VIRTONOMICS

ONLINE BUSINESS SIMULATIONS

Virtonomics

User Guide

www.virtonomics.com

Virtonomics: the concept

Virtonomics is a multiplayer business simulation game. It is accessible through any web browser.

The company can consist of different subdivisions: from extraction of raw materials to manufacturing and selling the finished goods to end consumers. The simulation offers various types of enterprises.

Every virtual company contains all key business processes and functions: HR, production, marketing, sales, logistics, strategic management, finance, supplying, etc.

Participant interaction

Virtonomics is not a computer-generated virtual environment: the actions of the participants influence market condition, which in turn, impacts the actions of the participants. Virtonomics participants are real users, who interact and collaborate in the virtual environment; they buy and sell to each other the products and services.

Game turns and game updates

The system calculates the actions of users every specific period of time. The calculation is called a game turn. The time between the game turns is called a game update. The participants make all their decisions and moves every game turn.

Access the simulation

Home page

MY COMPANY:

Enterprises: an overview of all enterprises, opening new subdivisions.
Reports: financial, market reports; reports based on specific products, technology sales, warehouse stock, logistics.
Management: equipment, technologies, licenses, business boosters.
Strategy: participants can define their business strategies, business models and company goals.
Top manager: the qualification level of a participant in specific business fields.

Analytics – the information about Virtonomics world:

Market analysis: reports on the products, competitors, geographical locations, licenses, production, etc.
Macroeconomics: geographical map of the virtual environment, logistics and transportation expenses, seasonality.
Reference: the list of industries and enterprises, business boosters and trade.
Bonuses and restrictions: taxes and fees, demographics information, etc.

RATING

Participant performance rankings.

TRAINING

For instructors and trainers — access to instructor account for simulation settings.

The key information and the structure of virtual companies is shown on the homepage of the simulation.

Cash and assets   In-game time   Time left before the update

The subdivisions of a virtual company   How to open new subdivisions

In order to return to the homepage, go to «My company — Enterprises»

Most often, the game has a specific scenario, where virtual companies have pre-configured initial conditions: a certain amount of money and employees, the level of top manager qualification as well as the goals and tips. Sometimes the game does not have a scenario and participants just receive a certain amount of virtual currency.

Managing stores in the simulation

Price, quality and brand

What is the most important?

What is more important: the price, quality or brand? There is no straightforward answer to that question. For example, if you establish a network of jewelry stores in upscale areas of the city, in that case the quality and the brand of goods will be very important. However, if your store is located in a residential area, an affordable price will be the key factor.
Do not be afraid to experiment with the prices, quality and brands.

We recommend following the instructions in game manuals. However, if there are no instructions, just the goal of the game, in that case a participant or a group of participants have to devise their business strategy and tactics. There a lot of options when it comes to choosing the scale of a business venture: from launching a small retail company to building an international vertically integrated corporation. But no matter what the choice is, participants have to have clear objectives on how they are going to run their companies in the simulation.

We decided to start with the detailed description of stores and how they function in the simulation. The end consumers are generated by the system. This is the only type of enterprise, where sales are computer generated: the actions and decisions in other types enterprises (factories, farms, mines, etc.), (buying, selling) are made by real participants.

The example of how the stores work is shown on your company's homepage:

7563356   🇪🇸 **Valencia (Es)**   Store 100 sq.m.   ▆

Click on "store" and you will receive the information on store's location, type and products.

The business model of the store is quite simple: buying supplies (at a low price) and selling to end consumers (at a higher price). The price margin has to cover all the expenses (rent of the premises, salary, advertising expenses, etc.)

Поставщики ⬌ 🏪 ⬌ **Покупатели**

You can sell various kinds of products in one store. The list of products depend on the game intensity. There is a choice of 205 types of products in Classic format (with daily game turns) and 40 in Intensive (with hourly turns).

Each product has its price, quality and brand. They depend on the type of product, location of the store, competitors and other factors.

There are different types of prices in the simulation:
- 🥝 **Supplier's price** — the price of goods, excluding transportation expenses and custom duties.
- 🥝 **Purchase price** — the price you are going to pay to the supplier, including transportation expenses and custom taxes.
- 🥝 **Selling price** — the price you are going to set for end consumers.
- 🥝 **Average city price** — the average price of a specific product in a specific city.

Quality —can be any number (starting from 1 as the lowest quality indicator). The higher the quality is, the better is the product's selling potential. **Brand** — the indicator of consumer appeal. The higher the brand is, the better is the product's selling potential.

In order to select the supplier, go to your store, and click on the «**Supply**» tab, select the product category and specific the type of the product, then click on «Select supplier».
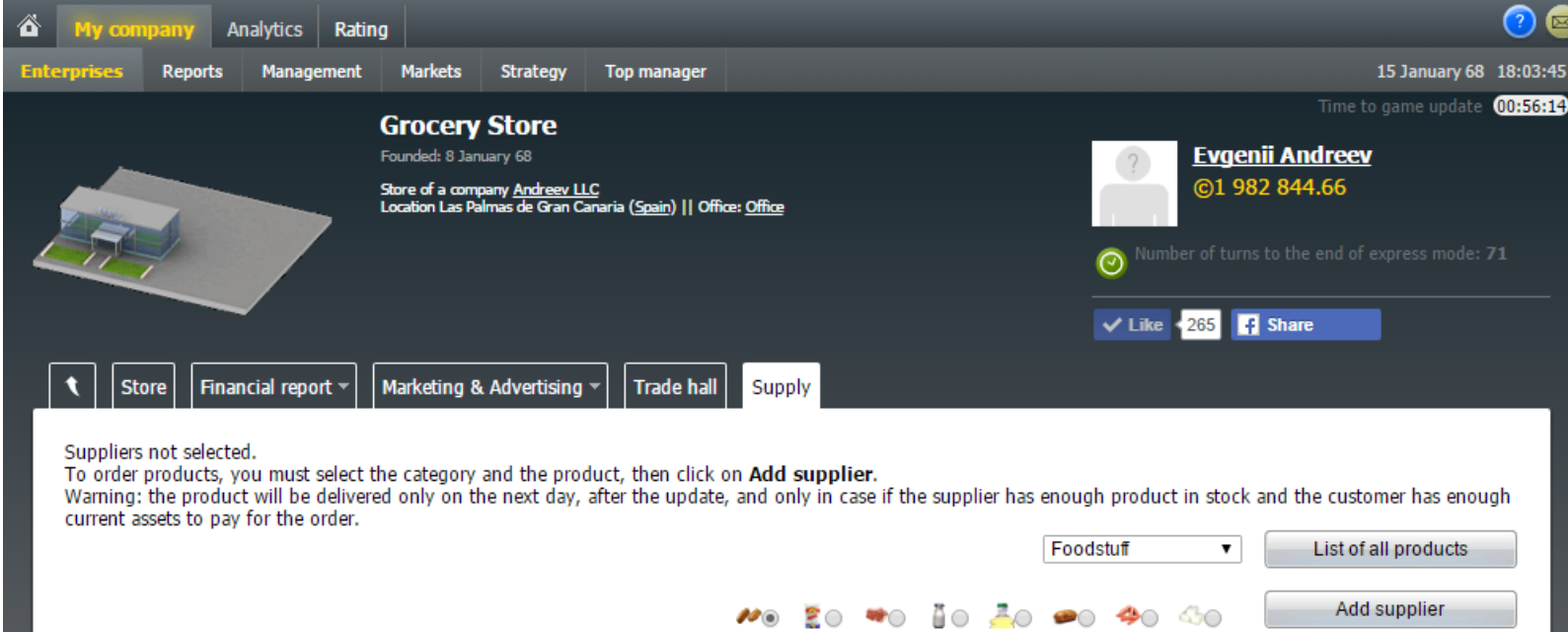
Ordering supplies

The purchase price may differ considerably from the supplier price in case long distance transportation is required.

When setting up the final price, you should consider such factors as the purchase price, the additional expenses as well as the average city price of the product.

In case there are two products of the same or almost the same quality, you should buy the one with lower supply price.

If two products have the same or similar price, we buy the highest quality products.

Select the supplier of your choice from the list. Click on «Select», enter the amount of units you would like to purchase, and click on «Place an order». **You will receive your order after the next game turn.**

Price examples of sausage supplies.

Things to consider

When signing a contract with a supplier, you can set specific conditions, like stopping the supply in case the price has increased by X%, or stopping the supply in case the product quality has decreased by Y.

All contracts are long-term by default. That is, if you order 100 units, every game turn you will receive precisely 100 items.

If you wish the contract to be valid only for one game turn, tick the "One-time purchase" box.

Sausages — Select supplier
Grocery Store :: Store :: Las Palmas de Gran Canaria
Current assets of managing company: ©1 982 844.66

| Average value in city stores: | Price = ©54.52 | Quality = 1.00 | Brand = 0.00 |

Advanced filter

All Mine Corp.

Supplier	Available In stock	Supplier's price	Price	Quality	Brand	
Meat processing plant Randle Institutions :: Meat processing plant :: Vorkuta	1 188 4 588	©8.53	©13.06	2.28	0.00	Select
Meat processing plant polimer polotno :: Meat processing plant :: Rostov-on-Don	2 500 55 999	©15.00	©21.50	2.41	0.00	Select
Meat processing plant viclys65 Invest :: Meat processing plant :: Magnitogorsk	20 650 20 770	©15.00	©21.53	2.64	0.00	Select
Meat processing plant Jushkonomica :: Meat processing plant :: Volgograd	16 976 17 676	©20.00	©28.61	3.30	0.00	Select
Meat processing plant viktor0217 Trejd :: Meat processing plant :: Norilsk	18 218 18 218	©25.00	©35.55	2.59	0.00	Select
Warehouse PooP&Com :: Warehouse :: Tomsk	500 4 276	©25.00	©35.56	3.12	0.00	Select
Independent supplier Novosibirsk	Unlim.	©25.00	©35.66	1.00		Select
Meat processing plant StarLabs :: Meat processing plant :: Ivanovo	10 900 10 900	©29.00	©41.11	2.72	0.00	Select
Independent supplier Hanover	25 000 Unlim.	©35.00	©49.68	5.00		Select
Meat processing plant osinan_004 i kompaniya :: Meat processing plant :: Lubercy	500 3 656	©41.00	©57.90	2.42	0.00	Select
Independent supplier Indianapolis	10 000 Unlim.	©45.00	©63.63	10.00		Select

Show by: 10 25 50 100 200 400

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Market analysis and selling potential

When you are in the process of selecting products for your store, it is crucial to know whether there is a market demand for these products. Otherwise, there is a risk of investing in a product that will not sell.

In order to determine product selling potential, you need to conduct a thorough market analysis as well as price and quality analysis.

Understanding market analysis data

For quick assessment look at the market development index. If it has a value of "E", it means there is a selling potential in such market, since it is occupied only by local suppliers (computer-generated stores, which are relatively easy to compete with). If the development index is "AAA", it means that there are real players in the market and it will be more difficult to compete.
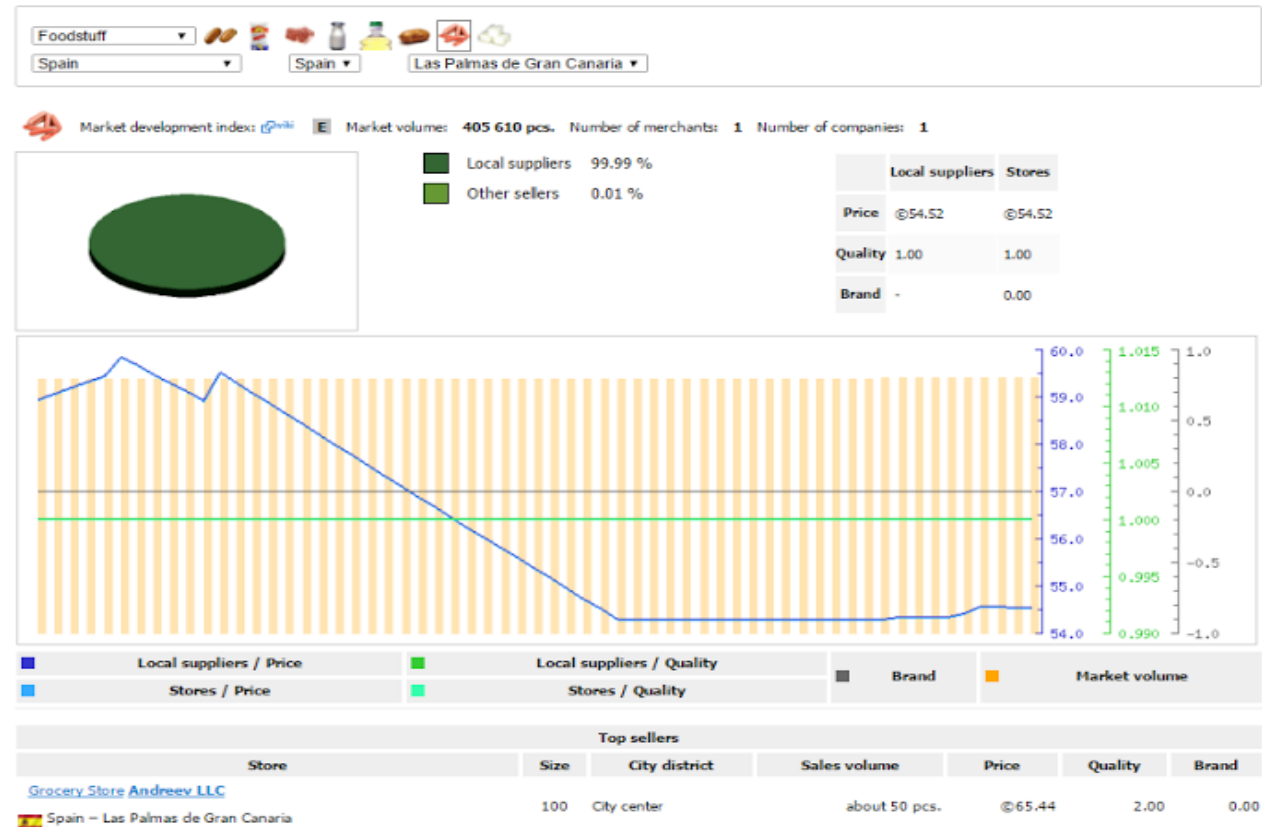
Notice the changes in price and quality. For example, the quality of this product in the market is minimal (1), the price has been decreasing for the last game turns and now it is a bit over 32. Therefore, if you are able to find a supplier of sausages (or build a sausage factory yourself) with the quality equal to or bigger than 1, but at a lower price, you have an excellent chance to generate profit.

