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Metrics for analysis of online marketplaces

For selling digital goods

Thesis
Autumn 2020
School of Business and Culture
International Business

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Thesis abstract

Nowadays, as people more and more often make online purchases and the total share of the e-commerce is still growing all over the world, the market of digital goods cannot be ignored by companies. The aim of this thesis work was to create an effective way for analysing sales channels in the industry of digital items, which could be used in the future for the comparison of the effectiveness of online marketplaces.

A quantitative research method, document screening, was used to achieve the goal of the thesis. The sales data for 2019 of Digital Software OÜ, an Estonian company, was taken as the sample data.

The main aim of the thesis was achieved, and the most appropriate way to analyse the effectiveness of the company on the market of digital goods was found. Ten of the most related metrics for the market of digital goods were used to analyse all the sales channels of the company in 2019. The answer to the question as to which online marketplace is the best for selling digital items can be found in this thesis, as a result of the study.

This thesis work could easily be used by anyone who decides to start or to expand on the market of digital goods, as well as by a company that will use the metrics found in this study for a future analysis of sales channels. That is why this thesis work is so valuable.

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Terms and Abbreviations

Digital goods   in electronic commerce, digital goods is a general phrase used to describe any goods that are stored, delivered and used in its electronic format. (Digital goods, [ref. 20 November 2020])

ERP system   the abbreviation of enterprise resource planning usually used by companies for accounting and many other business processes. (Bidgoli 2004, 707)

CRM system   is a technology for managing all your company's relationships and interactions with customers and potential customers. The goal is simple: Improve business relationships to grow your business. (CRM 101, [ref. 20 November 2020])

Tables, Figures and Pictures

1 INTRODUCTION

This thesis was written while working for my own company, so the task was really personal for me. The main task of the company is to sell digital goods. This business was started in 2014, much earlier than international business degree was accepted as field of studying. During the past six years my knowledge about business has been growing, but still nothing from the Business degree was implemented in real business. This horrible mistake should be fixed during the present study.

Despite the fact the work in the field of digital goods was started in 2014, officially the business was officially registered in 2018. The name of the company is Digital Software OÜ and its registered in Estonia. (Digital Software OÜ, [ref. 20 November 2020]) All the staff of the company are not citizens of the European Union, so why is the business is registered in a country of European Union? Because almost all potential customers of digital goods come from Europe or the United States and Estonia is showing itself as country with a high potential for digital business (Khan & Shahaab, [ref. 20 November 2020]). Almost all business processes can easily be regulated remotely through the internet.

The aims of this thesis are really important for my business. The results of the thesis study will definitely be used by the company in the future. The market of digital goods is very rapid and unstable. Everything is changing so fast. For instance, when a new item just had been added to the buying lists of the company, the selling of it was prohibited by online marketplace.

Each seller of the company even has a rule: announce all news and changes on the marketplace to managers in sixty minutes. Changes in the price of each digital goods come hourly and remember some currency exchange markets.

Companies on the market of digital goods need to count on not only the facts above, but also on the effectiveness of the marketplaces. What is the effectiveness of the marketplace where it is possible to sell digital goods? How to measure it? These are the main research question of this thesis work. From the scratch, a really less part of information related to the market of digital goods was found. There is almost nothing about the thread and that is the main challenge of this work, but let's start from

the development work of the company, where all main activities of the company will be showed.

1.1 Relevance and value of the topic

Nowadays, when people more often make online purchases and the total share of the e-commerce is still growing all over the world (E-commerce share, [Ref. 20 November 2020]), this market cannot be ignored by companies. Only in the United States, in 2020 during the COVID-19 pandemic, 129 percent year-over-year growth was showed on the market (Wertz 2020, [Ref. 22 November 2020]).

The business cannot ignore the trend and be on sidelines. Especially, on the sidelines of the market of digital items when even the corporations with the biggest revenue have been working on this destination. For instance, in 2017 Apple company generated almost $28 billion in year's revenue on services with digital content like music, apps and games (Mickle 2017, [Ref. 22 November 2020]). In 2020, 59 percent of all games for Sony PlayStation — one of the leaders on the market of home video game consoles, accounted for digital sales. Moreover, this number is still growing and 4 percent higher, compared with the previous annual report. (Nica 2020, [Ref. 22 November 2020]) So, the relevance of the topic of this study is extremely high.

1.2 the Main aims of the thesis and methods to achieve them

The main aim of this thesis work is to find an effective metrics which can be applied to analyse online marketplaces for selling digital items. Then, all sales made on the marketplaces of Digital Software OÜ will be analysed with the most effective metrics. The conclusion about the best online marketplace will be made, based on the results of the metrics.

This thesis only relies on the real sales history of Digital Software OÜ in 2019. Unfortunately, because of the policy of the company, it is not possible to share data about sales in this work, but all numbers were shown to the thesis supervisor. The

market of digital goods is a bit hidden in scholar libraries. There are just a few people who have researched this field. So, counting the lack of information about the topic, maybe, the only one right decision was to use a real data of sales for research.

The best metrics to compare online marketplaces for selling digital goods will be analysed in the thesis and, leaning on the real data sales of Digital Software OÜ, the most effective online marketplace will be shown. The results of this thesis work would be easily used by any people who decide to start or to expand on the market of digital goods. That is why this thesis work is so valuable and, in the future, if somebody wants to do research on the market it will be easier with leaning on the data of this research.

1.3 Structure of thesis work

Chapter two is dedicated to basic information about the company. Third chapter is totally about the theoretical background, with answers why some methods were successfully applied, and some were not. This part of the research not only gives an answer to the questions about structure and leaning on the hidden sales data, but also shows the biggest challenge of the research — less amount of the information and research similar to the topic.

Also, there is information about effective metrics can be used to analyse online marketplaces for selling digital goods. Each metric used for the research will be explained in the chapter, with the examples of applying and background like why it was applied and how it can be useful.

The last chapter is totally about the research. Each effective metric is used to analyse the real sales data of the Digital Software OÜ in 2019 for each marketplace. The end of this chapter is the result of the research, with the table of results for each marketplace and a final conclusion made on the results of the most effective metrics — which marketplace is the most effective for selling digital goods.

The final part of thesis work is the conclusion where all work was done will be described.

2 INFORMATION ABOUT THE COMPANY

2.1 Development work

Digital Software OÜ is a totally digital company, officially registered in Estonia since 2018. The company doesn't have the office and uses only dedicated labour and was found by two people: me and my partner. Shares in the company separated equivalently by the partnes. Also, the company has one investor, his role in the business processes is the minimum and limited by the quarterly reports of profit and loses. Digital Software OÜ works with thirteen people permanently and sometimes uses the services of freelancers.

Freelancers are hired by the company for additional and one-time tasks. For instance, the firm doesn't have a program developer in the staff but, sometimes, the one is hired to write some scripts or develop business tools for our regular tasks. Freelance website upwork.com for and some other sources is used for hiring freelancers. To the permanent staff of the company, I can relate: sales managers, bulk buyers on the thematic boards, accountant, financial manager, quality control manager and data research manager. The company has three bulk buyers, who work swiftly, five sales managers, per one for each online marketplace, and independent seller who do the direct sales. All staff work dedicatedly, from their homes with laptops.

