is calculated by the formula:

$$Em = Nm * (Vo /100),$$

Nm – rate of consumption of materials per 100 lines of source code of the software product (0,5 €).

Vo – specified total functions of source lines of code (LOC)..

$$Em = 0,5 * (2948/100) = 147,4 €$$

The cost of "special Equipment" (Es) includes the cost of acquisition of hardware and software for special purposes necessary for the development of a particular PP, including the cost of design, manufacture, debugging, etc. (determined by the actual market prices). Note: in cases where special equipment is not purchased, this article is not calculated.

The cost of machine time (Emt) includes the cost of machine time required to develop and debug a software product. They are defined in machine hours according to the standards for 100 lines of machine time source code, depending on the nature of the tasks to be solved and the type of software .

$$Emti = Pmi * Vo /100 * Nmt,$$

Pmi – the price of one mashino-hours, (1 €);

Vo – refined total volume of source code string functions (LOC);

Nmt – standard consumption of machine time for debugging 100 lines of code, machine hours. Accepted in the amount of 0.7

$$Emti = 1 * 2948 /100 * 0,7 = 20,6 €$$

Costs under "other expenses"(Eodc) include the cost of acquisition of special technical and scientific information and literature. Determined as a percentage of the basic salary of performers (10-15 %).

$$Eodc= Sb*Nпр /100$$

$$Eodc= 1843 *10 /100 = 184,3 €$$

$$Eodc12= 6516 *10 /100 = 651,6 € \text{ (after entering the market, 12 months)}$$

The cost of the article "Overhead"(Eo) related to the content of the subsidiary farms, pilot productions, as well as costs for General needs. Determined by the standard as a percentage of the basic salary of performers (for budget organizations, the standard is set within 100%, for other organizations, you can take real interest set in the organization).

Eo= Sb*Nнр /100

Eo= 1843 *100 /100 = 1843 €

Eo12= 6516 *100 /100 = 6516 € (after entering the market, 12 months)

The amount of the above-mentioned expenses under items (p. 1 - 8) for the software serves as the initial basis for calculating the costs for the development and maintenance of the software:

Amount of expenses = Sb + Sa + Esoc + Em +Es +Emt + Eodc+ Eo.

Amount of expenses = 1843 + 184,3 + 701,5 + 147,4 +Pc +20,6 + 184,3 + 1843 = 4924,1€

Amount of expenses 12 = 6516 + 651,6 + 2479,9 + 147,4 +Pc +20,6 + 651,6 + 6516 = 16983,1€ (after entering the market, 12 months)

Software development costs (Ed). The developer participates in the development of the software and bears the corresponding costs, which are estimated to be paid by the customer under the contract. To simplify the calculation of development costs are determined by the established standard (To = 10-15 %) of the cost of items 1 - 8:

Ed= Amount of expenses * No /100.

Ed= 4924,1 * 14/100 = 688,7 €

Maintenance costs (Eex). The developer provides support for the software product and bears the costs that are paid by the customer in accordance with the contract and the estimate for support. For simplification of calculations are defined on the established standard (Nex = 5-10 %) from the sum of expenses on points 1 - 8:

Eex= Amount of expenses * Nex/100.

Eex= 4924,1 * 7/100 = 344,7 €

The total cost of software development (Cp) is determined by the formula:

Cp= Amount of expenses + Ed+ Eex= 4924,1 + 344,7 + 344,7 = 5613,5 €

Cp12= Amount of expenses 12 = 16983,1 € (after entering the market, 12 months)

Table 4 - Calculation of the total cost of the software product

№	Name of cost items	Standard	Amount of expenses, €
	1	2	3
1	Total salary	-	2028
1.1	Including the main	-	1843
1.2	Additional salary	-	185
2	Social security contributions	34,6%	701,5
3	Special equipment	Not applied	
4	Materials	-	147,4
5	Machine time	-	20,6
6	Scientific visit	It was not planned	
7	Other costs	10%	184,3
8	Overhead	100%	1843
9	Development costs	14%	688,7
10	Total cost	-	5613,5

As a result of calculations, the total cost of the software product was 5613,5 €

4.3. Calculation of projected profit for the year and selling price

1. **Selling subscriptions**

One of the app's revenue sources will be selling subscriptions to partners. There will be three types of subscriptions:

Three types of package:

1) Bronze
2) Gold
3) Platinum

The partner will be able to choose one of the three types of subscription that will suit him both in functionality and price.