Take a look at the list of the biggest non-computer – generated buyers. They are a good indicators to understand the selling potential of specific products. For example, each game turn «Fedorov and the company" sells about 100 units of 1.05 quality products at the price of 35.99. Therefore, if your product has the same quality, but the price is slightly lower, you can expect to sell 100 units of sausages each game turn.

You have established your store in a certain location (country, region, and city). In order to have a clear picture of the market situation, click on «**Analytics**» > «**Market analysis**» and select the product and the region.

An example of a market report on sausages in Kazan.

Store	Size	City district	Sales volume	Price	Quality	Brand
Grocery Store Andreev LLC						
Spain – Las Palmas de Gran Canaria	100	City center	about 50 pcs.	©65.44	2.00	0.00

Experiment with the market

Try to apply various product range and price strategies. Experiment with supply and prices and adjust your strategy after marker reaction.

In some cases it is better to have a smaller margin (the difference between the selling price and the purchase price), but bigger sales volumes due to theoffer of a favorable price / quality / brand combination.
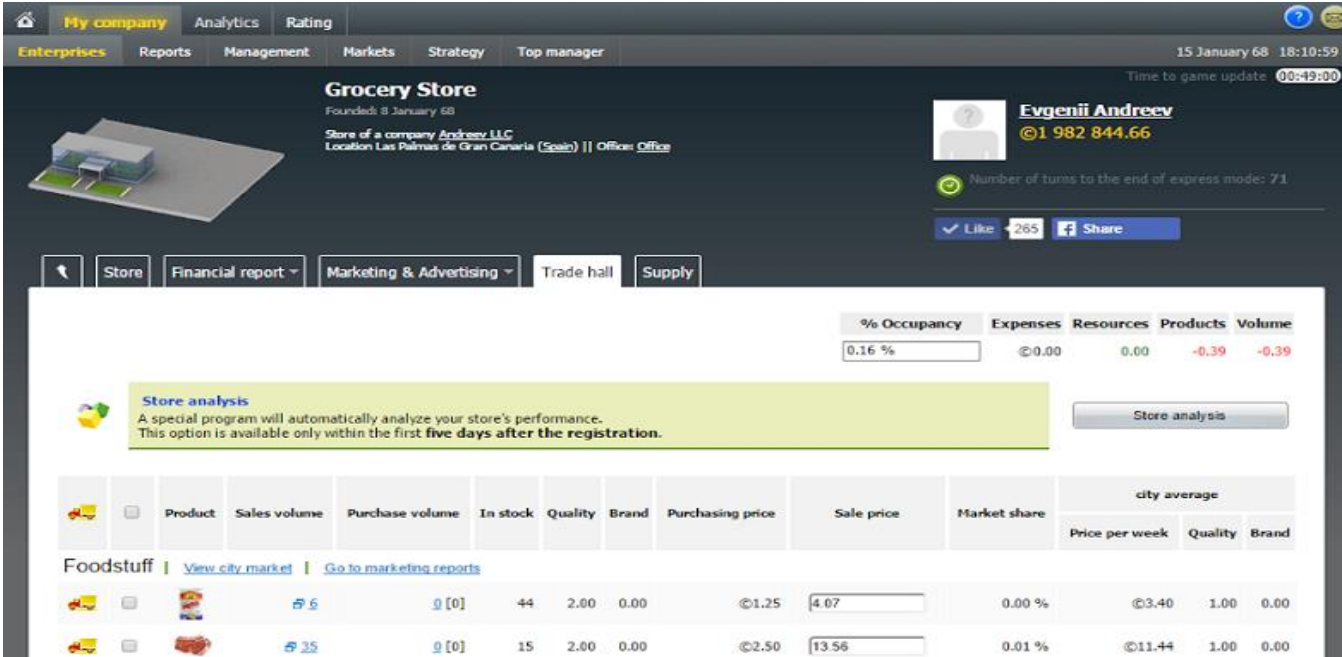
Also, you can choose the strategy of bigger margins and   smaller sales volumes.

The following example will help you have a better understanding about the selling potential based on the correlation between product price and quality.

Product type	Supply		Selling price	City average		Selling potential
	Price	Quality		Price	Quality	
🏍️	5 000	2	8 000	8 000	1	**Satisfactory**: the price is the same as the city average , but the quality is higher
🧢	50	1	120	110	1	**Bad**: the price is higher than city average, the quality is the same
👕	150	5	600	800	2	**Excellent**: the quality is higher than city average, but the price is lower
🍼	50	1	60	60	1	**Average**: product price and quality are the same as the city average
🥨	30	3	60	90	3	**Good**: the price is lower than city average but the quality is the same

Trade hall

Market analytics

Do not forget to refer to the analytics reports in the business simulation. They contain the information on market structure, key competitors and their prices, as well as information on new markets to enter.

Click on «**Analytics**» for analytics and reference information.

When you order the supply, the information on the average city price and quality of the product, your supply and sales volumes, product volumes in stock, etc. can be found in store's trade hall. **You can set the selling prices of your products in the trade hall of your store.**

Store size and location

Experiment with the market

Experiment with different strategies when selecting the location of the store, product range and price margins.

The closer the store is to the city center, the higher are the rent expenses. But the selling potential is bigger. Especially if your product is of a good quality and reasonable price.

As your business starts to grow, there will be a need to increase the size of the store: it will help you sell more products and serve bigger amount of customers.

The sign that you need to expand the store will be obvious: you will have long queues of customers in front of your store (there will be a notification of that). It means that the store has substantial customer traffic, a good price and quality correlation, qualified employees, but the store itself is too small to serve all customers, it means it is time to expand.

The location of the store is very important. The closer the store to the city center, the more the quality   and the brand of products becomes vital. The further the store is from the city center, the more the product price becomes important. For example:
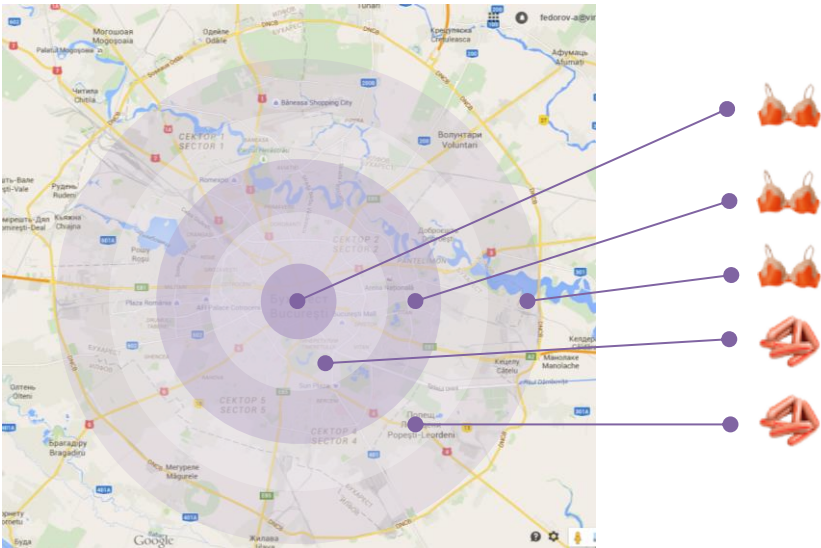
	Quality	Price	Brand
	8	1200	10
	4	800	3
	1	340	0
	5	50	4
	2	30	1

You can change the location and the size of your store by clicking on «**Store location**».

Employees and salary

Naturally, the store cannot function without proper staff. You can manage the HR department of your store by clicking on «**Employees and salary**» on the home page of your store. There you also can find the hint on how many employees your store currently needs.

Employees

It is better not to save on your staff expenses and your employees are crucial to your business!

Here are some recommendations on HR management:

- Your employees should correspond to the size, specialization, and growth of your business.
- For example, if you spend a lot on advertising, make sure you have enough employees to service the increased customer traffic.
- In order to increase the sales volumes, a high level of service is required, which depends on employees' qualification. This factor is especially crucial for the stores, located in the city center or upscale areas.
- Sometimes it is better to decrease the unnecessary supply purchasing (which ties up your money) than saving on your employees.
- It is always good to have some options. You can hire expensive yet qualified employees, or you can hire less qualified employees and invest in their training and development. Or you can opt for something in-between these two strategies.
- Experiment with managing your HR department, it will help improve the overall efficiency of your staff.

Set the number of employees and their salary, hire, dismiss and train your staff.

Advertising campaign efficiency

The more often potential customers see the advertising of your store, the better. Try to maintain a minimum contract figures to the city population ratio: not less than 2: 1 - 3: 1. That is, every resident of the city should see your ad at least 2-3 times.

Ideally, the advertising campaign of your store should be 100% efficient. The efficiency of advertising campaigns does not depend on how much money you have spent on it, but how efficiently the customers were served in your store after they had seen your ad.

In order to achieve it, it is crucial that your store works with 100% efficiency. This indicator is calculated on a regular basis in the simulation (see. the homepage of your store). The low performance of your store means that not all visitors, who came to your store to buy something, were able to make a purchase.

The efficiency of the store depends on three factors:
- The efficiency of your employees (sales assistants): the number of people and their skills, that is, their ability to provide high quality customer service.
- Manager's qualification in Trade (you can see the information on your qualification in „My Company"> "Top Manager".)
- The efficiency of your office.

The last two factors will be explained in details in the following chapters.

Advertising is crucial in attracting potential customers to your store. This eventually might translate into customer traffic and, consequently, bigger sales volumes. In order to set the advertising campaign for your store, click on «**Marketing and advertising**».

Try different advertising channels for maximum efficiency.

Top manager qualification

Initial qualification and its growth

The qualification level that you receive at the start of the course depends on the purpose of the course. Normally, the initial qualification is relatively high (e.g., 10 or 20), for short-term courses and training and relatively low (1-5) for long-term ones.

Your qualifications will be growing steadily if your business is profitable.

The qualification of a top manager has a direct impact on the efficiency of the office and its subdivisions. Click on the «**My company**» > «**Top manager**» to see your qualification details.

The higher your qualification in a certain field is, the bigger and more hi-tech enterprises you will be able to manage. If the qualification level is not high enough, the efficiently of your business decreases, which leads to bigger expenses and lesser profit.

Summary

1. Conduct a market analysis, where you plan to establish your business. Select the products with the biggest selling potential. Focus on these products.
2. If you received just the initial capital at the start of the game, find the best market for your company, pay attention to market development index and other factors. Do not forget to open office first. An enterprise will not be able to function without an office in that particular area.
3. Order the supply of particular products (materials). Bear in mind such factors as the enterprise location, average city price, quality and brand, sales volumes of your competitors.
4. Set the selling prices of your products.
5. Make sure you have enough of employees.

After first game turns

1. Check the efficiency of all your subdivisions on the homepage.
2. Take advantage of the in-game hints.
3. Look at the company financial reports — that way you can see which subdivisions of your company are more profitable.
4. Check the sales volumes in the trade hall and the warehouse of your factory are all products selling out? How many units were ordered and how many were sold? Experiment with prices if necessary.
5. Improve the sales and leftover stock supplies. Bear in mind that there is no point in investing into products that are not selling out.
6. Launch an advertising campaign. Try various advertising channels and budgets. Increase the efficiency of the advertising campaign.
7. Expand your business — optimize the processes in existing subdivisions or open new ones. Which ones exactly and how? Please, continue reading.