Also, one more important thing about structure Digital Software OÜ is the fact that all sales managers and bulk buyers do not have a stable salary. For these positions, the company uses a flexible bonus system where the monthly income totally depends on the results. Sales managers earn 30% from the profit of each sold item. Bulk buyers earn from 5 percent till 10 percent from the profit of each bought item. Swimming percent depends on the total quality of bought items. The more goods you bought the higher your income is.

The main activity of the company is the sale of digital goods: gift cards, activation codes, games and in-game currency. Almost all inventory is sold through online marketplaces, such as g2g.com, g2a.com, gameflip.com, paxful.com, mmo-ga.com

and eBay.com. On the market of digital goods, you do not need to pay for any ads, because all marketing expenses are totally on online marketplaces. The cost of selling is ONLY the selling fee on the marketplace. Besides each finished transaction, the marketplaces also take the commission for the money withdrawn. So, the selling fee is not so easy as it looks like and it depends on specific marketplace, but it is between 5 percent till 15 percent. This kind of business never has a trouble where to sell the goods.

Buying the digital goods is the main task of the business. Threads with contacts of our service were created and advertised on thematic boards. People find threads and sell not-needed digital stuff to us through messengers. Threads are created by the company, with aged profiles, on the popular thematic boards with many replies and likes. On the market of digital goods, age means the reputation. Replies are really important, because they always bump your thread on the top thematic section, and they are a real feedback for the future suppliers. So, aged profiles and popular threads on the thematic boards are one of the main activities of the company.

The company has been using Xero as the main ERP system for numbers and accounting. The Website on the Discourse is used by the company as the main platform for all business processes. Messengers like Telegram are used for all quick communications and Skype for all video meetings. Each week the company has something like Skype meeting where me, my partner, financial manager and one sales manager discuss the results of the previous week.

Aged public profiles and accounts, with many positive feedbacks and history of deals, can be referred to the main activities of the company. Another good active of the company is the experienced team with unique skills. The business of the company is unique, and it is always hard to explain everything to the new employer, because all business processes are totally made by us and there are no books about selling digital goods where you can find some related information.

2.2   Business Model Canvas of the company

Business model canvas it is a template which can be used for the documenting of already existing business (Barquet 2011, 332). This template was originally created in 2015, by Swiss businessman Alexander Osterwalder (2005, [Ref. 20 November 2020]) and it consists of nine blocks: key partners, key activities, value propositions, customer relationships, customer segments, revenue streams, key resources, cost structure and channels. In this chapter, I want to use this template to show the business structure of Digital Software OÜ.

KEY PARTNERS	KEY ACTIVITIES	VALUE PROPOSITIONS	CUSTOMER RELATIONSHIPS	CUSTOMER SEGMENTS
-Online marketplaces such as: eBay, G2A, G2G, MMOGA, Gameflip, Paxful, Gamivo. -Game and software developers. -Official Suppliers and Dealers of game and software -In-game currency farm owners -Freelancers	-Selling digital goods on different online marketplaces. -Selling digital goods directly to customers through Facebook. -Negotiations with official dealers and suppliers	-Same products for cheaper prices. -Well-formed and flexible price politics for loyal and stable customers	-Direct selling through Facebook. -Subscribers on Facebook. -Customers from G2G, Paxful, G2A, Gameflip, eBay, MMOGA and Gamivo.	-Direct consumers from Facebook. -Customers from online marketplaces.
REVENUE STREAMS	**KEY RESOURCES**	**COST STRUCTURE**	**CHANNELS**	
-Online sales on marketplaces -Direct online sales through Facebook.	-Profiles with rating on marketplaces. -Arrangements with trustful and official suppliers. -Page on Facebook. -Based on experience in this field, well-configured infrastructure for business processes. -Reputation on the marketplaces.	-Price from supplier -Salary of buyers, sellers, managers and accountant. -Fee of marketplaces or cost of advertising -Taxes	-Facebook -G2A -Gameflip -Paxful -eBay -Gamivo -G2G -MMOGA -eMail marketing	

Figure 1. Business Model Canvas of Digital Software OÜ

2.2.1   Key partners

The main key partners of the company are marketplaces with the possibility of selling digital goods – digital marketplaces. The business sells almost eighty percent of the inventory on g2a.com and gameflip.com. Ebay.com, mmogah.com, g2g.com, paxful.com, gamivo.com, eneba.com can also be related to the digital marketplaces.

Sometimes, it is possible to deal with game and software developers directly for buying their products from them, but more typically that developers sell their products through an official distributor. It is not typical, but the company has a couple of deals, and they make a real difference, so I can re-late official distributors and de-velopers to the key partners of the business. This is a really rare type of the company and unique software and web solutions developments are needed often, so it is good to have some partnership with free-lancers. You do not need to pay them a regular salary, but keep a stable trusted worker by touch, in case if you need to develop some unique solution. So, free-lancers can be related to the key partners of the company.

2.2.2   Key activities

One of the main activities of the company is selling digital goods on different online marketplaces, but as mentioned before, selling is not so hard on the market of digital goods. Buying and seeking of suppliers is much harder than selling, so all processes related to buying can be easily definite to the key activities of the company: working on the boards for updating company's threads and regular thread bumping.

The Crucial activity of the business is the negotiation process, but except of the main thing here — the negotiations themselves, the company is required to do many pre-paratory steps. For instance, to gather the information across all internet about the official distributors of this and that product is needed. The company has the direct sales channel through Facebook, so all processes there, such are: refreshing Face-book with content, selling themselves and advertising related to the key activities of the company.

2.2.3   Customer segments and the value propositions

The company's customers are divided between three groups: customers from online marketplaces, consumers from thematic boards and clients from Facebook. The percent shares of each group in the total revenue of the business are: eighty-five

percent for customers from online marketplaces, ten percent for consumers from thematic boards and five percent for clients from Facebook.

As mentioned before, three customer segments insist, so the value segment is developed for each of them. For buyers from online marketplaces, the valuable proposition can be structured as the same products for the cheaper price, since the business does not have any communication with them and can offer anything bigger. By the way, it is really typical that clients from online marketplaces looking exactly for this.

For consumers and clients from Facebook and thematic boards the firm used to have another strategy and it based on the long-term relationships with offering the most possible loyalty. For instance, the business offers post payments and pre-ordering to the most loyal consumers.

2.2.4   Customer relationships

Except selling itself, the establishment does not have any relationship with the most valuable segment of clients — customers from online marketplaces. Typically, the final customer's data is hidden from the seller by online marketplaces (G2A Privacy Policy, [Ref. 20 November 2020]).

The company tries to build strong relationships with two other customer segments, because all clients shared, their personal profiles in messengers during the deal process. Email-marketing, Facebook newsfeed and direct messaging are used in business to make strong and the long-term relationship with customers.

2.2.5   Revenue streams

Typically, all payments on the market of digital goods going through the systems of e-payment. An e-payment system is a way of making transactions or paying for goods and services through an electronic medium, without the use of checks or cash. It is also called an electronic payment system or online payment system. (What Is an E-payment, [Ref. 20 November 2020]) The business actively use three

e-payment systems: PayPal, Bitcoin and Webmoney. Most of all consumers from Facebook or thematic boards pay directly to one of the e-payment accounts of the company.