All packages included (**bronze**):

- Advertising page with the catalog (products in the store)
- Import product catalog from Excel, YML, 1C
- Personal account and statistics tools
- Accrual of points for a product or service

For **gold** package:

- Creating a unique item per month (for a product or service of the average price category)
- Push notifications for users when a new product, service or offer appears
- Accrual of more points for a product or service

For **platinum** package:

- Hot offer banner on the main page of the store
- Push notifications for users when a new product, service, offer appears
- Creation of two unique items per month (for products of any price category)
- EVEN more points

The calculations were made taking into account the presence of 5 partner companies.

To determine the subscription price, you must calculate the planned profit. The planned profit is calculated by the formula:

$$P = Cp * \frac{R}{100}$$

R - level of profitability of the software. Calculate the cost of packages(bronze, gold, platinum). The level of profitability will take as 20%, 30% and 40% respectively.

$$P_b = Cp * \frac{20}{100} = 1122{,}7\ €$$

$$P_g = Cp * \frac{30}{100} = 1684{,}1\ €$$

$$P_p = Cp * \frac{40}{100} = 2245{,}4\ €$$

After calculating the profit from sales, the projected price of tax-free subscriptions is determined by the formula:

$$Psub = Cp + P$$

Cp - total cost of the software product (EUR)

P - planned profit from the sale of software (EUR)

Psub.b = 5613,5 + 1122,7 = 6736,2 €

Psub.g = 5613,5 +1684,1 = 7297,6 €

Psub.p = 5613,5 + 2245,4 = 7858,9 €

Pm - the subscription price per month without VAT.

Pm.b = 793,4 € **(bronze package)**

Pm.g = 1074,4 € **(gold package)**

Pm.p = 1542,77 € **(platinum package)**

The subscription price includes value added tax and is calculated by the formula:

Pt = Cp + P + VAT

VAT = Cp * VAT/100.

Pt.b = 5613,5 + 1122,7 + 1347,25 = 8083,45 € - level of profitability 20%

Pt.g = 5613,5 + 1684,1 + 1459,52 = 8757,12 € - level of profitability 30%

Pt.p = 5613,5 + 2245,4 + 1571,78 = 9430,68 € - level of profitability 40%

Corresponding subscription price per month including VAT (Pmv):

Pmv.b = 952,11 € **(bronze package)**

Pmv.g = 1289,31€ **(gold package)**

Pmv.p = 1851,33 € **(platinum package)**

Profit from the implementation of the software product for the first year

Pcl = n*(12 * Pmv)* - (Cp+Cp12),

n - number of companies that bought the package (= 5),

(Cp+Cp12) - expenses for the first year

without VAT:

Pcl.b = 5 * 12 * 793,4 - (5613,5 + 7167,6) = **34 823** €

Pcl.g = 5 * 12 * 1074,4 - (5613,5 + 7167,6) = **51 683** €

Pcl.p = 5 * 12 * 1542,77 - (5613,5 + 7167,6) = **79 785** €

Pcl1n = (Pcl.b + Pcl.g + Pcl.p) / 3 = **55 430** €

inclusive of VAT:

Pcl.b = 5 * 12 * 952,11 - (5613,5 + 7167,6)= **44 346** €

Pcl.g = 5 * 12 * 1289,31 - (5613,5 + 7167,6) = **64 578** €

Pcl.p = 5 * 12 * 1851,33 - (5613,5 + 7167,6) = **98 299** €

Pcl1n = (Pcl.b + Pcl.g + Pcl.p) / 3 = **69 074** €

Pcl1 = Pcl1т * (1- Tr/100)

Tr – income tax rate (currently Tr = 18%).