The construction period

Bear in mind that the opening of some particular subdivisions may take some time (more than one game turn). A small consumer goods factory can be built in one or two game turns. The building of a huge technology factory, however, will take place during more than 10 game turns.

Offices and stores can be opened during one game turn.

The importance of the office and its efficiency

Office management

The homepage of your office:
- «Employees and salary» for hiring employees to your office.
- «Equipment» и «Automatic repair» for buying, repairing or removing computers
- «Change size» for changing the size and location of your office.

In order to open a new subdivision click on the link with the same name on your company's homepage:

In order to close the subdivision, click on the link of the same name on the subdivision's homepage:
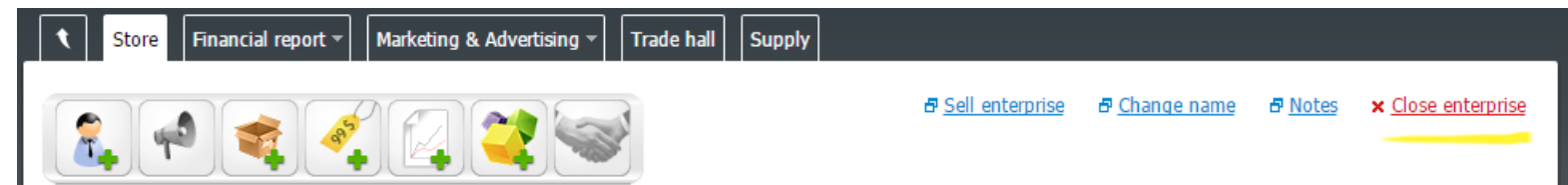
In order to open a subdivision in any geographical location, first, you need to open **an office** in that exact area. This will be the main headquarters, where the management team is working. Similar to stores, it does not take time (game turns) to build an office. You will be able to open your office during one game turn. Bear in mind that offices in Virtonomics do not generate any profit, since they do not produce or sell anything. Please, take into consideration such factors as education level of the population (the employees have to be appropriately qualified), average city salary, rent prices.

Your office has to operate at a maximum efficiency level. It depends on the following factors:
- 💼 **Your employees' efficiency** — the qualification of your staff cannot be lower than the city average and lower than the requirements of the job.
- 💼 **The quality and condition of computers**— each employee has to be provided with a computer. The higher the quality of the computers is, the more qualified should be your employees. Pay attention to the tear and wear condition of your computers: outdated computers have negative impact on the efficiency of your office.
- 💼 **The efficiency of a top manager (you and other participants)** — the qualification level of the user in «Management» (see «My company» > «Top-manager»)

High efficiency level of your office has a positive impact of the efficiency of all your subdivisions in the region.

Selecting the location and size of subdivisions

The location of the office matters

The location is very important in case the subdivisions cater to customers (stores, restaurants, medical centers, etc.).

The location is also important for factories, laboratories, offices, warehouses. Bear in mind the transport expenses. If the factory is located in New York and you sell products in Los Angeles, this significantly increases the price of the product. Another important factor: the development of high technology factories and research and development laboratories require highly qualified staff. The highly qualified employees can be recruited in the cities with high education level.

There is a number of subdivisions (mines, fishing bases), the location of which is pre-selected by the system.

In order to change the location and size of your enterprise, use the functions of the same name on the homepage of your enterprise.

An example of how to select the location and size of the factory: (the same as for the offices, laboratories, etc.):
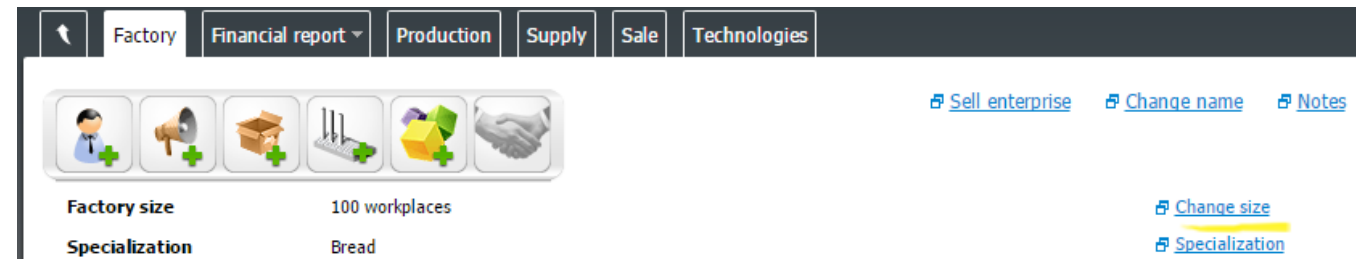
An example of how to select the location and size of the store:
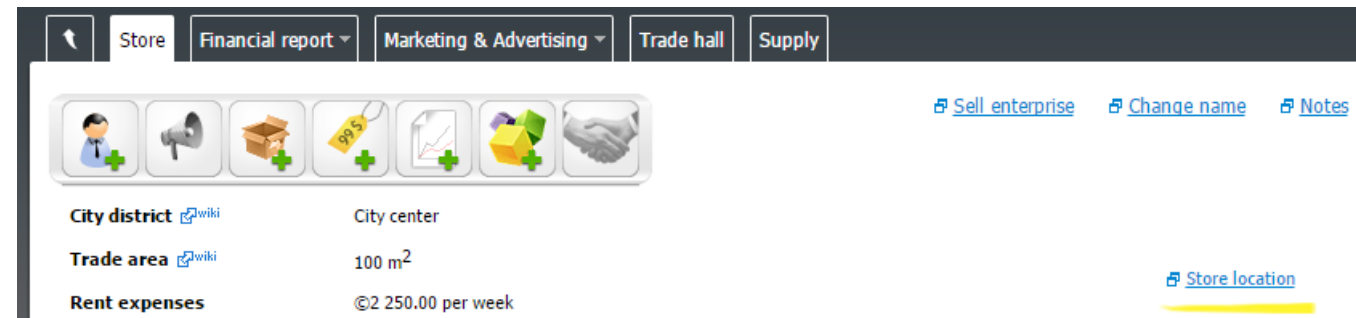
Factories are built to manufacture something out of raw materials. You can deliver the finished goods to your stores or the stores of other participants. Your finished goods, in turn, can be used as raw materials, parts or accessories for other manufacturers. Naturally, you can sell your finished goods not only to stores, but to the factories as well (yours and other participants). The same is with raw materials — you can deliver it to your factories and the factories of other users.

There is a big choice of factories and industries. There are 60+ types of industries in Virtonomics Classic. Given the fact that the finished goods may vary depending on the specialization and type, the selection of factories is very broad.

Production sector

Factory: the nuances

- As it was mentioned earlier that you can open a store during only one game turn, however, it takes several game turns to build a factory. The number of game turns depend on the size of the factory.
- You will encounter new management modules - production and technology.
- In order to produce something, first you need to purchase raw materials. The supply purchasing functions are the same as the ones in stores. The manufacturing process takes one game turn. After the manufacturing process has finished, you can set the selling prices. Your production will be available for sale during next game turn. In «Production» you can manage your finished goods: you are able not to sell your finished products at all (instead just store them in the warehouse), you can choose to sell to every participant or just the selected ones or you can sell your production only to your company.
- Factories have to have qualified employees, equipment and supply.
- Do not forget to pay attention to the equipment condition.
- The quality of manufactured products depend on the technology level. (See «Technology» tab).
- The equipment quality and the staff qualification requirements depend on the technology level.
- The technology level can be upgraded by purchasing new technology or carrying out experiments in the laboratories.
- When selecting the location of the factory, consider such factors as education level of the population, average city salary, and the location of the main buyers of your production.

In Fast realm there are 15 manufacturing-related industries.

Factory business model is not complicated: you need to buy raw materials, which will be in the factory. The finished goods can be sold to other participants in the simulation. The product quality depends on the level of technology. Qualified staff is need In order for the factory to function.

An example of a bread manufacturing factory:

Laboratories: R&D

Buying licenses and technologies

For purchasing licenses and technologies click on the «Technologies» tab.

Research in laboratories

In order for laboratories to work, you need to hire qualified staff, buy appropriate equipment and, of course, invest a lot of time.

Just like in other subdivisions, the staff has to be accordingly qualified and earn specific salary. The equipment has to be of an appropriate quality. In order to know what the optimal settings for laboratories are, pay attention to the hints in the simulation. The functionality is the same as in the other subdivisions.

Just like offices, laboratories do not generate any profit. However, your R & D results will be able to help other subdivisions generate substantial profit.

The quality of finished goods depend on the quality of equipment and raw materials, the qualification level of the staff and **technology level**. We have already evaluated the effect of quality on selling potential: if you manufacture products of a high quality at the expenses lower than that of your competition, the selling potential of your production is very high. The technology level at your factory can be increased in the following ways:

- **Purchasing a license** of a certain technology level — it will be valid only for the factory, it has been purchased for. Normally, it is not that costly, but its functionality is limited only to one factory.
- **Purchasing the technology** — in this case the technology can be installed into all similar subdivisions in your company. Although it might cost a lot, it can be used in all your subdivisions at once.
- **Carrying out research in your laboratory** and use the newly researched technology in your enterprises. You can also sell it to other participants.

**Agriculture:
Farms, mills, apiary, plantations, fishing bases.**

Farms: Livestock

Cowsheds, dairy farms, poultry, sheep farms, and pig farms. They function according to a familiar scheme: forage purchase > cattle breeding > production > delivering the production to your own enterprises or to the enterprises of other participants (factories and stores).

You have to take a good care of your livestock: constantly supply them with a required amount of high quality forage.

Plantations and agricultural farms

Are meant for growing agricultural products — tomatoes, corn, crops, cotton, coffee, fruits and so on. The equipment needed are tractors. Bear in mind that agricultural activities are seasonal.

Mills

The key factors are equipment, supply of good quality raw materials, milling, production and distribution.

Apiary

The conditions are similar to animal breeding only with bees.

Fishing bases

Fish can be delivered to fish-processing as well as retail enterprises.

The farms, mills, apiary, cowshed, plantations have similar **functionality** as production subdivisions. The only difference is that instead of equipment you will have to handle livestock. You will have to buy forage from suppliers- either from your own companies or from other participants of the simulation. The aim of keeping the cowshed could be cattle breeding or production of raw meat and milk, which could be delivered to your own stores or sold to other participants.

Examples of required forage and products produced in cowsheds:

Industry		Agriculture		
Specialization				
Specialization	Livestock	Forage	Products	Quality modifier
Cowshed	🐄	24.0 pcs.	5.0 pcs. / 20.0 pcs.	
Milk farm (grain)	🐄	24.0 pcs.	40.0 pcs.	
Cow breeding (potatoes)	🐄	30.0 pcs.	5/100 pcs.	+ 10.00 %
Milk farm (potato)	🐄	30.0 pcs.	40.0 pcs.	
Cowshed (potatoes)	🐄	30.0 pcs.	5.0 pcs. / 20.0 pcs.	+ 10.00 % / + 10.00 %
Cows breeding	🐄	24.0 pcs.	5/100 pcs.	

If you opt for delivering your production to your own stores, we recommend practicing on agriculture enterprises. The production chain in such subdivisions are normally shorter than in motor manufacturing business for instance.

Service sector

Prices and location

The factors as prices and locations are the most important in service sector. If your competition has lowered the prices on their services, you will need to take urgent measures and experiment with different production costs, specializations and location of your business.

The service quality level

To increase your qualification and, as a consequence, management skills and performance, it is important to maintain a high level of service, which, in turn, depends on the quality of equipment and employees.

The uniqueness of service

The more unique your service is, the more visitors you attract. Your service business is unique in case you are the only one offering services in the market. If there is competition, the uniqueness of your services is, naturally, decreases. Try to establish your service sector business in those markets, where there is no competition. Or choose the specialization, which has not been used yet. This will allow you to generate profit.

Consumables

Pay attention to the quality of the consumables in restaurants and medical centers. They affect the visitor traffic and, as a consequence, profit of your business.

Fitness centers, hair salons and laundry services are suitable for those, who is doing their first steps in the simulation. These particular enterprises do not require dealing with suppliers, but instead there is a need to select the right location,   equipment and hire qualified staff. There is also one specific factor- there no computer-generated competition- business owners will have to compete with other participants like themselves.

Gas stations are very similar to the stores. You will have to purchase wholesale gasoline and sell it at retail prices.

Restaurants and medical centers are also considered service sector businesses in the simulation. They require purchasing consumables, evaluating their price and quality correlation. It takes several game turns to build medical centers, other service sector businesses are rented, which means they can be opened in one game turn.

Example of the «Supply» function of the restaurant:

Mining and power plants

Mining

In general, the functionality of mining and power plant enterprises resembles the production. There is a production (mining), sales, technologies, general management staff, equipment, etc.).

The difference is that mining is tied to a particular location: it is impossible to extract oil in Berlin, for instance. Also, do not forget to open your office in the region, where the mining will be carried out. You will not be able to manage the mines or quarry without it.