It is harder always, with online marketplaces. Almost all online marketplaces have their own balance so, when the buyer pays the firm will get the payment on account on the marketplace, where money will be held for couple weeks during security reasons. After couple weeks, the company withdraw the money to one of the e-payment system accounts.

2.2.6   Key resources

Profiles with rating on marketplaces, thematic boards and Facebook page are the main resources of the business, because age and the positive feedbacks mean the reputation on the market of digital goods.

The prices can be given to the consumers is the key factor of selling, which relates to the price of the supplier. The official distributors can offer the best price on the market. As many agreements with official distributors as much profit can be made. The difficulty of the dealing with official distributors and the profit from them give me the rule to say — arrangements with trustful and official suppliers are the key resources of the company.

2.2.7   Cost structure and sales channels

The Cost structure of each sold item of the company consists of five factors: a price from the supplier, salary of managers and accountant, bonuses for buyers and sellers, a fee of marketplaces and taxes.

There are nine sales channels of the business. One social network — Facebook and one thematic board — playerup.com. Seven online marketplaces: G2A, Gameflip, Paxful, eBay, Gamivo, G2G and MMOGA.

2.3 The SWOT analysis of the company

A SWOT analysis is a useful tool for evaluating the business by zooming in on its strengths, weaknesses, opportunities available, and potential threats. Consider the following picture:

STRENGTHS
- Experience
- Value proposition
- Qualified staff
- Regular suppliers
- Quality of digital goods
- Reviews on marketplaces
- Regular buyers

WEAKNESSES
- Bad suppliers
- Substandard digital goods (from bad suppliers)
- Withdrawal of funds
- Quality control

OPPORTUNITIES
- New sales channels
- New digital goods
- The growing popularity of games and other digital goods
- Increase of sales price

THREATS
- Economy movement
- New competitors
- Loss of key staff
- Recession of market demand
- Increase of purchase price

SWOT

Figure 2. The SWOT analysis of Digital Software OÜ

In the picture 1 you can see the SWOT analysis of the company Digital Software OÜ that sells digital goods. To sum up, the key advantages of the company are qualified staff and a high reputation in marketplaces while the disadvantages are invalid digital goods and loss of.

The company can increase profit by the appearance of new sales channels or new digital goods. The main threat that may affect profit is the losing of key staff that can be the main competitors in the future.

3 UNUSED AND APPLIED METRICS DURING THE RESEARCH

This part of thesis work is totally related on the metrics used during the research. Firstly, the materials used during the research will be analysed, then one stop will be made for the metrics that cannot be used for analysing sales on the market of digital goods. On the next pages of this thesis work, one by one, each metric which was used for the research described with the given examples of using.

3.1 Fundamental book of the research and brief explanation of used metrics

The fundamental book for this research is the work Measuring Marketing, made by John Davis (2017). On the pages of just one book, the author gathered all effective metrics can be used for evaluating the business from different perspectives.

Unfortunately, not all of them can be used for measuring the sales data. Also, some of them cannot be used for measuring the data of the company related to the market of digital goods. In the book of John Davis (2017) separated by different groups: corporate financial marketing, marketing planning measures, brand metrics, customer metrics, product/offering metrics, price metrics, promotion metrics, direct marketing metrics, digital metrics, place distribution metrics and sales metrics. All metrics for the effectiveness of this research were taken from the distribution metrics of John Davis (2017).

3.2 Brief summary of literature related to the field of business

Compared with the analysis of sales channels in physical business, just a few works related to the sales in digital business were made and even they cannot be used during this research. All problems were faced during the research can be separated into two groups: the relevance of the information and the nature of sales were researched.

A lot of these works were done a long time ago and the information there was outdated. For instance, the work "E-workplace and E-learning" of Miller (2002) is dedicated to the research, but, on the market of digital goods, where everything is changing so fast, this book is totally outdated and cannot be used. The same issues were with the work of Sinclair (2005) and Holden (2006). For instance, the screenshots of the website from these books do not match reality, because the interface of this site was changed a long time ago.

Another trouble was faced during research in the nature of digital sales. The research by Burby (2007), Nitish (2005), Sandeep (2005), Siegel (2016), Colin Gray (2010) is mostly relevant, but dedicated to the sales on your own website or on the auction-like websites. Both of them are totally different ways of selling and not related to the sales of digital goods on online marketplaces.

3.3   Effective metrics that is described in the book

As it was mentioned earlier, the work of John Davis (2017) "Measuring Marketing" has ten chapters with the description of 1001 metrics. Firstly, let split ten chapters with metrics into two groups: related and non-related for this thesis research.

The group of non-related chapters contains metrics:

- – corporate financial metrics,
- – brand metrics,
- – product/offering metric,
- – price metrics,
- – advertising metrics,
- – direct marketing metrics.

This group of metrics is not approached for the research as they do not consist of information for sales analyse so these metrics cannot be used for analysing online marketplaces.

Then, the related group of metrics can be identified as possible for using to analyze online marketplaces. The metrics that are approached for the research:

- marketing planning,
- customers metrics,
- sales metrics,
- distribution metrics.

The second step is to analyse the appropriate groups of metrics and to identify several metrics that will be used to analyse online marketplaces.

3.3.1 Marketing planning metrics

This type of metrics can be used not only to analyse marketing program and their efficiency but also to analyse the company share, changes in sales, and company growth.

However, the efficiency of marketing cannot be analysed for the company Digital Software OÜ as the marketing companies are not used in the specification of this type of digital business. Marketing expenses lies on online marketplaces and marketing programs and attraction of customers are done by them.

The analysis of the company share cannot be done as most of the competitors are scattered across completely different online marketplaces. Also, it is almost impossible to get the data of competitors' sales that do an analysis of the company share impossible.

The changes in sales are the very important index that can show changes in the whole company. However, the metric that analyses sales changes is not suited for the Digital Software OÜ as this metric is approached for manufacturing companies and categorically not suitable for analysing reseller`s sales.

The index of the company growth is calculated as changes compared with the previous year. This metric is useful and can be calculated for the Digital Software OÜ, however, it does not suit the research.

3.3.2 Metrics of customers

The next group of metrics called customer metrics. This group contains an analysis of the clients of the company.

However, the online marketplaces hide the information about clients, because of the analysis of customers is impossible. Also, the price per client equals zero as the company does not attract customers as online marketplaces do that.

3.3.3 Metrics of sales

The group of sales metrics has two practical purposes. The first one is the analysis of customers to understand the ways of communication with them and the second practical purpose is the analysis of sales in the company to understand changes in cash flow. This group of metrics can be used in the research of online marketplaces as can be used for analysing sales and customers on platforms.

However, online marketplaces hide information about clients, so it is impossible to segment the audience of platforms by age, gender, and location. These private actions are taken by online marketplaces to avoid direct sales as in the case of direct sales platforms will lose their fee from every sale.

The next practical purpose of metrics is the analysis of sales and sales forecasting for the next period. However, the main difficulty in the business lies more on the purchasing of goods than on the sales process. Such forecasts are also not particularly needed.

3.3.4 Metrics of the place of distribution

The group of place distribution metrics can be used to identify the best channel for selling a digital product as contains metrics for analysing online marketplaces.

The availability of data for calculating metrics is presented for almost every index, however, several metrics from this group cannot be calculated as information is absent.