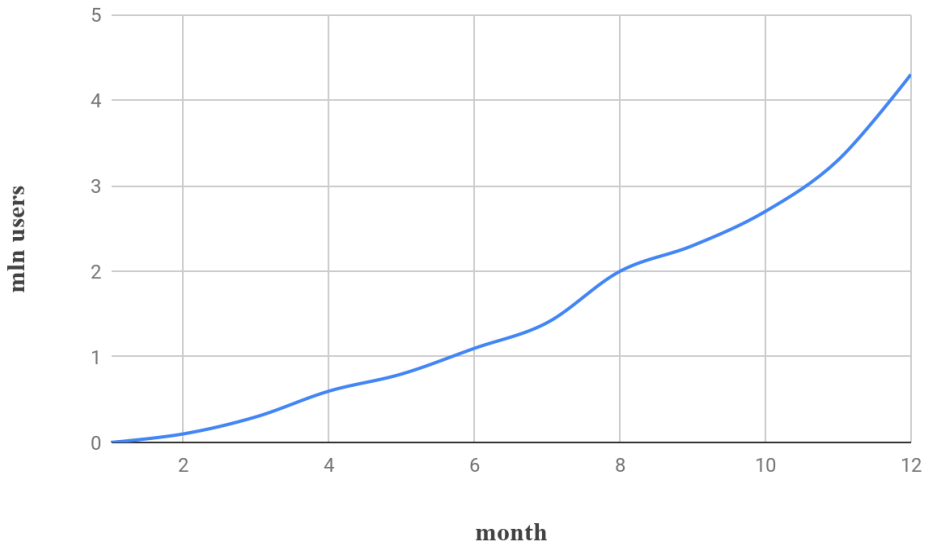
Pcl1 = 55 430 * (1- 18/100) = **45 453** €

2. Selling customization items

The second way to make a profit is to sell customization items.

The calculations were made taking into account the presence of 5 partner companies.

Facebook, instagram,Vk, Twitter statistics were taken as a basis for the calculation of the number of users for the first year:



During the year, the average number of subscribers - 4.3 million

12 paid elements for character customization will be released during the year.

6 items “common” = 1,79 €

4 items “rare” = 3,49 €

2 items “mysterious” = 5,99 €

Based on data from Insight ONE and App Annie, we found that about 41% of all users spend money on games and applications, 51% of which go to the MMO segment. Based on these data, we use the formula to calculate the profit for the year:

Nu -the number of users (assumed equal to 100 000);

S - this is the cost of 1 item

C - number of items issued per year

Calculated without VAT:

$$Ic = Nu * 0.41*0.51 * Sc * Cc = \mathbf{186\ 935}\ €$$

$$Ir = Nu * 0.41*0.51 * Sr * Cr = \mathbf{250\ 084}\ €$$

$$Im = Nu * 0.41 *0.51* Sm * Cm = \mathbf{208\ 682}\ €$$

$$Pcl2n = (Ic + Ir + Im) / 3 = \mathbf{215\ 233}\ €$$

Inclusive of VAT:

$$Ic = Nu * 0.41*0.51 * Sc * Cc +VAT = \mathbf{224\ 573}\ €$$

$$Ir = Nu * 0.41*0.51 * Sr * Cr + VAT = \mathbf{291\ 903}\ €$$

$$Im = Nu * 0.41 *0.51* Sm * Cm + VAT= \mathbf{250\ 501}\ €$$

$$Pcl2n = (Ic + Ir + Im) / 3 = \mathbf{255\ 659}\ €$$

Calculate the net profit for the sale of customization items:

$$Pcl2= Pcl2n* (1- VAT/100)$$

$$Pcl2 = 215\ 233 * 0.82 = \mathbf{176\ 491}\ €$$

VAT = 18%

The total net profit for the sale of subscriptions and customization items will be equal to:

$$Pt = Pcl1n + Pcl2n = \mathbf{324\ 733}\ €$$

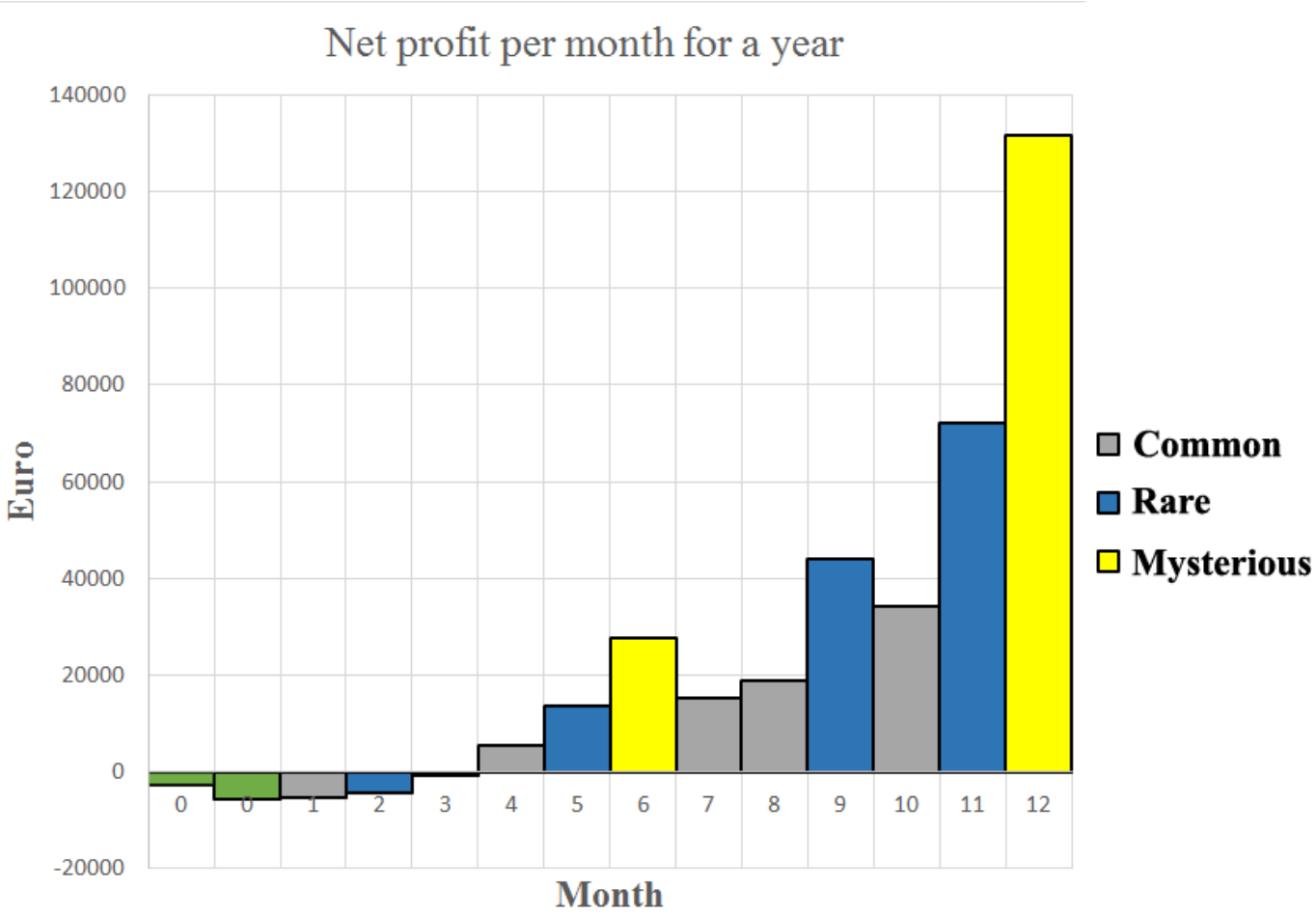
The total average net profit will be equal to:

$$Pt = Pcl1+ Pcl2= \mathbf{221\ 944}\ €$$

All calculations of price and profit for the software product are summarized in table 5.

The selling price is calculated by the formula:

Pe = Pc + Pc*20% = 5613,5 + 5613,5*0,20 = 6736 €



4.4. Price and profit of the software product

Table 5

Name of cost items	Standard	Amount of expenses, €
1	2	3
Total cost	-	**5 613,5**
Projected profit for the year	-	**324 733**
VAT	20%	**1 122,5**
Selling price	-	**6 736**

The following economic indicators were determined in the course of calculations:

- Total cost - **5 613,5** €
- Selling price - **6 736** €
- Projected profit for the year - **324 733** €

5. Annex

https://newzoo.com/insights/articles/newzoos-2018-report-insights-into-the-137-9-billion-global-games-market/

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