Another difference is the purchase cost of mineral fields. Initially, all fields are in state -owned. So you will have to invest a lot of money to establish them. But they will pay off big time as mining is a very profitable business.

There are 4 types of natural resources in Intensive format of the simulation and 14 in Classic.

Power industry

It take from 7 to 100 game turns to build a power plant. That is why there are available only in Classic format. There are three types of power plants: incinerators, coal-fired power plants and oil-fired power plants.

Mining allows the controlling of the initial stage of raw material production. A, consequently, its quality and prime costs. Natural resources can be either sold to other participants of the simulation or delivered to your own factories.

Power industry is a specific type of business in the simulation. It is rational to open power plants only in the case if there is a lot of time devoted to the simulation (long-term study course, for example). You can control the quality of the raw materials (oil, coal) if you own a huge manufacturing empire that is able to process all that.

Example of the oil-fired power plant functionality:

Warehouses

Warehouses are necessary for storing supply or raw materials. Every warehouse has its own purpose and specialization (for storing oil, chemical, manufactured products, etc.). You can select the specialization of your warehouse.

Normally, every store and factory have their own warehouses. So opening warehouses as a separate subdivision is useful in case you manage a huge business empire with several factories of one specialization, which use the same raw materials. Therefore, it is necessary to purchase these raw materials. You can arrange it, so all the purchases are delivered to one warehouse, from where the supply will be delivered to factories.

Similarly to the finished goods: it is possible to supply them from different factories to one warehouse and form there deliver them to various stores. This will save time in managing raw material.

Besides, warehouse are very useful in case of the supply contract cancellation or negative price changes.

When opening a warehouse, consider its size, location and specialization. For example, opening a warehouse on Cuba when your factories or stores are located in Liverpool is not a good idea because of logistics expenses.

Vertically integrated companies

When your store has started generating stable profit, naturally, you will want to expand your business and look for other business opportunities.   You can expand your retail network, by opening new stores or you can establish a **vertically integrated company**. In Fast realm, for example, the following supply chain is needed to produce motorcycles.

The key element here is steel production, which is vital in motorcycle and engine and wheel production.

The chain length

In Fast realm Intensive format it takes at least 10 subdivisions to establish a complete chain from mining to selling finished motorcycles.

In Virtonomics Classic realms, however, it will take dozens of subdivisions, since the range of products and industries is much bigger.

Analyzing the data and supply chain planning

If you want to know what it takes to produce any type of products, click on «Analytics» > «Reference».

There you will learn about the types of enterprises, raw materials and finished goods. Select the product of your choice (eg, the same motorcycle in „Trade" tab). The system will give you information on the required raw materials and the type of enterprises needed to produce it.

Select the subdivisions that you will need. Conduct the price and quality analysis of your competition. Plan the necessary production volumes. Keep in mind that it takes time (game turns) to build certain types of enterprises (plants, for example).

Bear in mind that building a vertically integrated business   can be done gradually, step by step, level by level.

Store

Factory
Production

Machinery factory

Tire production

Machinery factory

Металлургический завод
Steel smelting

Chemical factory
Robber

Well
Oil

Mine
Coal

Mine
Iron ore

It also takes three subdivisions, which will be responsible for coal and ore mining as well as oil extraction. Several factories will be needed to produce rubber, tires, engines, accessories and, eventually, the motorcycles themselves. Ideally, every subdivision of your company should be profitable, and it is quite an achievement if you manage to make your vertically-integrated company profitable as a whole unit.

Business boosters

Activating business boosters

Go the main page of a subdivision. Click on the buttons on the top of the page. (see pictures). Select the ones that would match your enterprise and would be effective in accelerating your business.

For example, if your qualification in management is quite high, but your store still cannot attract high traffic of customers (although the size of your store is good, the ad campaign is effective, but the store efficiency is still not 100%), so it is better to invest in convenient parking space rather than in installing EPR system.

Information on business boosters

Information on business boosters is available by clicking on «Analytics » > «Reference», «Business boosters» tab.

Virtonomics has the function, which can accelerate certain business indicators by means of **business boosters,** like opening parking spaces, launching ERP business management systems, integrate quality control, increasing energy efficiency, etc. Every business booster has its own price, service costs and validity.

Business boosters for stores:

Business boosters for factories:

Reports

The most important factors

Just like in real business, virtual companies have a lot of important indicators. But there are the most import that should be taken into consideration in the first place:

- **Money balance** — it is your strategically recourse for opening new subdivisions, purchasing supply, equipment, paying for ad campaign, salary to your employees, rent, etc. Bear in mind that your money resources are not unlimited and excessive investment in products may eventually tie up your money. Poorly calculated expansion or financing expensive projects can lead the company to bankruptcy as well. All operation of a bankrupt company are put on hold.

- **Profit** — an indicator of your success, which helps you save money. This indicator is a difference between the revenues and expenses of your company.

- **Revenues and expenses** — open number of subdivisions that would generate stable profit. Try to decrease your expenses, while increasing your revenues. Do not expand your business without conducting a proper cost and revenue analysis.

For reports of your company click on «**My company**» > «**Reports**». There are a lot of different types of reports. Financial reports, for instance, show the financial indicators of your company: revenues, expenses, profit, indicators based on regions, subdivisions, products, etc. There are marketing, warehouse, movement of goods reports as well as technology and mineral deposits reports. You can also see the reports of each subdivision of your in «Financial report» tab.

A sample of a financial report of the store, which has been opened only few game turns before:

| Graphics | Income Statement | By products | By purchases |

Revenues and expenses

	15 January 68	8 January 68	1 January 68	25 December 67
Revenues	©6 290	©0	©0	©0
Expenses	©3 494	©0	©0	©0
Profit	©2 661	©0	©0	©0
Taxes	©135	©0	©0	©0

Sales by products

	Sausages	©3 272.00	(52.02 %)
	Oil	©1 654.00	(26.29 %)
	Meat	©474.60	(7.54 %)
	Bread	©239.00	(3.80 %)
	Potatoes	©236.50	(3.76 %)
	Milk	©231.66	(3.68 %)
	Sugar	©158.08	(2.51 %)
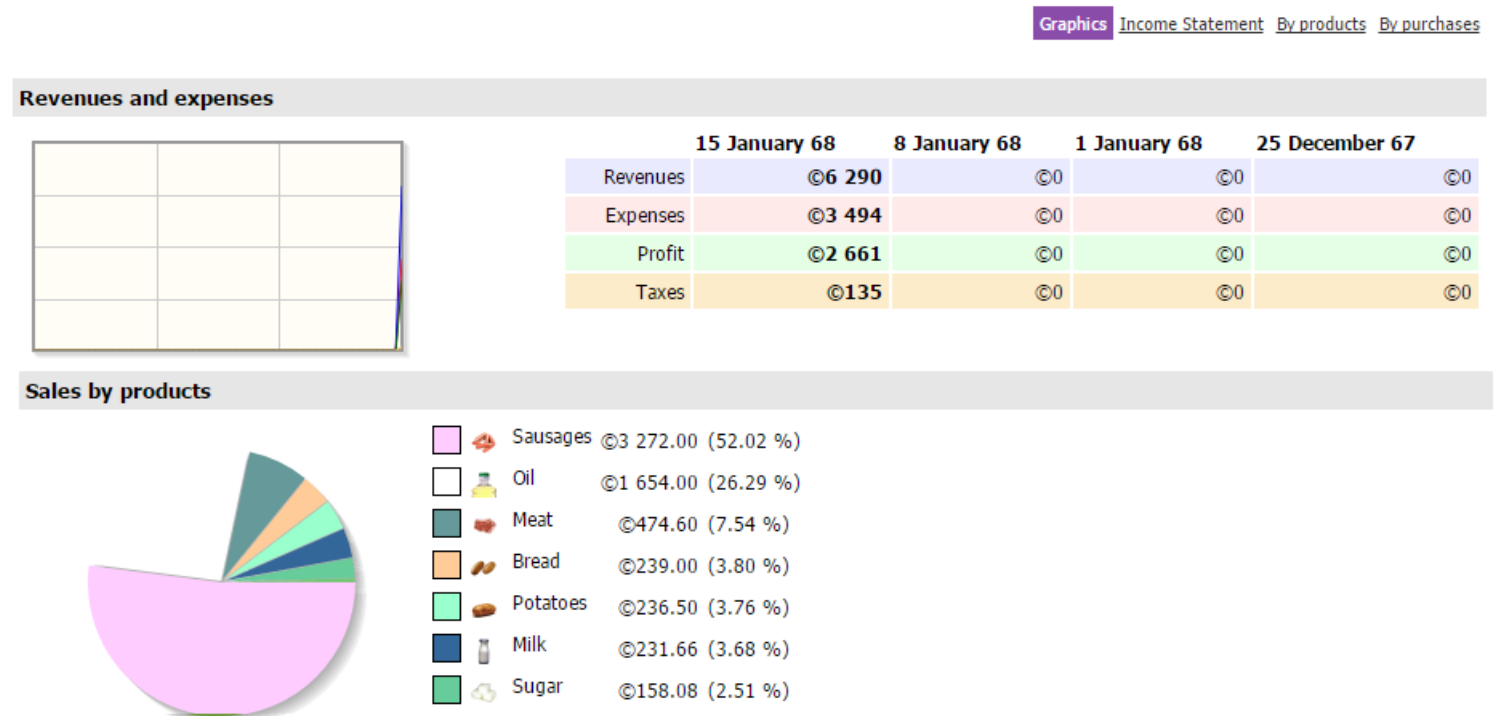
Your money balance is seen together with your name in the top corner of the homepage:

Evgenii Andreev
©1 982 844.66

Types of reports

Financial reports:
- Graphic.
- By items.
- By regions.
- By industry.
- By products.
- By subdivisions.

Marketing reports:
- Promotions.
- Brands in the cities.
- Stores assortment.
- City retail.
- Service sector.

Movement of goods:
- Purchases by suppliers.
- Purchases by products.
- Sales by consumers.
- Sales by products.
- Inventories.
- Industry.
- Monitoring of various sales.

Mineral deposit:
- Information on all your company's mineral deposits.

Technology:
- Reports on license and technology sales.

Warehouse report:
- Information on all warehouses of your company

A sample of warehouse report: locations, sizes, supply, occupancy:

| | Financial report ▾ | Marketing report ▾ | Movement of goods ▾ | Mineral deposits | Technology ▾ | Warehouse report | Logistics |

Storage expenses, total: ©36.36

City ▲▼	Subdivision ▲▼	Size ▲▼	% Occupancy ▲▼	Expenses ▲▼	Resources ▲▼	Products ▲▼	Volume ▲▼
Spain Las Palmas de Gran Canaria	Moto Store	100 sq.m.	15.83 %	©19.66	0.00	0.00	0.00
Spain Las Palmas de Gran Canaria	Apparel Store	100 sq.m.	3.94 %	©0.65	0.00	-0.31	-0.31
Spain Las Palmas de Gran Canaria	Grocery Store	100 sq.m.	0.16 %	©0.00	0.00	-0.39	-0.39

A sample of income statement report:

Item	Week	Previous	Month	Year	Total
Income					
Product sale	©21 240.26	©0.00	©21 240.26	©21 240.26	©21 240.26
Variable costs					
Product purchase	©5 000.00	©0.00	©5 000.00	©5 000.00	©5 000.00
Transport cost	©59.20	©0.00	©59.20	©59.20	©59.20
Customs duty	©1 250.00	©0.00	©1 250.00	©1 250.00	©1 250.00
Salary	©7 664.25	©0.00	©7 664.25	©7 664.25	©7 664.25
Energy costs	©20.86	©0.00	©20.86	©20.86	©20.86
Storage	©36.36	©0.00	©36.36	©36.36	©36.36
Profits tax	©1 455.02	©0.00	©1 455.02	©1 455.02	©1 455.02
Fixed costs					
General production	©1 758.88	©0.00	©1 758.88	©1 758.88	©1 758.88
Facility rent	©20 933.60	©0.00	©20 933.60	©20 933.60	©20 933.60
Management expenses	©217.42	©0.00	©217.42	©217.42	©217.42
Investments					
Building and modernization	©2 504.00	©0.00	©2 504.00	©2 504.00	©2 504.00

Business development strategy

The following strategic roadmap will be your guide in Virtonomics world. Select your business development direction depending on what company you received or selected at the beginning of the game:

A small-sized company functioning only in one city

A horizontal business development strategy to enter other regions will require the least amount expenses. However, in this case you will depend heavily on the suppliers. Although vertical development requires a lot of money and time investments, your manufacturing enterprises will be of a greater capacity.

A company on a regional scale

Most likely, the scale of the business will allow you to launch the production and research or even mining and processing. Expanding to other regions while having a well-developed production business is an excellent solution as well.

Local company (with branch offices within one country)

Intensify the vertical integration of the company through the development of production and mining, by expanding to other regions. Invest in research, raise the technological level of your production business, and reduce the expenses. Make sure you a have solid foundation for entering other markets.