Let disassemble a few metrics that cannot be used in the research of analysis online marketplaces for the company Digital Software OÜ.

3.4 Distribution metrics cannot be applied on the market of digital goods

The metric of transactions per customer, usually used to determine how many from potential customers convert to actual buying customers (Davis 2017, 271). Two values are needed for getting the result of this metric: the quantity of customers who bought something from the company in exact time period and total potential customer traffic during the same traffic period.

Collecting the quantity of customers of Digital Software OÜ from marketplaces is not a problem, but the data about all user traffic of the company are hidden by these marketplaces during their policies.

Hourly Customer Traffic (Davis 2017, 280) is a very important and valuable metric used for evaluating total customer traffic during a specific period of a time. Calculated by dividing total customer traffic in the exact time period to total hours in the time period and both these values can be gathered from the sales of Digital Software OÜ on the online marketplaces, but for what reason?

This metric can be used to measure the hottest time-spot for customer traffic in a physical retail store and linked to the results, plan the shifts for sales managers. Digital Software OÜ use only one sales manager for one online marketplace and the clients are scattered all around the world. The shifts planning for only one sales manager in conditions where each time-spot is almost insensible. So, the decision of not using use Hourly Customer Traffic metric was made.

The next metric was not used for current research and are not usable on the market of digital goods altogether is Percent Inventory Carrying Costs. The metric used for showing the attitude of inventory carrying cost to all net sales (Davis 2017, 287).

Digital good is just a set of random numbers and letters and only table or even text file on your laptop needed for carrying these items. So, The Inventory Carrying Cost on each marketplace for Digital Software OÜ and for all companies on the market of digital goods altogether is equal to zero. That is why the result of the metric will be the same for each marketplace and it will be zero.

Sales per square foot metric (Davis 2017, 293) is a key metric for measuring the effectiveness of square in retail stores. The metric shows how many sales counts for each square foot in the physical retail store. It is impossible to use sales per square foot metric on the market of digital goods, because physical stores are not needed for selling digital goods.

The percent utilization of discounts metric used to understand the impact on margin when discounts are used (Davis 2017, 303). The usable and important metric on the market of digital goods, but not from the perspective of this research. Data used for the research — all sales were made by Digital Software OÜ in 2019 only on marketplaces where is not possible to make any discounts. The company made no discounts in 2019 and there is nothing to measure with this metric.

Now, when all group of metrics described by John Davis (2017) had been presented, the main group for measuring and finding the best marketplace for selling digital goods was detected and not usable metrics were cut from the group, that is possible to look at all metrics will be used for the research.

3.5 Cost per sales dollar

This metric shows how much each dollar of sales would cost and applies for measuring the effectiveness of different sales channels. Obvious, that as less the cost per sales dollar is as good it is, and all business strive to minimize this index.

Cost per sales dollar can be calculated by the next formula:

$$C_{sd} = \frac{C_{oi}}{S_{ci}}$$

Where C_{sd} is cost per sales dollar, C_{oi} is total expenses from selling on the exact sales channel and S_{ci} is total income from sales on exact sales channel. (Davis 2017, 269)

For instance, if the company sold for $1000 on the g2g.com, the commission fee from each transaction is 10 percent (1000 * 0,1 = 100) and the fee for money with-drawing is 2.99 percent (1000 * 0,0299 = 29,9) + $0.99 (G2g - Fees, [ref. 28 November 2020]) then:

$$C_{sd} = \frac{100 + 29{,}9 + 0{,}99}{1000} = \frac{130{,}89}{1000} \approx 0{,}13$$

So, in this instance each dollar of sales would cost the company 13 cents.

The high-cost sales per dollar, not a necessary means something goes wrong. Typically, if you compare this value on two equal periods and cost per sales dollar became higher and it is not led to the increasing of total incomes that mean changes on the sales channel (Olsen, [ref. 28 November 2020]). On the market of digital goods, you can decrease the cost of sales per dollar by changing the withdrawal method or changing the group of items been selling on the marketplace.

3.6   Transactions Per Hour

Very easy, effective and important metric for the market of digital goods. It is showing how many transactions were made per one hour and can easily be used for measuring digital marketplaces for making the right scheduling of shifts. This metric can be calculated with the next formula:

$$TPH = \frac{T_{transt}}{T_{ht}}$$

Where TPH is transactions per hour, T_{transt} is the total quantity of the transactions in used time period and T_{ht} is how many hours in the used time period (Davis 2017, 273).

Let's assume that thirty-three items were sold on the eBay marketplace for last twenty-four hours, then:

$$TPH = \frac{33}{24} = 1{,}375$$

On the showed example, there are 1,375 transactions per hour were made on eBay during last 24 hours.

It is a key metric for understanding a peak time when the potential of your customers is the highest. With this metric, the company can be better in planning the working schedule and shifts (Phillips 2013).

Also, considering to the specifics of the market and specs of online marketplaces where nobody shares the personal data of the consumer with the seller, this metric can be one of the key-factor for understanding the portrait of your customer. Online marketplaces work worldwide, but the information from where the majority of the customers and what language is used by them is not demonstrated. It could be detected, because different time-zones are used by different regions. With the metric of transactions per hour is possible to compare different hours for finding the highest demand hours and match the data to different time-zones.

So, on the market of digital goods, based on the results of this metrics is not only possible to the better scheduling of the working process, but also use the right sales manager according to his language skills.

3.7 Average Transaction Size

Another metric which can be used not only in retail, but also on the market of digital goods. Typically, as big this value is as good the market for the realization of goods. Also, average transaction size shows the worth of the client on the market. Average transaction size can be counted by the next formula:

$$T_a = \frac{S_t}{T_t}$$

Where T_a is average transaction size, S_t is total income from sales on the market, for the exact period and T_t is total quantity of all transactions for the exact period (Davis 2017, 275).

For instance, if in December 2019 on gameflip.com the company had two hundred fifty-eight transactions on the total sum of eleven thousand and twenty-one dollars. Then:

$$T_a = \frac{11021}{258} \approx 42.71$$

In the example above, the average transaction size on gameflip.com for December 2019.

The average transaction size is an important metric, on the market of digital goods. It gives a possibility to measure the long-term success of sales manager. Comparing two equal time periods shows how manager works with the prices. In normal wealthy conditions, the reputation of company's account becomes higher with each day on the online marketplace and that is the main asset. This asset can be counted as the main reason for increasing the prices. So, the average transaction price should be grown. That is not rare, that higher transaction size can lead to decreasing the total quantity of transactions. (Patten 2013)

Also, transaction size metric opens an additional view on your customers, because it helps the company to see the worth of him. As high the result of metric is, as rich the customer on the exact marketplace is.

3.8   Average Items Per Transaction

Obviously, the businesses on the market of digital goods need a lot of different data types for making the typical view transaction profile. Quantity and types of purchased items, the average value of the transaction, days and even exact times of transaction are related to these data. The average items per transaction metric reveal to the customer's preferences, even in conditions where the customer profile is maximally unknown.

The next formula is used for counting average items per transaction:

$$S_{avg} = \frac{S}{T}$$

Where S_{avg} is average items per transaction, S is the number of items on inventory which was sold on the exact marketplace and T is the total number of all transactions made on the exact marketplace (Davis 2017, 277).