International corporation

Diversify your business by countries, products, and target segments. Work on improving all business processes, control the expenses. Strive to be one of the top 3 companies in the markets, where you operate.

Trade	Research and development	Mining	
			City
			Region
			Country
			World

HR management

The location and qualification of your employees

If you plan to develop high-tech industries, or conduct research, it is rational to establish such enterprises in the cities with high educational level.

The information on the education level of the city can be found by clicking on «Analytics» > «Macroeconomics». In the «World map» tab select the region or the country of your interest. It will show the list of cities, the information on the population, average salary, education level, wealth index, demographic situation.

Types of enterprises and salary

Just like in real life, low qualified employees earn less money, whereas jobs that require the employees to be highly-qualified are normally very well-paid.

For farms and plantations the required salary is only 50% of the city average, for manufacturing - 70%, service sector and stores are equal to the average salary on the market, office employees - 150%, power plant employees - 250%. The employees of laboratories and medical centers earn the most: the salaries are 4 times higher than the city average.

Employee training and development

Try to implement different HR management strategies in your businesses. For instance, you can hire employees that would work for the average city salary, but you will be able to raise their qualification by incorporating employee training.

Your **employees** work on oil rigs, factory machines, offices, stores, laundry services, hair salons. In order to manage your employees, go to «**Employees and salary**» on the main page of the enterprise.

Key factors in HR management:

- **The required number of employees** depend on the size of the enterprise, the number of equipment units. The system will give hints on the number of required employees.
- **The required qualification** depend on the education level in the city and the equipment level: the higher the technological level of the equipment is, the more qualified employees are required.
- **The salary** should be based on the city average and the required qualification.

If you manage a huge international corporation, you will find the automated HR management function very useful. It will save your time, by adjusting the salary every game turn based on the qualification and technological requirements.

Marketing and advertising

Marketing reports

There are a lot of marketing reports, which will help you make the right decision.

Geographical locations
«Analytics» > «Macroeconomics».

The information included in the report:
- Available countries, regions, cities. Demographical situation, tax fees, average city salary, the changes of the key indicators (after selecting of a specific city).
- Transport: logistics expenses from point «A» to point «B», minimal import and export fees.
- Renewable resources: Resource/City.

Market analysis
«Analytics» > «Market Analysis».

The information included in the report:
Market volume, key competitors, competition level for retail, service sector.
Trends in prices, quality, brand (after selecting a certain location).

Company reports
«My company» > «Reports».
Financial reports (sales reports by products and subdivision), marketing reports (product range, brands, promotions, service sector and retail), sales in the context of goods and consumers.

(Product)	The product must be in-demand in the market and have attractive price, quality and brand. Before launching a new product or starting a manufacturing business, conduct a detailed analysis of your competition, the average city price, best price offers, quality and brand. There are competitors in the market, compete with them, so you will have an advantage over them in at least one of these parameters. If the product is new to the market, then you have a lot of room for experimenting.
(Price)	Price is one of the most important factors. It is responsible for the overall product perception by the customers together with quality and brand. As like in real life, the prices in the simulation can change with every game turn, since the virtual economy is created by the actions of thousands of users worldwide. Pay attention to price changes and new significant competitors. Experiment with prices.
(Place)	Location is a very important factor for certain subdivisions. For example, if you plan to work with VIP customers and offer them high-quality goods of high-end brands, the store should be located in the city center or trendy neighborhood. The qualification of employees and their ability to provide quality service to all visitors are also important.
(Promotion)	Advertising helps sell the products. Depending on your targets, the advertising campaign can be focused on promoting the product or subdivision: **Advertising the product** — massive ad campaigns. They are implemented in the offices (see «Advertising» tab) and is working in the whole region, where the office is located. Such campaign influence the «Brand» category of your product. **Advertising the subdivision** —local advertising campaigns. They are set in a specific subdivision of your company (e.g. store) in order to increase the popularity of the product and customer traffic of that particular store. You can find more information on advertising in Virtonomics in chapters «For new users» > «Advertising». Apart from advertising campaigns, we recommending using business boosters, which are able to enhance the promotion of your products and subdivisions. You can choose them on the homepages of subdivisions.

Supplies and suppliers

Supply functionality in Virtonomics

In order to manage your supplies, go to one of your subdivisions and click on the «**Supply**» tab.

Every warehouse has a certain specialization (it is selected when opening a warehouse). For factories, farms, health centers the type of required materials is known beforehand:

For stores, you can make order any product of your choice (if it is available on the market). Select product category and specific product.
The simulation will give you the list of available suppliers. They can be sorted based on the price, quality and brand.

Select the supplier, select the volume of number of products you would like to purchase, select one of the following contract conditions: cancel the supply in case the price increases and quality drops, one-time purchase. Confirm the purchase by clicking on "Order". You will receive your order after the nearest game turn.

If you order from two different suppliers and the product quality differs, you will receive products with average quality.

If your company has stores, warehouses, farms, health centers or factories, collaborating with suppliers and purchase planning will be an important part of managing your company. Things to consider:

- Selecting one or several suppliers. You can order from several suppliers, it will reduce the risk of delivery failure (suppliers can change the conditions of the contract, deliver less than ordered and even terminate the contract). However, in this case, the purchase price may be slightly higher. Instead you can focus on ordering supplies from the supplier, who offers the best price. However, in case of delivery failure, you risk to be left without the supply in the next game turn.
- To ensure the supply for large enterprises, the purchasing of seasonal agricultural products can be integrated into the supply chain of warehouses. Storing these products will help you balance out the supply. However, in this case you a certain amount of money is frozen.
- Such indicators as price, quality and brand tend to change. Check them regularly to make sure you are buying the best offer. Also, new suppliers with more attractive offers may appear on the market.
- Every store and factory has its own warehouse. They can be used to store the goods. However, pay attention to the occupancy percentage.

A contract sample of potato supply to the store:

Bear in mind the following factors:

- The supply of potatoes at the same time from two suppliers. The conditions of the contract are set for an automatic termination in case of quality drops below the set minimum or the price increases more than 10%.
- The second supplier received an order of 20,000 units (the maximum amount of units the supplier can deliver is   no more than 30 000 per one game turn). Currently the supplier has 16 096 of available units. In other words, the conditions of this particular contract are not entirely met.

Production

Production Management

Before opening a factory, conduct competition analysis, evaluate their technology level, the quality of manufactured goods, prices, sales volumes and key buyers.

Make sure your factory has enough employees and the right equipment. Pay attention to the wear and tear condition of your equipment and repair it on time.

Keep an eye on the suppliers with the best offers, the changes in the prices and quality, the supply delivery limitations per game turns.

You can order from one supplier or several. You can store some amount of raw materials in case of product delivery failures. But it will put some of your assets on hold.

Improve your production business by selecting business boosters (on the factory's homepage.):

Manage your sales volumes — sell only to your own subdivisions, to the companies of particular players or make your products available for purchasing to every participant of the simulation.

Production is a very exciting option in Virtonomics. With a vast choice of available industries, you can establish a huge vertically-integrated company with its own supply chain. The finished goods are sold to the enterprises of real participants of the simulation.

For high quality production you will need: high level of technology (see factory's «Technology» tab), equipment based on the technology requirements (purchase of equipment is done on the homepage of the factory) and employees and appropriate qualification. The system will gives hints on the required level of equipment and employees. You will also need the right amount of raw materials. If you strive for a successful production business, make sure you have all these requirements are met.

A sample of motorcycle production report:

	% Заполнение	Расходы	Ресурсы	Продукция	Объем
	1.71 %	©10.29	0.00	+0.0556	+0.0556

	Продукт	Выпуск		На складе		Объем заказов	Свободно	Цена	Политика сбыта
	Мотоцикл	Количество 5		Количество 55		0	55	1600	Максимальный объем: 5
		Качество 2.46		Качество 5.73					Любому покупателю
		Себестоимость ©9 222.72		Себестоимость ©839.34					

Take a closer look at the following factors:
- Before the production processes started there were 55 motorcycles of 5,73 with prime cost 839,34 available at the warehouse. Every game turn the factory produces 5 motorcycles of 2,46 quality with the prime cost of 9222,72. When newly produced motorcycles will be transferred to the warehouse for sales, their quality will be the average of the two. It will happen every game turn. Bear in mind the quality of the newly produced goods when setting the selling price.
- The conditions of the contract state that the motorcycles can be sold to any customer. There 55 units available for delivery, but the maximum purchase volume, however, is 5 units. This will ensure the availability of the products in the warehouse. The occupancy of the warehouse is less than 2%, which means that there is enough of space at the warehouse, and you will not need to use external warehouses.

Selling the finished goods

Managing your sales volumes

You can manage your production sales in factories, warehouses, mines etc. , by setting the selling price, the sales volume per game turn and select the conditions of the contract — selling the finished goods only to your company, to particular companies of other participants, sell to any participant or to no one at all.

Price	Distribution policy
0	Maximum volume:
	Not for sale
	Not for sale
	To any customer
	Only to certain companies
	Only to my company
	Only to members of the corporation

Selling the production of a vertically integrated business

If your goal is to build a company with its own supply chain, from mining to selling the finished goods, strive for the profitability of not only your company as a whole, but each subdivision individually.

When selling among the subdivisions of your own company, consider prime costs and selling prices, transport expenses, taxes.

Try to optimize the whole supply chain, so as to minimize the expenses and get maximum benefit from the right location and tax policy.

The customers of a retail business are computer-generated. Customers can purchase products in retail stores, gas stations, etc. buy services in -laundries, hair salons, medical centers, etc. All other customers, who buy raw materials, finished products are real participants of the simulation.

Example of the dynamics of sales in the store:

| Ход | | Количество | | Качество | | Цена | | Бренд |
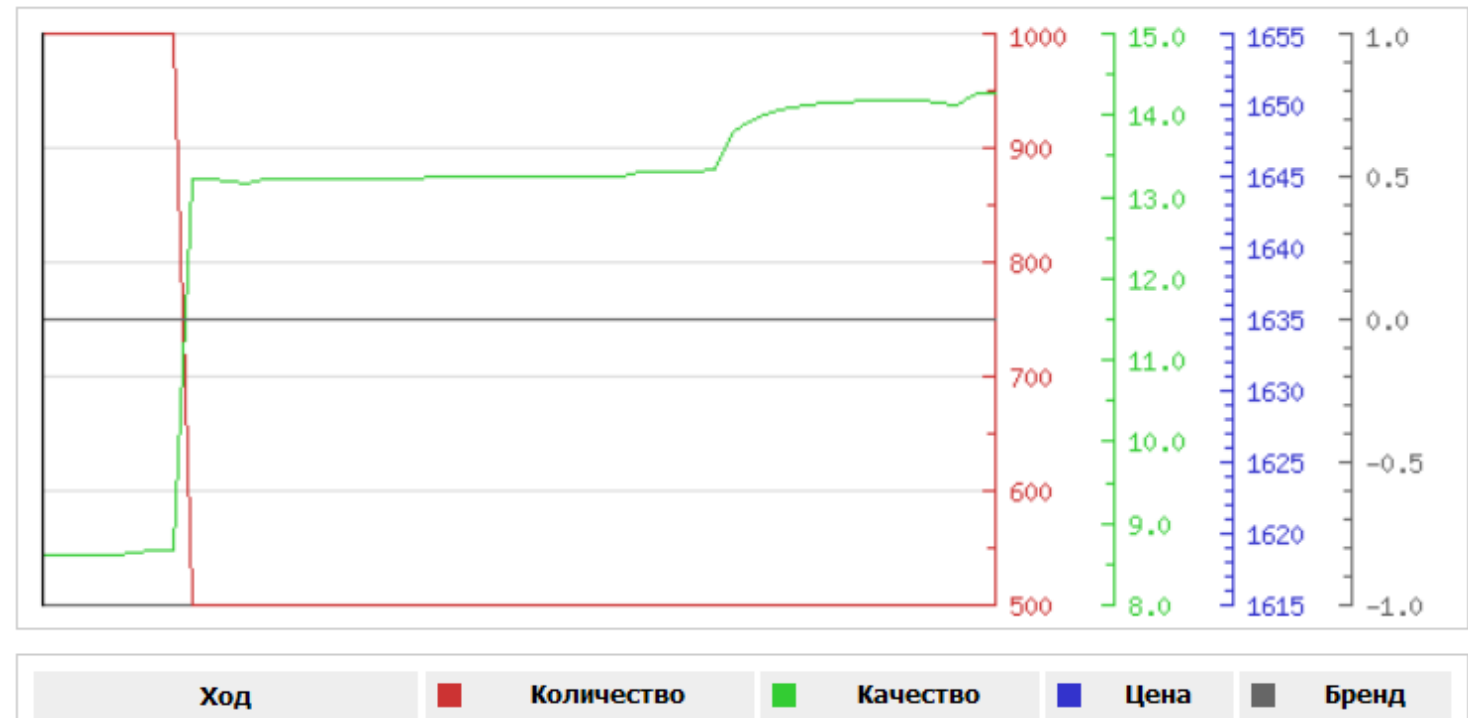
One game turn in Virtonomics equals to one week. The figure shows that the quality of the period increased by almost two times, the price remained the same, but the sales, dropped from 1 000 to 500 units. It happened, most likely, because, all available products in one game turn are selling out very quickly. Therefore, you need to increase the volumes of supply experiment with increasing the prices.

Research

If you want to conduct your own research, first, you need to open a laboratory, hire adequately qualified scientists and purchase the equipment of appropriate quality.

The larger the laboratory is, the higher the level of technology can be developed.

There are three stages of research:
- Initial hypothesis.
- Hypothesis processing — select the hypothesis, which will be tested.
- Technical testing.

Each stage can take several game turns. The invented technologies can be implemented in your own enterprises or be sold in a form of usage licenses to other participants.

Purchasing of a license

In order to buy a license click on the «Technologies» tab in the enterprise, the technology level of which has to increase

The licenses can be purchased at auctions.

Purchasing of a technology

Click on the «Technologies» tab in the enterprise of your interest.
The buying of technologies is not complicated — just select the need technology and pay the technology and its implementation price.

The technology level of an enterprise (just like the qualification of the employees, equipment and raw materials) has a huge influence on the production quality and staff efficiency. The technology level can be improved by conducting research in laboratories, buying licenses and technologies.

Every method has its own specific nuances. For example, the process of conducting your own research will take time, but eventually you will be able to implement a new technology or sell it to other participants. Although the purchasing of a license or technology is the fastest way to improve the technology level, you will need to pay for it right away. The licenses normally cost less than technologies. But licenses are implemented only in one enterprise, whereas technologies can be implemented in all enterprise of the same type.

A sample of technology implementation prices of 1, 2 and 3 level at a pet food factory:

Technology level	Technology cost	Cost of introduction	Total cos
○ Level 1	$0.00	$62 020.54	$62 0
✓ Level 2	$0.00	$0.00	
⦿ Level 3	$13 368 574 074.07	$171 679.85	$13 368 745 7

Example of license purchase application:

Select the required level of technology and the maximum amount you are willing to pay for a license.

The competitive application is when the price that you offer does not exceed the given price, not competitive – average market price. In this case, it can be any price, but the purchase opportunity increases.

The applications are processed during the game update.

Equipment: purchasing, repairing and removing

Automatic repair

If you have an equipment auto repair function in your enterprise, the system will monitor the condition of your equipment every game turn and automatically repair it if needed.

You can set the replacing equipment quality and price range.

It is also possible to set the supply of equipment from your own subdivisions (in case they manufacture the required equipment).

There is some sort of **equipment** in any type of enterprise: computers (offices), machines (factories), work-out equipment (fitness centers), trawlers (fishing bases), research equipment (laboratories), etc. The equipment is selected based on the technology level of your enterprise. High technology levels require high quality equipment. While, the quality of the equipment depend on the qualification of your employees.

Equipment tends to wear out due to constant exploitation and needs to be repaired. Go to «**My company**» > «**Management**» to manage the equipment in all your company.

	Subdivision		Equipment					
City ▲▼	(sort by name) ▲▼	quantity		quality		wear and tear ▲▼	Eff. ▲▼	
	(sort by type) ▲▼	un. ▲▼	max. ▲▼	un. ▲▼	required ▲▼			
Las Palmas de Gran Canaria 🇪🇸 Spain	Office	4	10	1.00	0.99	1.92 % (0+1)	2.20 %	
Kyiv 🇺🇦 East Ukraine	Office	4	10	1.00	0.99	1.92 % (0+1)	100.00 %	
Las Palmas de Gran Canaria 🇪🇸 Spain	Restaurant	5	20	1.00	0.99	0.96 % (0+1)	2.60 %	
Kyiv 🇺🇦 East Ukraine	Bread Factory Bakery	10	100	2.30	2.26	0.96 % (0+1)	100.00 %	

Show by: 10 25 **50** 100 200 400   Page: 1

There are equipment buying, repairing and removing functions on the home page of each enterprise. («Equipment» and «Automatic repair»):

Equipment quantity	2 500 pcs. (maximum 2 500)
Equipment quality	28.78 (required according to the technology 2.16)

🔗 Equipment

🔗 Automatic repair

Finance

Cash inflow and outflow

During the game update, the system calculates your cash flow:

- Supply and products purchasing expenses.
- Rent expenses (stores, warehouses, offices, etc.).
- Employees' weekly salary.
- Employee training expenses.
- Revenues from sales.
- Списания (поступления) в случае покупки (продажи) лицензий.
- Expenses of opening new subdivisions or changing their size.
- Advertising expenses.
- Tax fees.
- Profit from the sales of subdivisions at auctions.

The following expenses are calculated **instantly**:

- Employee hiring /dismissal payments.
- Opening offices, stores, warehouse, etc.
- Changing stores' size and location,
- Purchasing mines and oil wells, etc.
- Buying business boosters

At the beginning of the simulation, you will always receive a certain amount of money. The amount can vary, but they are necessary to maintain your company's processes and open new subdivisions.

The amount of your money funds is indicated on the top of your company's homepage. It is always visible whenever you perform any actions in the simulations (purchasing supplies, hiring employees, etc.)
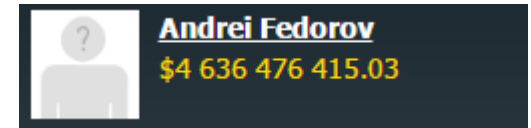
Factors to consider when managing the money funds of your virtual company:

- Cash inflow and outflow. Some operations are calculated during the game update and some are calculated instantly.
- Carefully assess your business development expenses or improving the technology level.
- Pay attention to the available stocks of raw materials and finished products at your warehouses. On one hand, they ensure the stability to your business. On the other hand, your money are tied up in those stocks when they could be invested into your company's growth. Find the right balance between stability and business development.
- Your company' account is replenished by company profit.
- In case of the shortage of money, you can sell some of your businesses at an auction. But it may take some time, and you cannot be certain how much money you will be able gain. The process of selling the business should be planned beforehand, a few game turns before.
- If the money balance of your company is negative for more than 10 consecutive game turns, your company is declared bankrupt. In this case, the management function of your company is stopped, and the company is put up for sale. If the company recovers after the sale of some of the businesses and the money balance is positive again, the management function is restored.
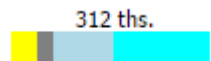
There are a lot of reports on the financial situation of the company as a whole and its separate subdivisions. You can find them by clicking on «**My Company**» > «**Reports**» in the «**Financial report**» tab on the homepage of each separate subdivision.
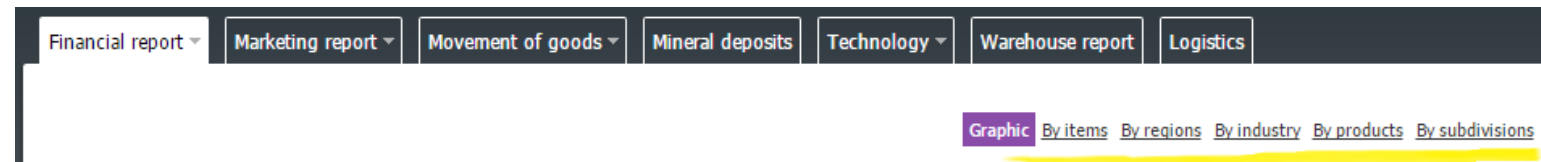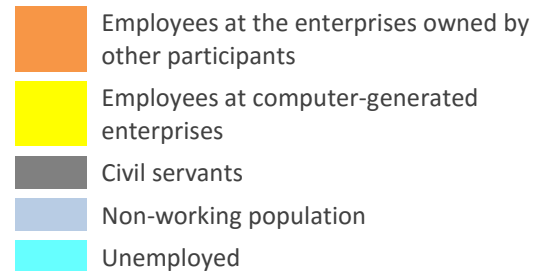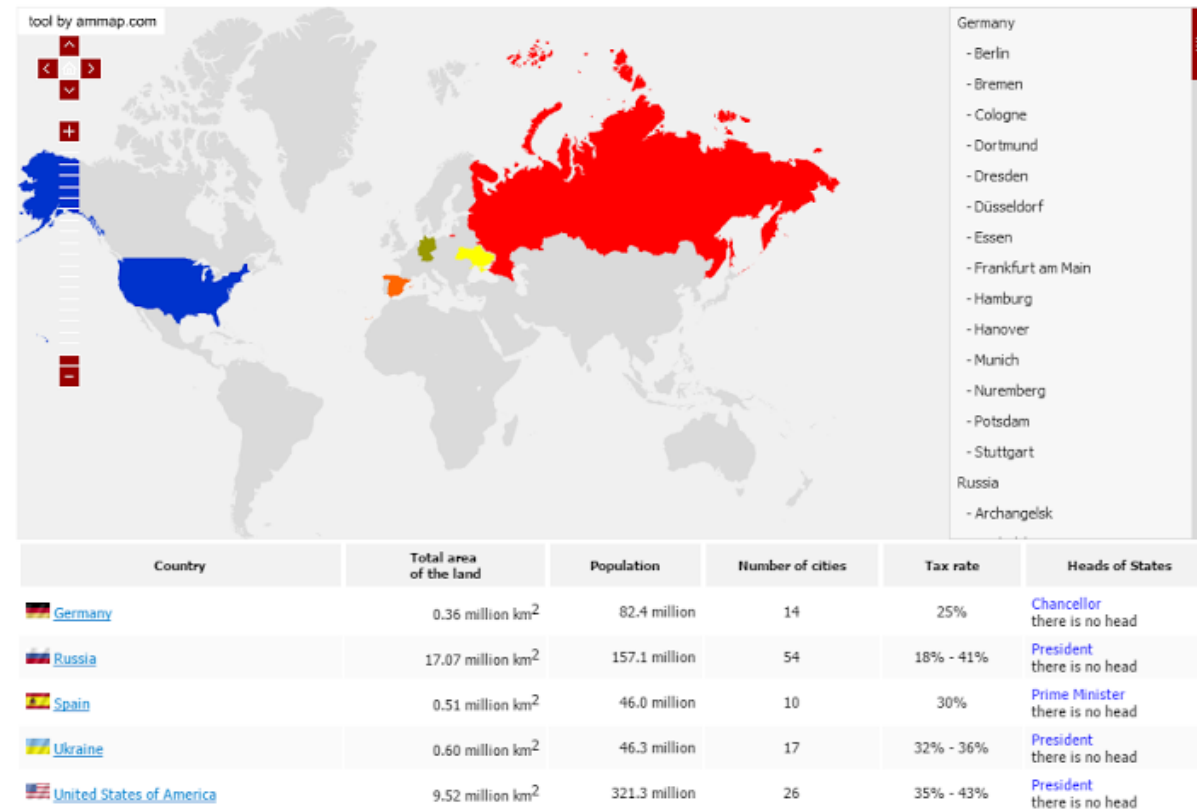
World map

Demographic situation in cities

Every city has its own demographic profile. An example of Ivanovo (Russia):

312 ths.

Employment types:

(orange)	Employees at the enterprises owned by other participants
(yellow)	Employees at computer-generated enterprises
(grey)	Civil servants
(light blue)	Non-working population
(cyan)	Unemployed

The world map in Virtonomics is identical to the real geographical map. The only difference is the number of available countries in Virtonomics. There are 5 countries in   Intensive format and 36 in Classic. You can see the Virtonomics world map by clicking on «**Analytics**» > «**Macroeconomics**».