Let assume that in 2018 Digital Software OÜ sold on mmogah.com nine thousand five hundred sixty-nine items and for the taken time period there were one thousand five hundred forty-nine transactions. Let count:

$$S_{avg} = \frac{9569}{1549} \approx 6{,}18$$

On the showed example, the average items per transaction in 2018 for Digital Software OÜ was 6,18.

On the market of digital goods, this metric is really valuable for making an inspiration for another marketplaces. The company can analyse which products typically are bought by customers in mix and, if the product A is often sold with the product B on one marketplace, then start to sell the product B on another marketplace, where product A is sold. (Units Per Transaction, [ref. 28 November 2020])

3.9 Returns to Net Sales

The importance of this metric is high, because returns to net sales mean the satisfaction or dissatisfaction of the client. Returns to net sales measures in percent and simply means how many returns were made comparing with all company's sales. As high the result of this metric is as bad the service of the company on the exact marketplace is. Returns to Net Sales can be calculated by the next formula:

$$RTS = \frac{T_{rat}}{S_{nt}} * 100$$

Where RTS is the Returns to Net Sales, T_{rat} is the sum of all returns were made by not satisfied customers from the exact marketplace and S_{nt} is the total sum of all sales made on exact marketplace. T_{rat} and $\frac{T_{rat}}{S_{nt}}$ must be taken from the same time period (Davis 2017, 283).

For the instance, let's imagine that in third quarter of 2019 Digital Software OÜ the total sum of sales on eBay.com is one hundred twenty thousand and eighty-five dollars. Twenty-five thousand and seventy-six dollars is the sum of all returns were made by customers. Let's have the calculations:

$$RTS = \frac{T_{rat}}{S_{nt}} * 100 = \frac{25076}{120085} * 100 \approx 20{,}88\%$$

In the example above, the value of Returns to Net Sales in third quarter of 2019 equal to 20,88 percent.

On the market of digital goods, the importance of Returns to Net Sales is extremely high. This metric successfully was applied in business of Digital Software OÜ, not only for measuring the sales channels, but also for calculation the effectiveness of buying channels and even for measuring the quality of the goods of each supplier separately.

As low the result of this metric on the goods of the exact supplier as good this supplier is. Typically, the company wants the lowest Returns to Net Sales ratio from each supplier, but it is really rare. So often, Digital Software OÜ needs to work just with private individuals who want to get rid of from not-needed digital items which were got as unwanted presents or as the prize in some internet lottery. The quality of goods from this kind of supplier leaves much to be desired (Kappel, [ref. 28 November 2020]).

In the business of selling digital goods, it is not the rarity, that returns come from inattentive buyers. Almost on each position from inventory of Digital Software OÜ, few different variations. For instance, the region where the exact item can be activated. So often, buyers from the United States make transactions not carefully and pay for the items which can be activated only in Germany. The shares of these transactions were made by mistake in the total value of Return to Net Sales is huge.

3.10 Inventory Turnover

Metric is used to show how quick the inventory is being sold on one or another sales channel. Also, one of many possible indicators for understanding the popularity of one or another item. On the market of digital goods, measuring the inventory turnover is a typical way to get relative and actual positions for the buying list and moderating the prices. The calculation of inventory turnover can be achieved by the next formula:

$$Turnover = \frac{S}{I_a}$$

Where $Turnover$ is the inventory turnover, S is the total number of sales on the exact sales channel and I_a is the average inventory. Typically, the average inventory can be calculated as the sum of the total cost of the inventory on the start of the month (12 in all) plus the cost of the inventory on the last day of December, divided by 13. S and I_a must be for the same time period. (Davis 2017, 285)

Let's imagine that average inventory of Digital Software OÜ in 2018 is six hundred thousand dollars and total sales on gameflip.com were one hundred fifty-nine thousand and eight hundred sixty-six dollars. Then:

$$Turnover = \frac{S}{I_a} = \frac{159866}{600000} \approx 0,26$$

In the showed example, the inventory turnover for gameflip.com in 2018 was 0,26.

Importance of Inventory turnover is always high because finance managers use for planning the budget of the company. Also, on the market of digital goods, the metric can be used by bulk buyers for detecting the most relevant, form the side of speed of realization, items. (Fuhrmann, [ref. 28 November 2020]) As high the Inventory turnover value for the exact item is, as fast the item on realization is. Digital Software OÜ actively use the Inventory turnover per item for the determination of the most relevant items.

3.11 Gross Margin Return on Inventory Investment

The metrics shows how much the investors can earn from investment and usually used to measure the item with the highest return. As high the value of the gross margin return on inventory investment is, as good the item for investment is. The formula for calculation metric is:

$$GMROII = \frac{M}{C_{ai}}$$

Where $GMROII$ is the gross margin return on inventory investment, M is the gross margin return from sales on exact time period and C_{ai} is the cost of the sold inventory for the same time period (Davis 2017, 289).

Let's assume that the company made a gross margin return from sales on g2a.com in fourth quarter of 2018 on the sum of twenty-one thousand dollars. The inventory bought for sales on g2a.con in fourth quarter of 2018 cost seventy-one thousand dollars. That means:

$$GMROII = \frac{M}{C_{ai}} = \frac{21000}{71000} \approx 0,29$$

In the listed example, for each dollar invested in inventory bought for selling on g2a.com the company earn 0,29 dollars of profit.

Gross margin return on inventory investment metric can be used widely on the market of digital goods and not only for measuring the most effective online marketplace. On any market, any company always wants to earn as much profit as it possible and this metric is one of key source for understanding the profitability of each channel. On the market of digital goods, gross margin return on inventory investment can be used for measuring the most effective positions. Sometimes, relate to the low results of this metric and if the bought quantity of the exact item is not enough the bulk buyers can increase the buying price.

Usually, bulk buyers offer different buying price for each supplier and the most successful suppliers can be detected with the results of gross margin return on inventory investment metric. Depends on the results of metric for the exact supplier and

with the results of some other metrics explained above, the buying price policy can be easily regulated for each supplier.

3.12 Sales/Profits per employee

The metric for counting how many sales or profit is generated by employees. Sales/Profits per employee is important metric for measuring the productivity of the company, separately by departments or individually for each employee. The result can be counted by the next formula:

$$SPPE = \frac{S \; or \; P}{E}$$

Where $SPPE$ is sales/profits per employee, S is the total sales number for the exact time period, P is the profit made for the exact time period and E is the total number of employees worked in exact time period (Davis 2017, 295).

For the instance, let assume that company made ten thousand eight hundred ninety-two sales in the first quarter of 2018 with profit one hundred eighty-three thousand dollars. Ten full-employed workers worked on the company in 2018. Then:

$$SPPE = \frac{S}{E} = \frac{10892}{10} = 1089,2$$

Or, for the profit per employee:

$$SPPE = \frac{S}{E} = \frac{183000}{10} = 18300$$

In the example above, there are one thousand eighty-nine point two transactions and eighteen thousand and three hundred dollars of profit on each employee of the company.

Usually, on the market of digital goods the companies used to have one sales manager on each online marketplace. So, the results of each marketplace are the result of exact sales manager. However, in Digital Software OÜ, where three bulk buyers work in shifts, the sales/profits per employee can be used to detect the effectiveness

of each bulk buyer separately. SPPE can be counted not with the profit or sales, but with the sum of bought goods and then compared with the results of each bulk buyer individually for measuring the productivity of each. (Carlson, [ref. 28 November 2020])

3.13 Retail Margin Percentage

Retail Margin Percentage metric which business realize during all lifetime of the item inventory, from buying it from suppliers to selling it to final consumers. Naturally, it shows how much percent from the sum of the final price to consumer the business can count as a margin. The results of this metric usually show the quality of the sales channel. As good the value of the retail margin percentage is as good the sales channel is. The retail margin percentage can be counted by the next formula:

$$RMP = \frac{(S_p - P_p)}{S_p} * 100$$

Where RMP is retail margin price, S_p is selling price for consumers and P_p the buying price from suppliers (Davis 2017, 301).

For the instance, let's assume that Digital Software OÜ buy one thousand gold from World of Warcraft for eight dollars and sell them on g2g.com for eleven dollars, then:

$$RMP = \frac{(S_p - P_p)}{S_p} * 100 = \frac{11 - 8}{11} * 100 \approx 27,27$$

So, in the example above, Digital Software OÜ have twenty-seven point twenty-seven percent of the retail margin percentage in one thousand World of Warcraft gold.

Usually, all companies want as much retail margin percentage as possible, Digital Software OÜ and all market of digital goods in total is not an exception. It is not the rule that high results of retail margin percentage mean the same numbers on profit, because of additional expenses on realization. Comparing the results of retail mar-

gin percentage metric with some others can show additional expenses to item realization and, as a result, how much profit the business can get potentially by cutting expenses on realization (Wilkinson, [ref. 28 November 2020]).

3.14 Brief summary

During this research nine different metrics are applied for the real sales data of Digital Software OÜ in 2019 on different online marketplaces. So, nine appropriate metrics will be used for:

1. Understanding the marketplace with the lowest price of each dollar of sales.
2. To see the marketplace with the highest quantity of transactions per hour.
3. To find the marketplace with the highest average transaction size will be detected.
4. For the detection of the marketplace with the highest item quantity per transaction
5. For understanding sales channel with the lowest return to net sales ratio.
6. To find out the marketplace with the highest speed of inventory turnover.
7. To see online marketplace with the highest gross margin return on inventory investment
8. To detect the marketplace with the highest sum of profit
9. For understanding on which marketplace, the highest retail margin percentage rating is.

Results of each marketplace for every metric had been made and leaning on the result of data of each metric I made a conclusion and found out which marketplace is the best for selling digital goods. The tables with the results of each metric and the conclusion which marketplace was the best in 2019 for Digital Software OÜ can be found on the fourth chapter of this thesis work.

4 APPLYING METRICS FOR ANALYSIS DIGITAL SALES

This part of the thesis is totally dedicated to the counting of the results for research. One by one, each metric from third part of the research will be applied on the real sales data of the Digital Software OÜ in 2019, to determinate the best marketplace for selling digital goods. The table with the results for each metric can be found at the end of each chapter subchapter related to exact to metric. The last subchapter of this part of the research is the conclusion with the final table filled with the results for each metric and final score.

Unfortunately, all the sales data of Digital Software OÜ cannot be showed during the corporate secrets of the company, but they were verified by the supervisor of this thesis work – Kimmo Kulmala.

4.1 Cost per sales dollar

In 2019, 0,05 was paid by Digital Software OÜ to g2a.com from each dollar of sales

$$C_{sd} \approx 0,05$$

Eleven cents were paid by Digital Software OÜ to gameflip.com from each dollar of sales in 2019.

$$C_{sd} \approx 0,11$$

So, 0,15 was paid by Digital Software OÜ to eBay.com from each dollar of sales in 2019.

$$C_{sd} \approx 0,15$$

Cost per sales dollar for Digital Software OÜ on g2g.com in 2019 was 0,11.

$$C_{sd} \approx 0,11$$

Cost per sales dollar for mmogah.com in 2019 was 0,01. The table with final results for each marketplace can be found below:

$$C_{sd} \approx 0{,}01$$

Table 1. The results of the metric cost per sales dollar for each marketplace.

Marketplace	Cost per sales dollar	Rating for the metric
Mmogah.com	0.01	5
G2a.com	0.05	4
Gameflip.com	0.11	3
G2g.com	0.11	2
eBay.com	0.15	1

Mmogah.com has the best result on this metric – greatest 0.01 from each dollar of sales. Unfortunately, this marketplace is restricted for selling only in-game currencies and top-ups and you cannot sell activation codes and gift-cards. The worst result was showed on eBay.com, where 0.15 cents will be cut from each dollar of sales.

4.2 Transactions Per Hour

1,3 transactions per hour in average were made by customers of the company on g2a.com in 2019.

$$TPH \approx 1{,}3$$

The result for transactions per hour metric on gameflip.com in 2019 was 1,66.

$$TPH \approx 1{,}66$$

The value of transactions per hour for eBay.com in 2019 was 0,04.

$$TPH \approx 0{,}04$$

The value of transactions per hour for g2g.com in 2019 was 0,02.

$$TPH \approx 0{,}02$$

The result for transactions per hour metric on mmogah.com in 2019 was 0,06.

$$TPH \approx 0,06$$

Table 2. The results of the transaction per hour metric for each marketplace.

Marketplace	Transaction per hour	Rating for the metric
Gameflip.com	1.66	5
G2a.com	1.3	4
Mmogah.com	0.06	3
eBay.com	0.04	2
G2g.com	0.02	1

Generally, the results of this metric showed their dependence from the total value of sales. Gameflip.com was the biggest sales channel for Digital Software OÜ in 2019 and, as a result won the transaction per hour metric. The worst result was showed by g2g.com, but the value of sales there leaves much to be desired.

4.3   Average Transaction Size

Average transaction size on g2a.com for the company in 2019 was $50,44.

$$T_a \approx 50,44$$

$35.44 was the average transaction size on gameflip.com for Digital Software OÜ in 2019.

$$T_a \approx 35,44$$

Average transaction size on eBay.com for the company in 2019 was 106,6.

$$T_a \approx 106,6$$

$53.69 was the average transaction size on g2g.com for Digital Software OÜ in 2019.

$$T_a \approx 53,69$$

Average transaction size on Mmogah.com for the company in 2019 was 139,74.

$T_a \approx 139{,}74$

Table 3. The results of the metric of average transaction size for each marketplace.

Marketplace	Average transaction size	Rating for the metric
Mmogah.com	139.74	5
eBay.com	106.6	4
G2g.com	53.69	3
G2a.com	50.44	2
Gameflip.com	35.44	1

Mmogah.com was the best sales channel of Digital Software OÜ in 2019 from the perspective of average transaction size. G2a.com and gameflip.com — sales channels with the most volume of sales showed almost the same results.

4.4 Average Items Per Transaction

1,22 items were sold through one transaction on average were sold by the company in 2019 on g2a.com.

$$S_{avg} = \frac{S}{T} = \frac{13933}{11441} \approx 1{,}22$$

Unfortunately, there is no option to buy more than one item during buying process on gameflip.com, so average items per transaction for Digital Software OÜ in 2019 on gameflip.com was 1.