Country	Total area of the land	Population	Number of cities	Tax rate	Heads of States
Germany	0.36 million km^2	82.4 million	14	25%	Chancellor there is no head
Russia	17.07 million km^2	157.1 million	54	18% - 41%	President there is no head
Spain	0.51 million km^2	46.0 million	10	30%	Prime Minister there is no head
Ukraine	0.60 million km^2	46.3 million	17	32% - 36%	President there is no head
United States of America	9.52 million km^2	321.3 million	26	35% - 43%	President there is no head

General information on the countries includes the number of cities, population and tax rates. For the detailed information on the cities (population, average salary, unemployment rate, education, etc.) select the country or a region:

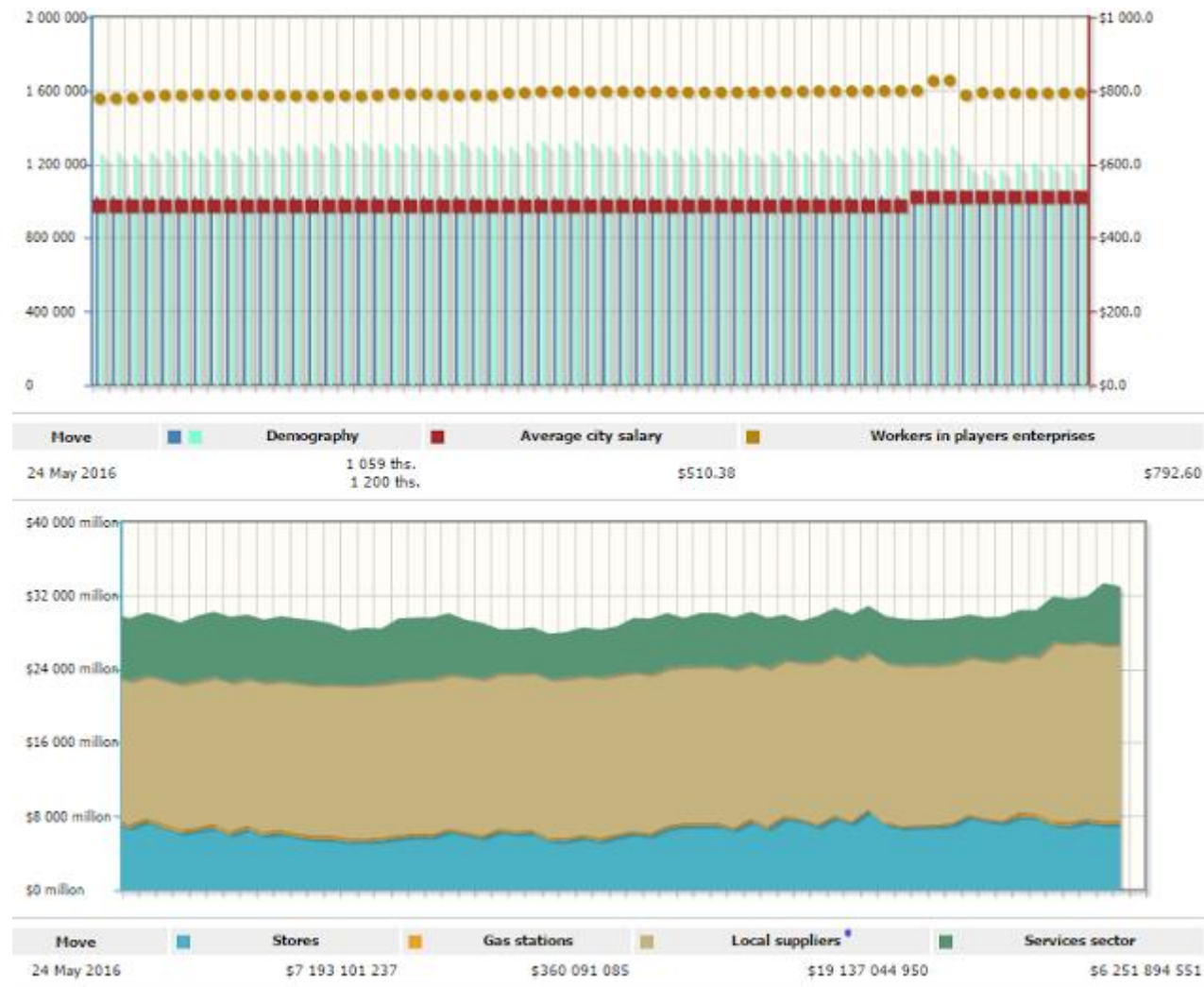| City	Population ths.	Average city salary	Unemployment rate	Education level	Wealth level	Demography	Mayors
New York	8 406 ▾	©1 540.00 ▾	23.85 %	8.50 ▾	1.56	8 406 ths.	no mayor electors activity is high

City indicators

The main factors

When selecting a city to start your business, pay attention to the following factors:

- **Population** — it gives an overview of the potential market size.
- **Average city salary** — the level is normally higher in bigger cities.
- **Unemployment rate** — on one hand, high unemployment reduces the market potential. On the other hand, the unemployed can easily become your employees.
- **Education level** — abstract indication of average employee qualification in the city.
- **Wealth level** — abstract indication of population's buying power in the city. It is calculated correlation of city population and the size of retail market.

There is archived information on key indicators in every city:

Move	Demography	Average city salary	Workers in players enterprises
24 May 2016	1 059 ths. 1 200 ths.	$510.38	$792.60

Move	Stores	Gas stations	Local suppliers	Services sector
24 May 2016	$7 193 101 237	$360 091 085	$19 137 044 950	$6 251 894 551

Additionally, there is data on rent costs, renewable resources (agricultural products, wood, etc.) and seasonal variations.

Taxes and fees

Tax and fee rates

Just like in real life, the virtual companies in Virtonomics have to pay certain taxes and fees:

- **Custom duties** — are applied in export and import operations. Their rates depend on the product / raw material.
- **Income tax** — the main tax. Applied in trading (wholesale, sales of products produced by your factories, sales in stores), and services. The income tax rates vary according to region. The dividends are transferred during the game update.
- **CTIE rates** — a minimum tax deduction sum; applies only to production subdivisions. It is deducted only when the products were sold at a price lower than their prime cost or if the enterprise's income is lower than the income tax rate. In all other cases the income tax is applicable. The tax rates vary based on regions.
- **Technology and licenses sales tax.** 7% rate.
- **Property sale tax** (when selling subdivisions). 10% rate.

The information on the taxes and fees that are applied in Virtonomics virtual world can be found by clicking on the «**Analytics**» > «**Macroeconomics**» tab.

A sample of customs duties on export and import in Russia (select the country and click on the «Custom duties» tab):

Information on the tax rates in a specific region of the country (Russian Far East). Select the country and click on «Region».

A sample of CTIE rates in Central Russia (select the region and click on the «CTIE rates»):

Transport and rent expenses, energy consumption costs

Transport expenses

In some cases, transportation expenses and customs duties can have a significant impact on the selling price of the product.

For example, the manufacturer's price of one potato is $ 0.09. The shipping of potatoes from Shanghai to Cologne and customs duties will cost $ 0.06 per each potato, and that is ~ 66% of the price.

The selling price and the price with shipping expenses and customs duties is indicated when ordering products:

Supplier's price	Price
$600.00	$668.64
$900.00	$913.76

Supplier's price — selling price.
The price — the total price, including transport expenses and custom duties.

Rent

Premises for offices, stores, warehouses, restaurants, hair salons, laundries, etc. are for rent. You can rent the required premises in one game turn (the actual building of the subdivisions take longer than that).

Just like in real life, the shipping of products in Virtonomics cost a certain amout of money. The information of shipping costs are available by clicking on «**Analytics**» > «**Macroeconomics**», select the «**Transport**» tab. Select the product category and the departure city:

Energy tariffs of certain regions of the country or the whole country can be found by clicking on «**Analytics**» > «**Macroeconomics**», just select the required country or region.

Industry	Products	Tariffs for the electric power
Electric power for cities		$80.00 / MWh
Agriculture		$50.00 / MWh

The rent costs of the cities by clicking on «**Rent**»:

Class of subdivision	Rent 1 thousands m²	Office rent for one employee
Office	-	$256.00
Store	$26 135.00	-

Renewable resources

Report on products' seasonality

For the information of the city's renewable resources, click on «Analytics» > «Macroeconomics», and choose the «Resources» tab.

For specific reports click on «Analytics» > «Market analysis» and select the «Resources» tab.

Seasonal businesses

Agriculture business (farms, plantations) are actively developing only during a certain part of the game year. The seasons of sowing, ripening and harvesting vary according to different types of crops.

When the harvest season comes to an end, the employees of the agriculture subdivision are dismissed, but general expenses are still applicable.
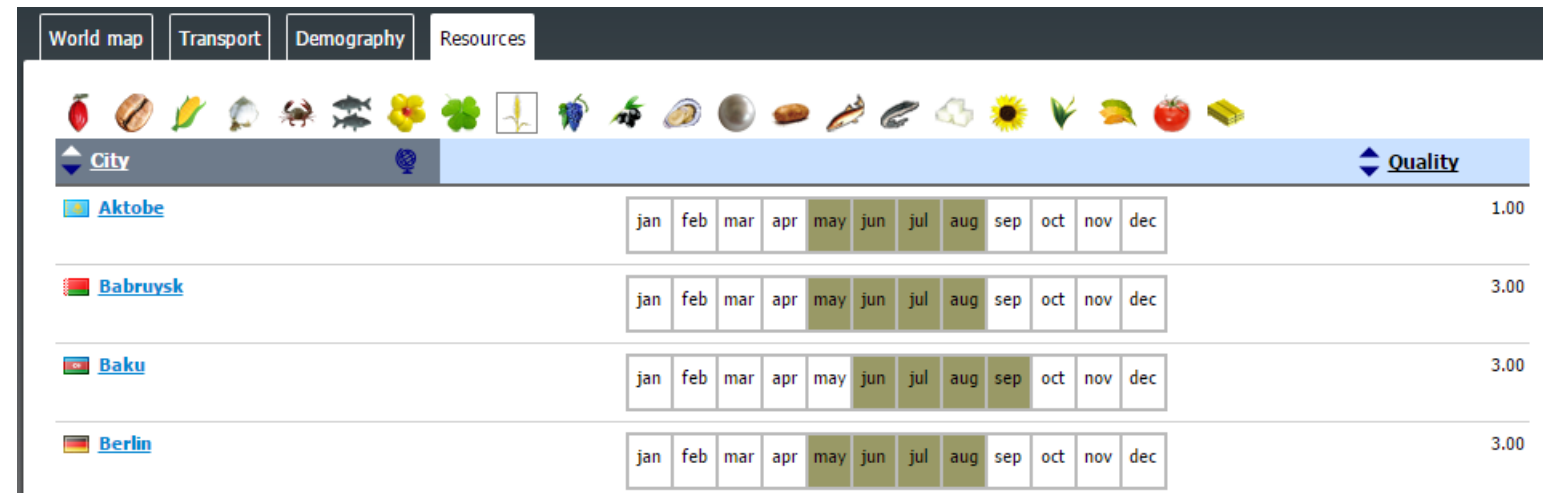
When you open farms, you can start the sowing process during this exact virtual year. Fruit plantations give crops only the next year.

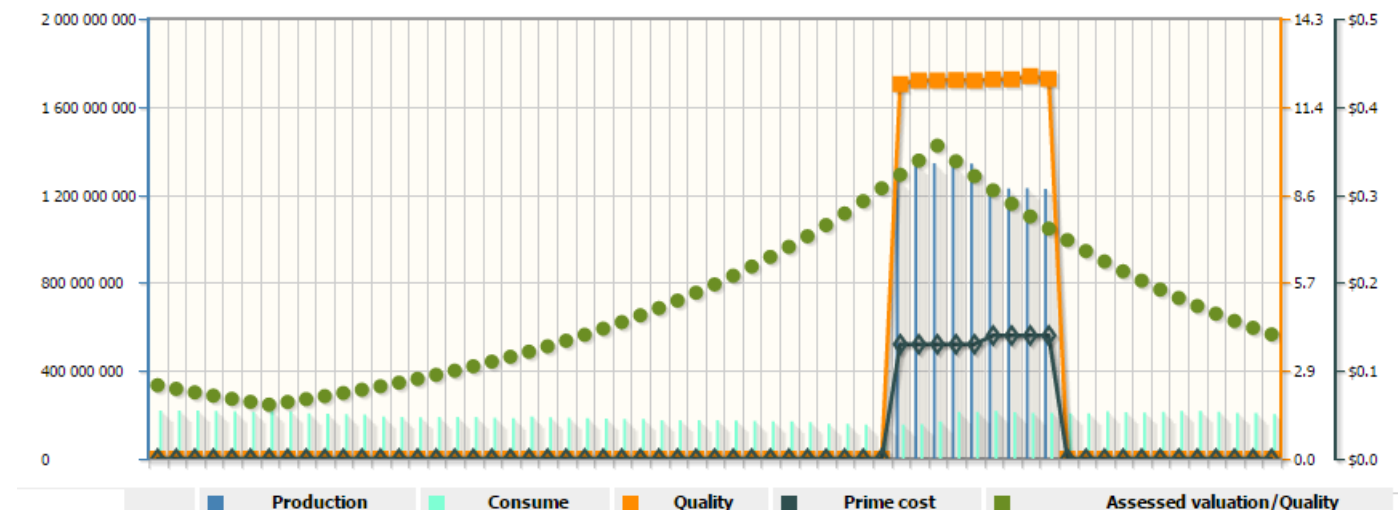### The geography of agriculture business

Just like in real life, growing certain crops strongly depend on geographical aspects. Each renewable resource depend on certain environmental conditions and geographical location. (You cannot grow coffee in Norway, for instance).

Wood, agricultural and fishery products are the renewable resources that vary according to each city. Production of certain resources do not depend on seasonal variations (wood manufacturing or pearl fishing, for example). However, agriculture business depend heavily on seasonality.

A sample of harvesting calendar in specific cities:

The seasonality is depicted in crop cultivation reports:

Retail

Market development index

For quick assessment of market potential a market development index can be used. It can be found in «Market analysis» > «City Retail»:

Market development index: 🗗wiki **E**

The index rating:

- **AAA** — oversaturated market, supply exceeds the demand by more than three times.
- **AA** — oversaturated market, supply exceeds the demand by more than two times.
- **A** — oversaturated market.
- **B** — saturated market.
- **C** — initial stage of saturation.
- **D** — market is not saturated.
- **E** — market is not saturated, the local suppliers' share is more than 50%.