Average transaction in 2019 on eBay.com for the company was:

$S_{avg} \approx 1{,}21$

The average items per transaction for the company on g2g.com in 2019 was:

$S_{avg} \approx 63{,}75$

The index of average items per transaction on mmogah.com in 2019 for the company was 197,94.

$$S_{avg} = \frac{S}{T} = \frac{89075}{450} \approx 197,94$$

Table 4. The results of the metric of average items per transaction for each marketplace.

Marketplace	Average items per transaction	Rating for the metric
Mmogah.com	197,94	5
G2g.com	63.75	4
G2a.com	1.22	3
eBay.com	1.21	2
Gameflip.com	1	1

Mmogah.com and G2g.com were on the leaders from the perspective of average items per transaction, but that was not surprising, because these two marketplaces related to in-game currency sales. Typically, customers are not buying just one unit of in-game currency and that is why there is so much difference between first two places and three other marketplaces.

4.5 Returns to Net Sales

The value of returns to net sales metric for Digital Software OÜ on g2a.com in 2019 was:

$$RTS \approx 3,18\%$$

The return to net sales ratio for the company on gameflip.com in 2019 was 1.17 percent.

$$RTS = \frac{T_{rat}}{S_{nt}} * 100 = \frac{6060,75}{516394,15} * 100 \approx 1,17\%$$

2019 was a great year for sales on eBay.com, mmogah.com and g2g.com of Digital Software OÜ, because the sum of refunds on each of these marketplaces was 0.

Table 5. Rating of marketplaces by the lowest return to net sales ratio.

Marketplace	Return to net sales ratio, %	Rating for the metric
eBay.com	0	3
G2g.com	0	3

mmogah.com	0	3
gameflip.com	1,17	2
G2a.com	3,18	1

The greatest result was achieved by eBay.com. The good job was done by the sales managers of the company in 2019. G2a.com and Gameflip.com were on the last positions of the rating, but this due to the specific groups of the goods sold there: activation codes and gift-cards. Traditionally, these groups of goods generate the high level of return to net sales. There were no refunds of mmogah.com and g2g.com because Digital Software OÜ sold there only in-game currency.

4.6 Inventory Turnover

The average inventory for Digital Software OÜ in 2019 was:

$I \approx 15567,95$

The calculations of inventory turnover for each marketplace:

$G2A \approx 37,07$

$GAMEFLIP \approx 33,17$

$EBAY \approx 0,38$

$G2G \approx 0,37$

$MMOGAH \approx 2,55$

The table with final results for inventory turnover metric can be found on the next page.

Table 6. The inventory turnover by the marketplace.

Marketplace	Inventory turnover	Rating for the metric
G2a.com	37,07	5
Gameflip.com	33,17	4
mmogah.com	2,55	3
eBay.com	0,38	2
G2g.com	0,37	1

The best result in 2019 for Digital Software OÜ was showed by g2a.com. That is not to be surprised that the marketplace with the highest total sales income showed the best inventory turnover and the marketplace with the lowest one — g2g.com, showed the worst.

4.7 Gross Margin Return on Inventory Investment

Gross margin return on inventory investment for Digital Software OÜ on g2a.com in 2019 was:

$GMROII \approx 0,25$

In 2019, from each dollar invested into goods sold on gameflip.com the company earned $0.19.

$GMROII \approx 0,19$

Digital Software OÜ made $0.24 of the profit on each invested dollar into items sold on eBay.com.

$GMROII \approx 0,24$

Gross margin return on inventory investment for Digital Software OÜ on g2g.com in 2019 was:

$GMROII \approx 0,07$

Digital Software OÜ made $0.2 of the profit on each invested dollar into items sold on mmogah.com.

$$GMROII = \frac{M}{C_{ai}} = \frac{6535,72}{32920,31} \approx 0,2$$

Table 7. The results of Gross margin return on inventory investment metric.

Marketplace	Gross margin return on inventory investment	Rating for the metric
G2a.com	0,25	5
eBay.com	0,24	4
mmogah.com	0,2	3
Gameflip.com	0,19	2
G2g.com	0,07	1

In 2019, one of the most important metric showed the victory of g2a.com, with $0,25 on each invested dollar.

4.8   Sales/Profits per employee

The calculations of profits per employee metric can be found below:

$G2A \approx 8507,02$

$GAMEFLIP \approx 6579,46$

$EBAY \approx 76,67$

$G2G \approx 28,34$

$MMOGAH \approx 502,75$

Table 8. Profits per employee metric for each marketplace.

Marketplace	Profits per employee	Rating for the metric
G2a.com	8507,02	5
gameflip.com	6579,46	4
mmogah.com	502,75	3
eBay.com	76,67	2
G2g.com	28,34	1

4.9 Retail Margin Percentage

The calculations for retail margin percentage metric and the table with results for each marketplace can be found below:

$G2A \approx 28{,}99$

$GAMEFLIP \approx 31{,}3$

$EBAY \approx 45{,}87$

$G2G \approx 21{,}30$

$MMOGAH \approx 20{,}55$

Table 9. The results of retail margin percentage metric.

Marketplace	Retail margin percentage metric, %	Rating for the metric
eBay.com	45,87	5
gameflip.com	31,3	4
G2a.com	28,99	3
G2g.com	21,30	2
mmogah.com	20,55	1

Retail margin percentage metric was a big surprise to Digital Software OÜ in 2019. The results showed how unreal the results of this metric comparing to the real life. The profit was made by the company from sales on eBay.com — marketplace, with the best retail margin percentage, was only at fourth place from five different marketplaces.

A difference between profit made by the company on eBay.com — first place of the retail margin percentage metric, and mmogah.com — the last place in the results as big as almost seven times, in favour of mmogah.com.

The huge gap in difference, between the real profit will be made and the retail margin percentage comes from a huge fee on marketplaces. Taking into account the fee of the marketplace is always needed during the forecasts of the profit.

4.10 Summary

Table 10. The results of all metrics for each marketplace.

Metric	G2a.com	Mmogah.com	Gameflip.com	eBay.com	G2g.com
Cost Per Sales Dollar	4	5	3	1	2
Transaction Per Hour	4	3	5	2	1
Average Transaction Size	2	5	1	4	3
Average Items Per Transaction	3	5	1	2	4
Return to Net Sales	1	3	2	3	3
Inventory turnover	5	3	4	2	1
GMROII	5	3	2	4	1
Profit per employee	5	3	4	2	1
Retail Margin Percentage	3	1	4	5	2
Total	32	31	26	25	18

Now, when nine different metrics been used on the real sales of the digital goods of the company in 2019 and the rating was calculated, that is possible to make a conclusion what marketplace is the best for selling Digital Goods and why.

Based on the results of data, the g2g.com was the worst place for selling on the market of digital goods. The marketplace had the worst results by several key metrics at once: the transaction per hour, inventory turnover, gross margin return on inventory investment and profit per employee.

In 2019, there was not even one metric where the best result was showed by g2g.com. That is unimaginable that sales channel showed the worst result by inventory turnover and gross margin return on inventory investment in the same. The awful result for the marketplace where items are restricted by only one subcategory of items — in-game currency. So g2g.com, was the worst marketplace for Digital Software OÜ in 2019.

eBay.com was placed at the fourth place, with the result of 25 points, which is not the bad result for the marketplace with such a low quantity of sold items. The marketplace won one metric — the retail margin percentage and, if not such a terrible selling fee, even the better result could be showed by the marketplace. The huge selling fee is also costed the worst rating by the cost per sales dollar metric for eBay.com.

Gameflip.com won the bronze medal and defeated eBay.com by just one point. The marketplace won the metric of the transaction per hour and that is not surprised, for the marketplace which had second total sales income for all sales channels of Digital Software OÜ in 2019. Good results were scored by gameflip.com in three important metrics: the inventory turnover, profit per employee and retail margin percentage. Not the bad score, but... just not bad. The much better result can be expected of the marketplace with such a great market of valuable customers from all over the United States.

At the second place, the marketplace mmogah.com was placed by Digital Software OÜ, based on the sales in 2019. Definitely, that is great and the unexpected result for the marketplace which restricted for selling only in-game currency. The best result got scored by mmogah.com in three metrics at once: cost per sales dollar, average transaction size and average items per transaction, but the place in the middle of the table in the majority of metrics took their own and the first place was lost.

The first place, with a small gap in just one point, was taken by the marketplace — g2a.com. Referred to the data taken from the real sales of Digital Software OÜ in 2019, g2a.com can be counted as the best marketplace for selling digital goods. The reason for the victory of this marketplace can be founded in three key metrics were won by g2a.com at once — profit per employee, gross margin return on inventory investment and inventory turnover.

The sales channel is really brilliant when it shows awesome profit at the same time with the best inventory turnover comparing with all other sales channels. Also, good results in the cost per sales dollar and transaction per hour metrics were showed by g2a.com. So, referred to the data of this research, the best place for selling digital goods is g2a.com.

5 CONCLUSION

The absence of information about selling digital goods and analysis of online marketplaces is done a high value of this thesis research.

The research contains analyse of literature about selling online and doing online business. Almost all the sources have outdated information even that they were written not long ago, it relates fast growing the popularity of online business and changes connected with the Internet.

The main book that was used for the research is John Davis (2017) "Measuring Marketing" that has a lot of metrics for analysing business. However, only one chapter from the book was used as others do not consist of the topic of the thesis or the company do not have information to implement metrics. The chapter "distribution metrics" was used for analysing online marketplaces.

Only nine metrics from the chapter "distribution metrics" were dismantled to find the best online marketplace for selling digital goods. Let's remind nine metrics that will be calculated in chapter four.

1. Cost per sales dollar — index that shows how big the commission will come from each dollar of sales on the exact marketplace.

2. Transactions per hour — index that shows the average quantity of transactions per one hour, this metric can be used to analyse customers through Time Zones as customers buy digital goods from all around the world. Also, this metric shows the peak hour of selling.

3. Average Transaction Size –– index that shows the average amount of transactions in every online marketplace. This metric can be used to identify the sales channel with the wealthiest customers.

4. Average items per transaction — index that shows the average amount of items on one transaction.

5. Returns to Net Sales — index that shows the ratio of the amount of refunds to the number of sales. This metric can be used to understand the attractiveness of

the marketplace with low amount of Returns to Net Sales as it saves additional expenses for the exchange of digital goods.

6. Inventory Turnover — index that shows the online sales channel with the highest rapidity of realization digital goods.

7. Gross Margin Return on Inventory Investment — index that shows the percentage from investing in digital goods was earned.

8. Sales/Profits Per Employee — index that shows the profit that each sales channel generates per each employee.

9. Retail Margin Percentage — index that shows the percentage of profit in the cash flow.

All these nine metrics were counted to understand the best online marketplace for selling digital goods for the company Digital Software OÜ.

The company Digital Software OÜ sells digital goods on five different online platforms –- g2a.com, gameflip.com, ebay.com, g2g.com and mmogah.com. The financial statement of 2019 year, with sales on each of these marketplaces, was used to count all metrics.

The sequence of analysis platforms consisted in the following system: the best result in metric brings to the trading platform five points, the second score brings four points, the third score — three points, the marketplace on the fourth place will get two points and the last place will get only one point. The company sells digital goods in five platforms and it is easy to use five-point grading scale.

However, if the trading platforms scored the same number of points, then each trading platform gets the lowest number of points. For example, if three marketplaces have the best result at once, then they will get 3 points both. If two marketplaces have the best results, then each gets 4 points.

Let's remember the best marketplaces for each metrics:

1. Mmogah.com got the best result in the metric Cost Per Sales Dollar.

2. Gameflip.com got the best result in the metric Transactions Per Hour.

3. Mmogah.com got the best result in the metric Average Transaction Size.

4. Mmogah.com got the best result in the metric Average Items Per Transaction.

5. eBay.com got the best result in the metric Returns to Net Sales

6. G2a.com got the best result in the metric Inventory Turnover.

7. G2a.com got the best result in the metric Gross Margin Return on Inventory Investment.

8. G2a.com got the best result in the metric Sales/Profits Per Employee.

9. eBay.com got the best result in the metric Retail Margin Percentage.

To sum up all results and numbers of points for all metrics the worst trading platform (7 points behind the 4th place) became the g2g.com — online marketplace restricted for only selling in-game currency. This result can be considered poor for a trading platform specializing only in specific goods –- game currency.

The fourth place was taken by the eBay.com selling platform, with a slight lag of 1 point from the third place. eBay.com is a very promising marketplace despite huge commissions and the highest Cost Per Sales Dollar.

The gameflip.com platform is in a third place, with the best result in the metric Transactions Per Hour, but with the lowest results in two metrics -– Average Items Per Transaction and Average Transaction Size.

At the second place is the platform mmogah.com with the best results in three metrics: Cost Per Sales Dollar, Average Transaction Size and Average Items Per Transaction. Also, the difference from the first place is only one point, an excellent result for a trading platform specializing just in a game currency.

The first place and the rank of the best online marketplace comes to the g2a.com platform, with victories in three metrics: Inventory Turnover, Gross Margin Return and Inventory Investment.

To sum up, based on the results of the metrics, it was found that the best place to sell the digital goods is an online marketplace called g2a.com.

The importance of the research consists in the high role of marketplaces in the daily work of the company, as it was mentioned earlier the main assets of the company are old profiles and transaction history. All this information is kept in the history of online marketplaces as they are engaged in the marketing process between sellers and customers. Based on this information all online marketplaces are important as support communication and engage new clients, so company Digital Software OÜ depends on marketplaces for growing auditorial and growing dales.

However, online marketplaces can be changed by the company if the profit decreases or the fee for selling is significantly overstated. In the case of decision-making situation, compares with the online marketplaces, the firm can use the sales channel assessment system that was developed in the research. To sum up, the research has practical value for the company in the future.

The deduction of the best sale channel in 2019 was showed for the company Digital Software OÜ. This information can be considered as significant as must be used to prioritize online marketplaces in the order connected to the result of the research. This is due the fact that the highest level of profit and high rapidity of realization of digital goods are provided by the best-selling channel. Also, the best marketplace provides high results in all metrics that can be considered positive, that is why the company have an interest about all metrics.

To sum up, the absence of information and the relevance of the topic is made the research more important. Also, the sales channel scoring system can be used in the future by the company to identify changes in the key online marketplaces.

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