Sample report analysis

The market development index is «E—D» (for various regions in Russia), it means that the market has a potential. Two key players make one fourth of the market in total (sales volumes for both are 150 000 units and the whole market volume is 600 000 units.).

Local suppliers offer the product with a quality little higher than a unit at a price of about 1400. The market leader offers the product of a high quality (about 78) at price of 700. The products offered by another player are of a quality about 30 and price of 230. Both offers are clearly more attractive than the market average (the price is lower, whereas the quality is higher). Use this information as a guide before launching a product.

For market analysis click on «**Analytics**» > «**Market Analysis**». The information on market situations is categorized based on the following sectors:

City retail Best stores Services sector Sales volume Wholesale trade: price-quality Products

Retail market reports are one of the most important in the simulation. It includes information about the consumer market: products price and quality, market maturity and capacity, key players, etc. The information can be filtered based on specific geographic location that will help assess the selling potential of your product.

A sample of underwear market report in Russia:

Market analysis: specific indicators

Sample report analysis

Competition on the market is moderate - the development index is "E". Approximately 2/3 of the market belongs to local suppliers - computer shops and the stores, which offer products on the market, since there are no real participants with such offers. Just over a third of the market is controlled by a real participant.

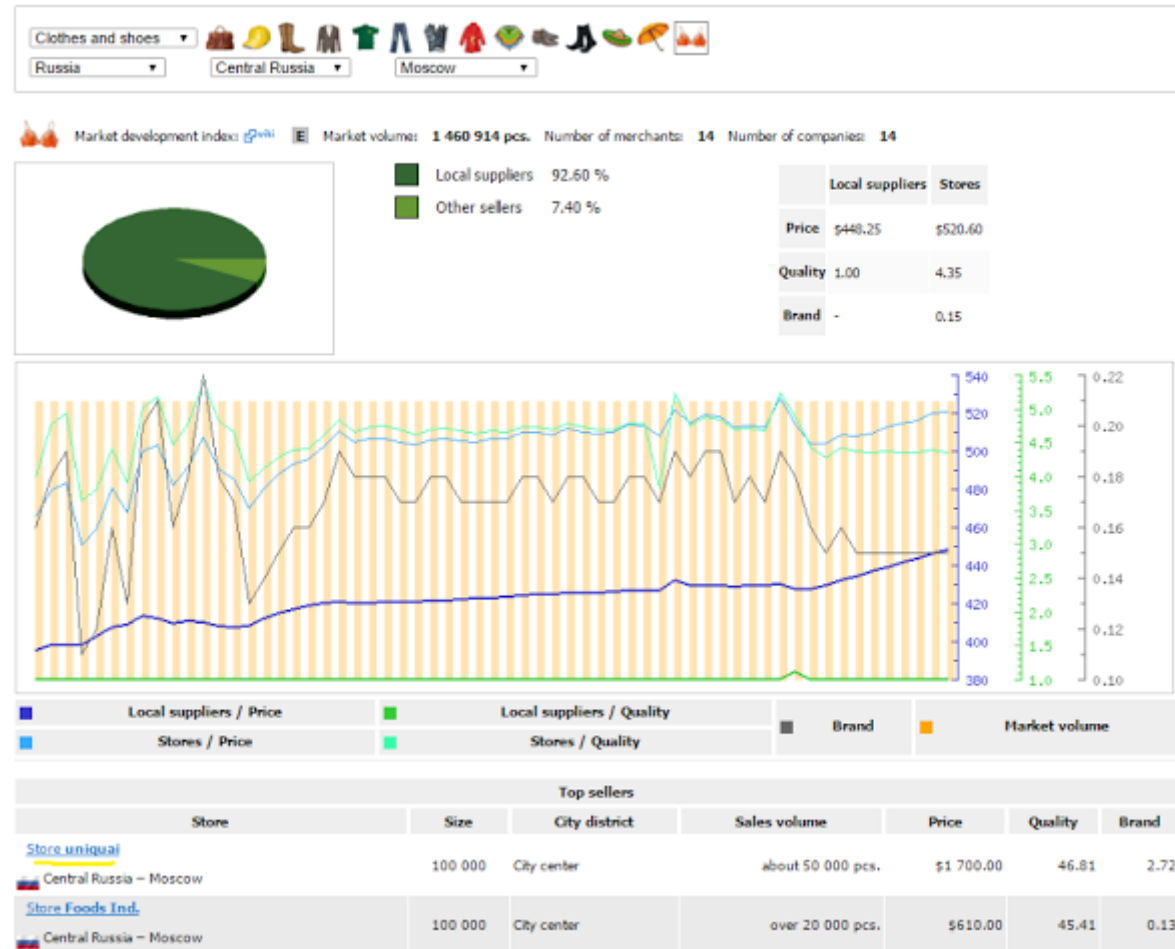The market volume is stable and has not drastically changed. The products' brand is zero.

There is a positive trend in quality and price dynamics in local stores. It is a reaction to the actions of a real participant, who has entered the market with a product of a higher quality and price. Local suppliers have also begun to raise the prices and quality of their products to remain competitive.

Competitions assessment

You have the opportunity to see the behavior of your competition. Click on the subdivision of your competitor in the competition report (in the example of the report "store») or just a company name («uniquai»), in the second case, you will see the whole list of subdivisions of your competitor.

For detailed market and competition analysis select he city of your interest. You will receive information on key indicators.

A sample of detailed underwear market report in Moscow:

Store	Size	City district	Sales volume	Price	Quality	Brand
Store uniquai Central Russia – Moscow	100 000	City center	about 50 000 pcs.	$1 700.00	46.81	2.72
Store Foods Ind. Central Russia – Moscow	100 000	City center	over 20 000 pcs.	$610.00	45.41	0.13

Competition analysis: products, sales, enterprises

Competition assessment

The store is of the biggest size possible - 100 thousand square meters. It specializes only in selling clothes and shoes (there's only one department).

The store is of an elite service level, which means that the number of employees and their qualifications are of a relevant standard, the size of a trade hall meets the customer traffic flow.

In order to increase the traffic, you can select the following options:
- Parking. One of the business boosters (available on the store's homepage).
- Advertising campaign

The store offers a wide range of products. The products that sell the most are the ones with a price higher than market average, their quality is also significantly higher than city average.

Select the competitor of your choice In the «**Market Analysis**» tab. You will see the whole list of their enterprises. By clicking on a specific enterprise you will see a detailed report of its activity.

Subdivision of a company uniquai

Location	Moscow (Russia, Central Russia)
City district	City center
Trade area	100 000
Number of departments	1.00
Popularity	547.26
Number of visitors	about 1 000 000
Service level	High

Product	Sales volume	Quality	Brand	Sale price	Market share	city average Price per week	city average Quality	city average Brand
Clothes and shoes								
	over 10 000	52.11	2.72	$2 900.00	0.63 %	$605.64	3.94	0.16
	over 100 000	66.97	2.72	$455.00	4.85 %	$195.74	25.10	0.78
	about 5 000	43.70	2.72	$18 500.00	0.97 %	$2 263.02	7.87	0.18
	about 100 000	66.97	2.72	$450.00	3.11 %	$209.28	24.97	0.77
	about 100 000	51.47	2.72	$2 200.00	5.52 %	$700.05	4.29	0.19
	about 50 000	60.81	2.72	$1 500.00	1.33 %	$365.04	13.07	0.26

A useful report on market structure and the key players is available in «**Analytics**» > «**Market Analysis**» > «**Sales volumes**». Just click on any competitor to access the information about their company.

Market structure and sales volumes

Navigating the market

Reports on market structure are based on separate products. Select the product category first then specify the concrete product.

You can also select a specific location (regions and cities. If concrete location is not selected, the product report is based on of all data (market situation of the products in all geographical locations).

City retail   Best stores   Services sector   **Sales volume**   Wholesale trade: price-quality   Products

Clothes and shoes

Market development index: wiki   **E** - **A**   Market volume: **58 150 763 pcs.**   Number of merchants: **1 181**   Number of companies: **1 123**

Service sector

Navigating the market

Service sector market reports are based on specific service sector specializations and geographical locations.

The reports contain information on key players and market structure based on competitors' specializations and geographical locations of their enterprises.

The report also includes the data on market size and average prices.

Below the graph, there is detailed information on your competitors. You will be able to access the company or enterprise report of your competitors.

A sample of service sector market report:

City retail   Best stores   **Services sector**   Sales volume   Wholesale trade

Go to the ratings

Market development index: **9.11**   Market volume: **103 089 196**   Number of subdivisions: **7 504**   Number of companies: **659**   Price: **$6 674.73**

Other sellers	100.00 %	

Italian Restaurant	12.15 %
Steak Restaurant	11.23 %
Beer Pub	10.77 %
Tearoom	10.65 %
Ice Cream Parlor	10.25 %
Coffee House	8.20 %

City center	54.55 %
Residential area	27.36 %
Outskirts	10.49 %
Suburb	5.03 %
Trendy neighborhood	2.58 %

Production sector analysis

Reading graphic reports

Graphic reports show the data on production average quality and costs. These reports are useful for understanding general market trends.

From the Red Bull example, we can see the increase in production quality and reduction in prime costs. It means that someone has introduced new technology. The production volumes for this moment have decreased and at the same time there is an increase in consumption of the product in the market.

Key manufactures

For detailed analysis see the information on key competitors («Production» > «Today»).

The key player in RedBull production is the company «Parex, which is about 10 times bigger than the second biggest competitor («Dalaimoc S.A.»). When choosing a production strategy, the information on the competition on the market is highly useful.

Production reports are available by clicking on «**Analytics**» > «**Market analysis**» and selecting the «**Production**» > «**General report**» tab. Select a product category and the product.

A sample of Red Bull production report:

Move	Production	Consume	Quality	Prime cost	Assessed valuation/Quality
25 May 2016	26 651 845	31 997 878	23.84	$226.08	$15.00
24 May 2016	23 948 860	37 215 238	23.83	$205.80	$14.28
23 May 2016	24 142 834	36 697 126	23.18	$176.41	$14.56
22 May 2016	24 044 275	33 091 370	22.85	$169.34	$14.47
21 May 2016	23 100 055	27 039 047	23.21	$165.50	$14.55

The information on the market structure and key competitors is available in «**Production**» > «**Today**»:

	Компания	Кол-во	Кач-во
1	Parex	около 1 000 000	45.68
2	Dalaimoc S.A.	около 100 000	14.50
3	Ackermann Industries International	более 20 000	6.29

Reference

The reference data is based on the following sections:

Types of enterprises

The list of all types of manufacturing enterprises, their production, required raw materials, and production cycle, time needed to build a factory.

Products and raw materials

Products and raw materials, which are bought and sold by the participants of business simulation. This section also contains the data on the raw material, from which products are made. By clicking on the raw material of your choice, you will see the same report and the information on where this raw material is used.

Trade

The products that are offered to the end users in retail. Also, the section contain information on raw materials, which are necessary for manufacturing the products.

Business boosters

The list of all business boosters in the simulation, their prices, service costs and validity periods.

Information on the types of enterprises, product, raw materials and production type, trade and business boosters is essential in business management in Virtonomics. The information can be found by clicking on «**Analytics**» > «**Reference**».

For example, this data will inform you what raw materials are necessary for the production of aircraft fuselage parts, the duration of construction of such factory, how many product units can be produced in one game turn:

| Industry | Aircraft production |

Specialization

Specialization	Equipment	Raw material							Products	Quality modifier
Fuselage section		17 400 pcs.	3 000 pcs.	3 000 pcs.	3 000 pcs.	1 500 pcs.	1 500 pcs.	600 pcs.	1 pcs.	
Wing elements		27 000 pcs.	2 000 pcs.	9 000 pcs.	2 000 pcs.	4 500 pcs.			1 pcs.	
Empennage elements		7 000 pcs.	6 000 pcs.	1 500 pcs.					1 pcs.	

Production specifications

Size	Number of workplaces / Max. equipment	Building duration (weeks)	Production volume		
			Fuselage section pcs./week	Wing elements pcs./week	Empennage elements pcs./week
10000 workplaces	10000 40000	45	4	4	8
25000 workplaces	25000 100000	90	10	10	20

By clicking on the component or raw material, you will see the information on what is needed to produce them. It is vital information for planning to establish a vertically integrated company.

Messaging other participants

The messaging system is available to all participants of the simulation.

Virtonomics has a **messaging system**, which allows participants to communicate with each other. You can use it to make contact other participants to sign contacts, negotiate price conditions, etc.

In order to send a message click on the company of your interest. You can also do that by clicking on «Analytics» > «Market Analysis», select the company and click on «**Contact president**»:

Enter the subject and the content of your mail:

Click on the letter icon at the top of your page to access your messages: