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The purpose of the is to research the theoretical and methodological bases of startups funding process and its sustainability, and conduct analysis of its modern trends.

The object is startups and its funding systems in the context of modern changes in methodological maintenance, globalization, and digitalization.

The subject is economic relations among startups, investors, and policymakers with the issue to reach sustainable funding.

Research methods are systematization, structural and comparative analysis, logical generalization.

Structure of thesis. The main part of the master's thesis consists of three sections. The first section outlines theoretical approaches to startup definition and classification and considers startups funding and policy issues. As the study hypothesis is devoted to the most prominent trends in startups development and these trends include medicine and health protection sphere, the basic theoretical points of digital health projects and startups researches are reflected.

The second section analyses startup development trends in Ukraine and examines digital health projects and startups financing. To ensure the sustainability of startup funding throughout the life cycle the appropriate methodological approaches are developed.

The third section identifies startups global expansion challenges paying attention on scale maturity and digital tools accomplishment. Furthermore, marketing tools to attract startup online personal financing through psychological constructs are proposed and implications marketing strategies for Startups financing attraction on practice are described.

STARTUP, SUSTAINABLE FINANCING, LIFE CYCLE,
DIGITAL MEDICINE, MARKETING TOOLS

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INTRODUCTION

The relevance of the topic of the master's work.

Covid 19 and the challenges it posed transformed most of the spheres of ordinary life into the Digital Plane. Remote work, online shopping, quarantine bans on travel and live contacts could not but affect the ways of doing business. On the one hand, analysts argue, this has significantly worsened the working conditions of micro and small businesses, in some cases even put them on the brink of survival. But on the other hand, new business conditions, new pains and needs of the environment give impetus to new research, new developments and new ideas.

To implement such ideas and entrepreneurial potential, the most important thing is to find sustainable sources of funding. Modern realities also transferred entrepreneurship and fundraising into an online format. This is facilitated by the emergence of a large number of online fundraising platforms, the transition to the majority of funds and venture companies, online pitching and fundraising conferences, open online courses and training programs on how to become an entrepreneur and obtain financial resources.

The most sought-after sector of the economy in a global pandemic is usually the medical sector. Undoubtedly, in the search for effective vaccines and drugs for viral disease and its mutations, large corporations with their rich R&D departments achieve the greatest results. And it is impossible to come up with a magic pill in the garage mixing household chemicals. But you can help patients and their families by creating a useful and convenient product, application, medical digital device. And this is where the full potential of startups in modern conditions is revealed.

The purpose of the master's work is to research the theoretical and methodological bases of startups funding process and its sustainability, and conduct analysis of its modern trends.

Objectives of the study, which are set and resolved to achieve the goal of work are the following:

- to outline theoretical approaches to startup definition and classification;
- to consider startups funding and policy issues;
- to reflect the basic theoretical points of digital health projects and startups researches;
- to analyse startup development trends in Ukraine;

- to develop methodological approaches to ensuring the sustainability of startup funding throughout the life cycle
- to examine digital health projects and startups financing;
- to identify startups global expansion challenges;
- to propose marketing tools to attract startup online personal financing through psychological constructs;
- to describe possible implications marketing strategies for Startups financing attraction on practice.

Object of thesis is startups and its funding systems in the context of modern changes in methodological maintenance, globalization, and digitalization.

Subject of thesis is economic relations among startups, investors, and policymakers with the issue to reach sustainable funding.

Research methods, used in the process of research and processing of materials are systematization, structural and comparative analysis, logical generalization.

This **study hypothesis** is that there are gaps and reserves for development in financing of startups based on analysis of the modern development trends.

Structure of thesis. The main part of the master's thesis consists of three sections. The first section outlines theoretical approaches to startup definition and classification and considers startups funding and policy issues. As the study hypothesis is devoted to the most prominent trends in startups development and these trends include medicine and health protection sphere, the basic theoretical points of digital health projects and startups researches are reflected.

The second section analyses startup development trends in Ukraine and examines digital health projects and startups financing. To ensure the sustainability of startup funding throughout the life cycle the appropriate methodological approaches are developed.

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Factual basis of work consists of materials of textbooks, manuals, scientific articles in the field startup development and funding in Ukraine and in other countries, regulatory documents and official world and Ukrainian statistics.

1 THEORETICAL AND METHODOLOGICAL PRINCIPLES OF THE STARTUP DEVELOPMENT AND FINANCING

1.1 Theoretical approaches to startup definition and classification

Is technology changing faster than society can afford it? As recently as 30 years ago, people had little understanding of what a computer was and what it was capable of. 10 years ago, no one could have imagined how to buy a plane ticket, book a taxi or rent a holiday home online. So, in the last 10 years, technology has significantly changed our lives, transformed our world. What technologies are developing the fastest? According to technology growth statistics, 90% of the world's data has been generated in the last 2 years alone. Most of the data comes through social media, digital photo, video, consumers' data, and others. "Each day, we produce 2.5 quintillion bytes of data according to big data statistics. Given the growth of the Internet of Things, that figure should accelerate in the years to come" [1].

There is a close link between data growth, innovation, technology development, scientific and technological progress and the entrepreneurship that provides them.

The constant search for opportunities and unmet needs is the basis for startups to ensure technological breakthroughs. Usually, technological achievements are provided by large corporations. The role of large traditional companies in the development of technology is crucial, they have the resources and motivation to increase efficiency and scale products and processes. However, truly groundbreaking, disruptive ideas that can change the future arise within "garage inventors", dreamers, and idealists.

Nowadays, almost every business-projects are presented as Startups. Can every idea, product, or service launched on the market be called a startup?

To answer this question, it is necessary to consider the definition and main features of startups.

Starting with the point, that "Startup is a term that proliferates across mainstream and popular, as well as academic, descriptions of knowledge, digital media, and technology-based regional economic geographies" [2], we have analysed literature sources connected to the startup definition issues from modern dictionaries and blogs to broad-cited articles [3, 4, 5, 6] and found, that the most of definitions

are broad and unclear. For instance, a startup could be defined as “a state of mind” [6], “a human institution designed to create a new product or service under conditions of extreme uncertainty” [7], “an engine of economic growth amid the ongoing global economic slowdown” [8], “an enterprise for fast growth” [9], the accumulation of resources, the introduction of innovations, their development and market entry [10], A startup is a partnership of two or more people to create an innovative product or service that is in its infancy with limited resources and requires additional venture capital [11].

All these definitions are unclear and could be applied to different kinds of human activities or small businesses. In their research D.Cockayne tried to find the distinct between startups and other kind of business like firm size (1-3 founders), duration of operation (up to 10 years), growth (enormous fast), finance (self-based), absence of product (just prototype), informality and hard work, venture capital [12].

According to Google Trends (Figure 1.1), the interest to the term Startup is rising for last decade. It’s a visible tendency, which provide strong connection between startups and innovations, but we cannot see any correlations to venture capital and entrepreneurship.

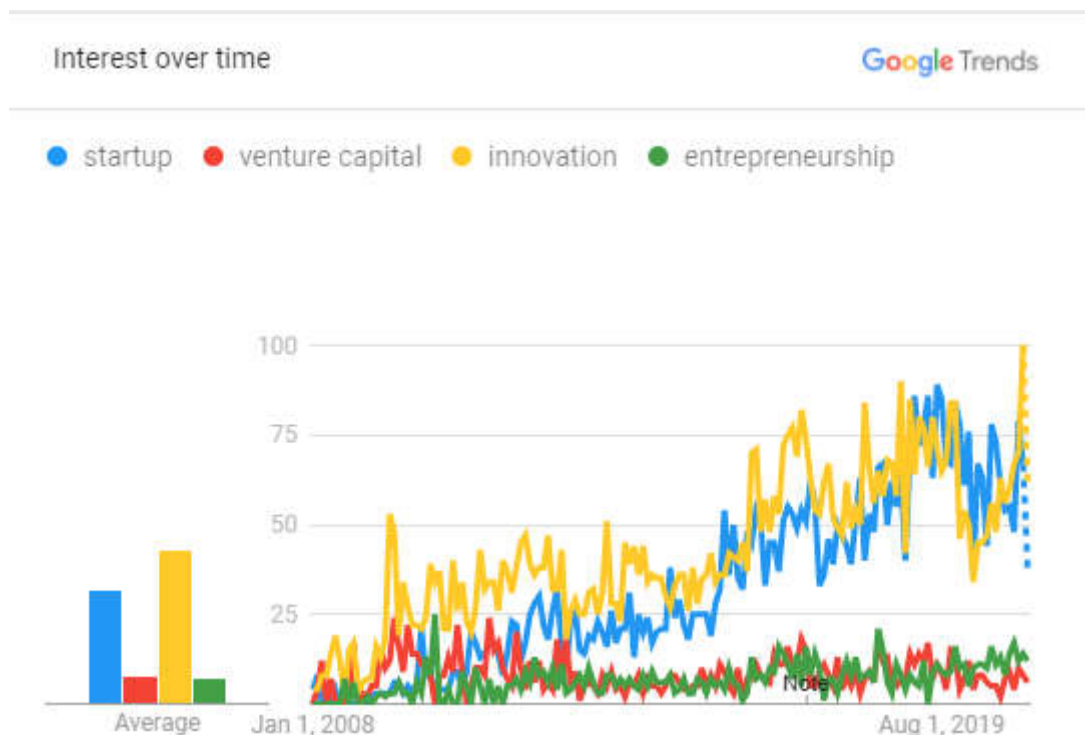


Figure 1.1 – Google Trends analysis of the interest to terms “Startups”, “Innovation”, “Entrepreneurship” and “Venture Capital” in news.

According to the startups.com platform, which provides education, community, and tools to help startups launch faster, the most comprehensive set of determinant features of startups are the following shown on Figure 1.2.

A Startup is...

- ...focus on growth
- ...solving a problem
- ...a job you can't live without
- ...more questions than answers
- ...searching for product/ market fit
- ...filling a gap in the market
- ...changing the ways things are traditionally done
- ...starting from scratch
- ...a company in its early stages;
- ...not successful — yet;
- ...a home for “the crazy ones”
- ...a mix of emotions;
- ...a company with few employees;
- ...working toward an innovative common goal;
- ...a company with a small user base
- ...completely independent;
- ...searching for a sustainable business model;
- ...about making change;
- ...prototyping a concept;

Figure 1.2 - Determinant features of startups (composed by author based on [7].)

The last in the list feature is the most interesting from the theoretical and methodological perspective.

Nowadays, there is no clearly defined and meaningful classification of startup types. Most domestic authors use approaches that are adapted to the specific objectives of scientific research. The most common feature is the industry of application - IT robotics, electronics, telecommunications, computers, energy,

ecology, medicine, etc. In our opinion, the most interesting approach is to divide startups according to the types of benefits into profitable and non-profitable (volunteer or social) startups [13]. Particular interest attracts the approach to classification startups on features of products and markets. Accordingly, all startups can be divided into “successful copies” which are numerous domestic projects that clone foreign counterparts; “aggressive newcomers” or startups focused on capturing the market segment and ousting competing companies due to, for example, exceptional price advantage; and “dark horses” - the prospects of which are not defined according to given the degree of their risk and innovation [13]. This approach allows us to identify the strategy of development of startups and apply the most adequate tools for its establish and maintenance.

Furthermore, in our opinion, the key characteristic that distinguishes a startup from other others is its age. According to European standards, it should not exceed 10 years. All other characteristics and properties, such as the desire for rapid development and growth, profit, innovative ideas, disordered structure are secondary. Their presence or absence is determined by the specifics of a particular startup, the scope of its inception and scale.

In addition to the general time constraints, startups are also characterized by the same elements of business cycles. And although there is currently no single point of view on the number and characteristics of the stages of development of startups, most scientific studies [14, 15, 16] with certain deviations in the definition describe the following sequence:

0) launch (Pre-seed / Bootstrapping Stage) is a stage of the studying the possibility of turning an idea into a product / service, market analysis, marketing planning and sales at product launch;

1) "sowing" (Seed and Development Stage) is a stage of product launch, hiring staff, product development to enter the market;

2) startup (Startup / Early Stage) means working business model, selection of the main team, further product development, development of scaling plans;

3) growth (Growth Stage) is a stage of scaling, increasing market share, building a high quality team, bypassing competitors;

4) expansion (Expansion / Later Stage) is a stage of increasing market share, preparation for IPO;

5) grow up and possible exit (Maturity And Possible Exit / Steady Stage) is a stage when a team focused on growth, sufficient and stable financial condition, developed corporate governance, favorable market expectations [17].

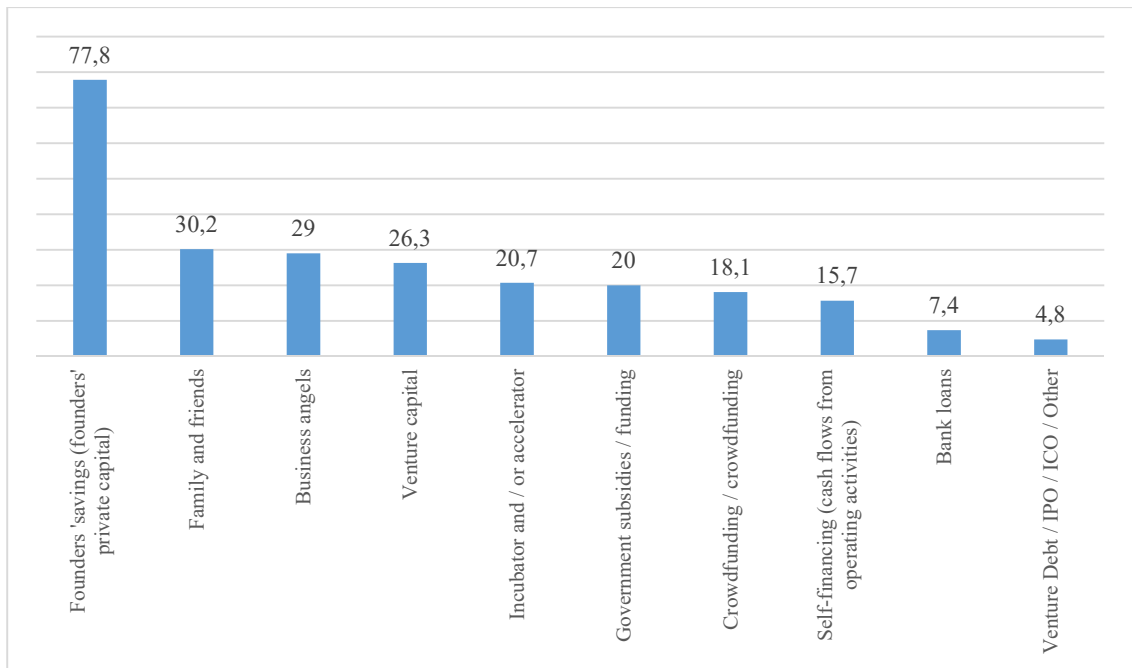
What else unites startups? The process of finding and attracting resources for its implementation namely fundraising. Representatives of the global business community believe [18] that fundraising is the greatest work of startup founders.

1.2 Startup funding and policy issues

As it was proved in the previous section now there is no single universal approach to the definition of a startup. The main thing that researchers agree on is the uncertainty of the conditions of its existence. Such uncertainty significantly increases the risks, and thus minimizes the attractiveness of fundings.

Based on the analysis of current publications on the financial support of startups, we concluded that all sources of funding can be divided into the followings: Founders 'savings (founders' private capital); Family and friends; Business angels; Venture capital; Incubator and / or accelerator; Government subsidies / funding; Crowdfunding / crowdfunding; Self-financing (cash flows from operating activities); Bank loans; Venture Debt / IPO / ICO / Other .

Analysis of the structure of sources of funding for startups in the European Union (Fig. 1) shows that most founders used their own savings for funding; one in three sought the help of family, friends and business angels; more than a quarter have successfully included venture capital in their sources of financial resources, and about twenty percent of startups have used tools such as centralized infrastructure and preferences, and crowdfunding. More than fifteen percent of the money was generated by startups from their own successful operations. Bank and venture loans, IPOs and ISOs were the least involved.



1. Figure 1.3 - Sources of funding for startups in the European Union in 2018,% [17]

According to the analysis of the report of the global database Crunchbase [19], despite the general declining trends, the most active business angels and venture capital in the number of transactions are at the "seed" stage, and the size of invested venture capital - in the expansion stage. In our opinion, the reason for this distribution in both the first and second cases is the risk and potential and actual profitability of the startup.

The analysis allows us to systematize the sources of fundraising in accordance with the stages of development of the startup (table 1).

Table 1.1 - Sources of fundraising by stages of development of the startup [17]

Sources of fundraising	Development Stage					
	0	1	2	3	4	5
Founders' savings	+	+				
Family and friends	+	+				
Government subsidies / funding		+				
Crowdfunding / crowdfunding		+	+			
Business angels		+	+			
Incubator and / or accelerator			+			
Venture capital			+	+	+	
Internal financing				+	+	
Bank loans					+	
Banks					+	
Private companies					+	
Hedge funds					+	
Public						+

In the early stages, startupers put their own money and the money of friends and family at risk. The task of most startups is to pass this stage as quickly as possible and become "visible" to external investors. On the one hand, some types of business can be launched without the participation of investors, when there is a business plan and sustainable self-financing. For others, and especially for the implementation of non-profit startups, external sustainable financing is the basis for existence and development.

Another modern fundraising source is based on Blockchain technology. It is ICO - Initial Coin Offering, which is realized in the form of a preliminary issue by the company of its own original cryptocurrency (coins or tokens) outside mining procedures (mining) or forging (creation of new blocks) of existing cryptocurrencies and distribution of this issue among stakeholders - investors. Such tokens were bought for bitcoins from the very beginning and were aimed mainly at the development of the cryptocurrency market. The effectiveness of ICO can be evidenced by the emergence of a large number of cryptocurrencies: NXT, Mastercoin, Bitshares, Mailsafecoin, NEM, Synereo, Factom, DigixDAO, Lisk, Waves and, especially, Ethereum - the third most important after Bitcoin and its "light" modification [Kobushko].

As for the ICO fundraising procedure itself, it is carried out on the basis of a public offer - a standard document that regulates all the relationships between the issuer and the investor and posted on a web resource. In essence, ICO is a crypto-analogue of IPO - Initial Public Offering [19].

Therefore, a variety of tools are needed to raise resources to ensure the development of startups. However, in addition to finance, management, staff and their training, it is less important to have the institutional support for this process, which is able to bring together all the key elements of the ecosystem and do so at the right stages of growth [20]. Moreover, for each arrangement, for each regulatory act, for the long and short term it is necessary to concentrate on the local or regional level, on local ecosystems, which may include all related agents such as companies, universities, science parks, incubators, business angels. organization of venture financing. These ecosystems at the regional level should generate knowledge, academic communities and form specialized human and social capital that will become a driver for the development of innovative startups [21].

In the context of the Covid 19 pandemic, such ecosystems are best supported at the local and global levels when funding health and medical startups. The development of digital medicine has simplified the process of starting startups and entering small business in the medical business.

1.3 Digital health projects and startups

According to the OECD, the proportion of adults seeking online health information has doubled in the last nine years. However, the demand growth on health information did not significantly affect the investment into information and communications technologies of the medical sector. It stands to mention that the investment volume is the lowest among other economic sectors (OECD, 2020). However, the COVID-19 pandemic has broken down the regulatory, psychological, and financial barriers between digitalization and the healthcare system. In turn, most governments are looking for an effective mechanism for public funds management to provide quality health services. The World Health Organization and the OECD insist that the widespread use of ICTs would improve the health service quality while reducing their cost.

On May 26, 2018, the Seventy-first World Health Assembly stressed the importance of digital health in achieving the Sustainable Development Goals, particularly Goal 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development (WHO, 2018). It was stated that the regulatory assistance, technical guidance, and advice would promote financing and introducing digital health business models.

Deloitte's experts highlighted the fundamental changes in the global health care system caused by the COVID-19 rush spread. Notably, it resulted in public-private collaborations between organizations, industry, academic community, and governments for vaccination and treatment (Allen, 2021). It worth mentioning that these changes require a review of business models and funding for health care systems worldwide.

Systematization of scientific background devoted to investigated issue allowed to notice the growing interest of domestic and foreign authors in exploring digital health and health care financing.

Notably, in the study [22], the authors analyzed and mapped the responsible investment instruments in health care under United Nations Development Programme (UNDP) methodology, theoretical approaches, and practical recommendations by USAID, and the parameters of the World Bank.

On the other hand [23], assessed the impact of health care financing on national economic development. The findings proved its strong positive impact in most investigated countries (64%), while the negative impact was noticed in the rest of them.

Therefore, it stands to mention the constantly growing interest in ICT implementation in medicine (Figure 1a). According to the GoogleTrends data, the search request «Digital Health» jumped the shark in August 2020. Notably, in most Central and Eastern European countries and some Asian countries, the search queries «e-health» predominated (Figure 1b).



Figure 1.4 Comparison of the search requests «Digital Health» and «e-health» a) trends; b) by regions [24]

The emergence of «e-health» formulation was thanks to marketers who used the analogy of other edomains such as e-commerce, e-government, e-business. It is worth noting that involving the prefix «e-» means combining electronic communications and information technology and better quality health services [25].

Zhang et al. [26] proposed considering digital health as a scientific field, not just as one of the varieties of interdisciplinary practices. In the frame of the study [27], the authors explored the role of blockchain technology in digital health and electronic medical records.

Despite the high scientific interest in digital health, international organizations such as the World Health Organization (WHO) and the OECD conduct the most in-depth and systematic research on health financing and the global spread of digital health.

Herewith, the WHO defines e-health as using electronic means to obtain information, resources, and services related to health, such as electronic health records, m-health (applications, mobile or body devices); telemedicine (consultations with doctors via PC or mobile devices); medical e-initiation (both for patients and medical staff); social media (including informal, social online communication channels); analysis of medical data and «big data» (to obtain evidence in decision-making or policy-making on health care reform) [24].

2 ANALYSIS OF STARTUP DEVELOPMENT TRENDS AND SUSTAINABILITY OF IT'S FINANCING

2.1 Analysis of Srartup development trends in Ukraine

Thus, as defined in the previous section, startups are a complex system with many interconnections, which in many cases are a key element of success in applying multidisciplinary approaches to their evaluation and research. Such an assessment is necessary both for the founders of startups and for their investors at all stages of life and development of startups. There are many mathematical methods and tools for this. Some scientists [28] insist on the successful use of Bayesin networks, and because of the possibility of identifying the factors influencing the development of startups, as well as identifying the most successful scenarios for such development..

Other authors draw attention to the possibility of creating a successful startup based on the continent in the social network Twitter, thus determining the factors of sustainable startups and business models.

As a result of the study, positive, neutral and negative factors were identified. Among the positive ones there are tools used, technologies developed by startups, empathy of managers and their methods of project development, attitude of startup managers, artificial intelligence, etc. Geolocation, type of project and presence of support incubators make neutral impact. The most dangerous factors arises when startups fail potential employees and business angels relationships [29].

Another prominent research puts attention on such factors as local density of universities and research centers, the education level of the local population, and the number of incubators in the area [30].

Talking about practical approaches to reach successful and stable development through all stages of life cycle, the best advises to our point of view were given in the SPEC INDIA Blog. The list of trends includes the following: “enhanced digital awareness and acceptance; changing points of business focus; social indulgence will attract business; AI getting more prominence for startups; ‘work from home’ will be in vogue; robotic technology will spread its utilization in startups; 5g and high-speed internet to be the need for startups; e-commerce and online education startups go strong; complete virtual startups will be witnessed increasingly; **virtual health and wellness startups would be in demand** [60]

There are no official statistics of startups in Ukraine. Thus, on the website of the State Statistics Service [31] in the indicators of statistical information in terms of economic statistics there are the following: the enterprise activities; science, technology and innovation; and the information society. Taking into account the research conducted in the previous section on the definition of a startup, in our opinion, these indicators could include an assessment of the development trend of startups in Ukraine. Detailed analysis of their content, value and calculation algorithm showed that they have nothing to do with the evaluation of startups. According to methodological explanations referring to the Economic Code of Ukraine, micro-entrepreneurs could be involved in startups. Unfortunately, the parameters by which enterprises are classified as micro include only the number of employees and the annual income of 10 people and 2,000,000 euros, respectively. In innovation activities, there are the only indicators relating exclusively to industrial enterprises. This once again confirms the thesis that there are no official statistics on the development of startups in our country.

In order to support the creation and growth of technology startups in Ukraine in the early stages of development and ensure their global competitiveness in Ukraine, with the technical support of the World Bank, a Ukrainian startup fund (USF) was established and began its work on December 2, 2019. The USF grants startups in the early stages of development without participation in capital, finances the training of startups in national and international accelerators and offers so-called financial and non-financial opportunities for startups. The USF founders believes that the main advantages of participating in this grant program are electronic forms of automated application processing and a minimum of contacts with the fund's administration. Not all startups can ask for funding, but only Ukrainian business with a focus on world markets, which has projects in the early stages pre-seed and seed development. Funded projects must be income-oriented or profitable and offer innovative or high-tech products. The foundation's website states that they have

already received about 2,700 applications, funded 86 startups for more than 80 mln.hryvnia.

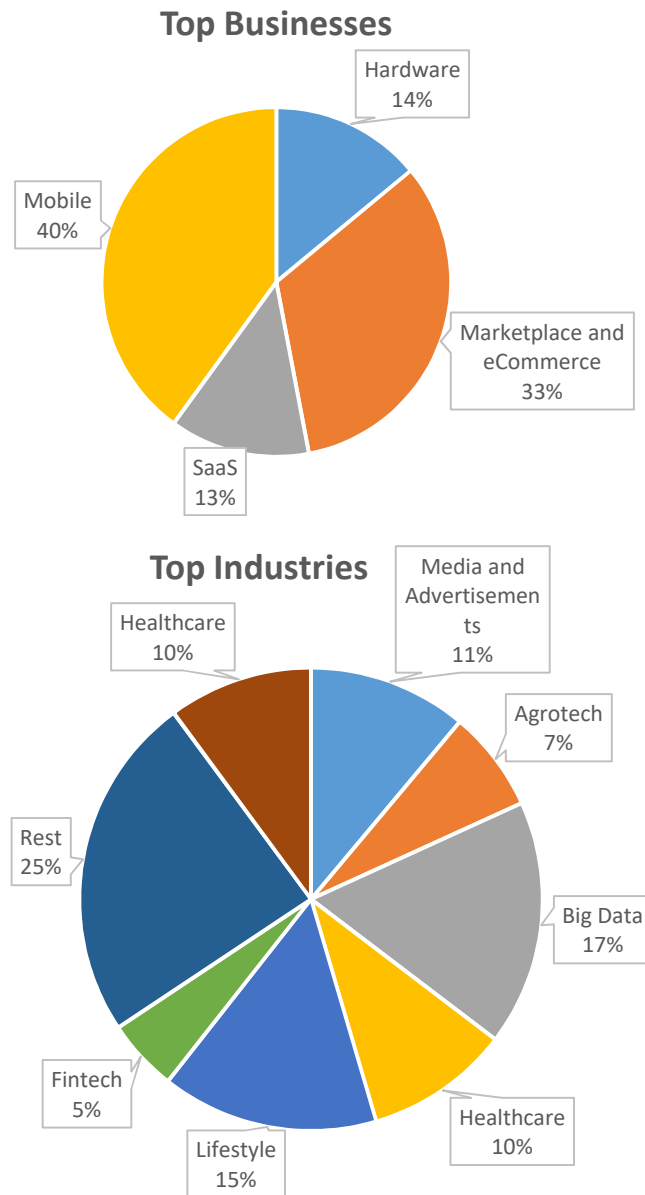


Figure 2.1 – Top Industries and Businesses startups funds applications to USF (developed by author based on [32])

The amount of funding depends on the startup development stage and ranges from \$ 25,000 at the pre-seed stage to the \$ 50,000 at seed stage. It can result into \$ 75,000 per each participant in total.

The recipient is obliged to report on the results of the use of funds. Eligible costs funded by the grant program include prototyping, confirmation of the concept

of registration of intellectual property rights, testing and piloting of prototypes, preparation of business plans to attract other types of capital, marketing costs and more.

In addition, the fund offers an acceleration program, which provides the opportunity to receive up to \$ 10,000 for those startup projects that have already applied for a pre-chair and a grant from the main program of the fund. Such a grant provides for payment for the services of an accelerator that has been accredited by the startup fund. At the time of the thesis writing, only 8 accredited accelerators were presented on the site [33], offering startups professional training from leading European and global experts, access to a network of angel investors, providing startups with useful networking industry, creating a pilot with a corporation, helping new clients or preparing for recruitment. next round of funding including a start-up-based startup.

2.2 Methodological approaches to ensuring the sustainability of startup funding throughout the life cycle

In the United States, which was and continues to be one of the best countries in the world for entrepreneurship and startups in 2019 [53-55], almost half of small businesses cease to exist within the first four years of operation [56]. Research conducted by Tech in Asia, the largest English-language media technology company focused on Asia, shows that in 2016, the average life cycle of a startup was 11.5 months. This means that the vast majority of startups in this part of the world die in the first year after founding. At the same time, almost three quarters of such failures are experienced by startups started in the field of logistics (21%), e-commerce (20%) and food technology (19%). In this case, we are even talking about companies that have received funding of millions of dollars of venture capital [57]. The viability statistics for technology strata are even worse - 70% of companies die within 20 months of first funding. For startups in the production of consumer equipment prospects are particularly terrible - cease to exist or become "zombies" 97% of companies that received their first funding, including on the terms of crowdfunding [56].

The causes of such failures are identified based on the relevant bad experiences of entrepreneurs who started failed startups. Thus, CB Insights analyzed 101 failures of startups and identified the top twenty reasons, among which the second most important was the lack of funds [58]. Another study, which covered 193 unsuccessful startups, found that 24% of failures were due to a lack of funds, and another 13% were unsuccessful in finding investors.

So, despite a good business model, idea, team, mission, strategy, even a good start of the fundraising campaign, the lack of sustainable funding is the root cause of the death of many startups [11]. We define the sustainability of funding according to [34] as capacity, as the ability to autonomously implement a program or project and maintain the positive results obtained in the long run [17].

There are different approaches to assess the level of sustainability of funding. In the Toolkit for Assessing the Sustainability of Programs at the University of Washington, St. Louis, Missouri, the authors make the possibility of creating a stable financial base for projects dependent on economic and political trends. Additionally, the founders' understanding of "objective and optimal value as a whole." project, and the cost of its components (services or other activities) "[35], and the level of sustainability is proposed to measure the subjective assessment of the founder. These parameters could be the measures of favourable economic climate, the use of various mechanisms to ensure stable funding, diversification of sources, a combination of stability and flexibility of funding and the availability of stable funding [35]. Given the cyclical nature of the calculation, this approach, in our opinion, will at best give a static result that is not subject to broad interpretation, and therefore does not allow to identify reserves for growth in the level of sustainability in the long run.

Other studies as a measure of funding sustainability also provide recommendations for assessing the degree of diversification of funding sources. In our opinion, in order to maximize the level of fundraising sustainability for startups, it is very important not only to diversify funding sources, but also to select the right types of resources that will meet the project mission and expectations of the founders.

In view of this, we propose to conditionally divide all sources of fundraising by categories of impact on the sustainability of funding as follows:

I. internal sources of fundraising:

- savings of the founders;

- family and friends;
- self-financing;
- bank loans;

II. supportive / neutral sources of fundraising:

- incubator and / or accelerator;
- government subsidies / funding;
- crowdfunding / crowdfunding;

III. external sources of fundraising:

- business angels;
- venture capital;
- banks;
- private companies;
- hedge funds;
- the public.

The key motivational characteristics of the startup for its founders are presented in table.2. It should be noted that the use of such comparative characteristics is necessary for the decision of the founders of the startup on whether to attract external sources or rely on their own strength and look for opportunities to use neutral sources of fundraising.

Table 2.1 - Comparative characteristics of the startup for the sustainability of funding

Internal fundraising	External fundraising
The desire to keep the company owned	Willingness to sell at peak value
Independence in decision-making	Concentration on profit and quick payback
Involvement	Procrastination
Payment for the use of fundraising tools	Minimize the time spent searching for funds Marketing, promotion Assistance in the form of knowledge, experience, guiding
Control over the targeted use of funds	Concentrate on the product, on what really matters
Limited size	The founders have a good history and reputation Compliance of the product with macro trends

	The presence of a prototype or minimally viable product
Financial risks for the founder	Financial risks for the investor

With regard to the use of supportive or neutral sources of fundraising, the only limitation for startup founders is the influence of administration and donors on the values and mission of the startup, the need to adhere to sometimes strict conditions and restrictions for financial or infrastructural support.

Returning to the life cycle of a startup (Table 1.1), we can say that the greatest threats to funding sustainability arise in the transition from the first to the second stage, when domestic sources of funds may not be enough and the startup has not grown enough to be visible to external investors. In our opinion, in this situation it is necessary to try to find support from the local community. The easiest way to convey the values of a startup, compliance with local culture and conditions (situations) to the local community. It is also important to remember the importance of involving the local community in decision-making and organizational work. This will increase the level of financial autonomy, curb the growth of financial risks for the founders of the startup and, possibly, will allow to move to the third stage (self-financing) while maintaining ownership of the startup. Such approaches will expand the opportunities for achieving sustainable funding and ensure the viability of the startup throughout this life cycle.

2.3 Analysis of digital health projects and startups financing

Electronic health records. Since March 2019, the eHealth system of electronic medical records has been operating in a test mode in Ukraine. Notably, the implementation of this project was carried out supported by international donors.

In Ukraine, the National Health Service of Ukraine ensures the functioning of the eHealth system. In turn, the NHSU reports do not specify the funding, only a general list of partners providing expert and financial assistance. It stands to indicate the main international donors such as the WHO, the World Bank, Swiss Agency for Development and Cooperation, United Nations Children's Fund, United States Agency for International Development, UK Government, Global Fund to Fight

AIDS, Tuberculosis, and Malaria, EU Delegation in Ukraine, and the Government of Canada through Canada's Department of Foreign Affairs, Trade and Development, the Renaissance International Charitable Foundation, the US Centers for Disease Control and Prevention, European Embassies in Ukraine, etc. [36].

The analysis of the financial documents of the National Health Insurance Fund [37] for the last three years showed that the Passports of the budget program provided KPKVK 2308010 certain expenditures for the functioning of the eHealth system were for 2019 and 2020.

Table 2.2 demonstrates the work capacity of the budget program is less than half, while the share of expenditures on eHealth is less than 10%.

Table 2.2 - Analysis budget financing for support and servicing eHealth for 2019-2020

Year	Plan	Actual	Proportion in budget program	Deviation from a plan	% of implementation
2019	18000	8049	4,2	-9951	44,7
2020	33327,3	15593,2	7,2	17734,1	46,8

Sources: developed by the authors based on [36].

Moreover, expenditures in even the approved passport of the budget program changed during the budget period. While at the approval time, they amounted to only 9 mln UAH, in October, it increased to 16.5 mln UAH. In the final version approved on December 7, 2020, the expenditures amounted to 33327.3 ths UAH. Therefore, it highlights the instability of funding for eHealth support and maintenance in Ukraine.

On the other hand, there are some concerns regarding the stability of the business entity administrating the Central Database of eHealth of Ukraine and is responsible for the digital transformation of the domestic health care system. Established on December 14, 2017, the company generated property from the sources as follows: state property, income from securities, loans from banks and other creditors, capital investments and subsidies from budgets, and other types of income not prohibited by law. An analysis of the company's financial statements posted on the official website (NHSU, 2021) showed that the company's operations were profitable only the first year. In 2019, a net loss of 165.7 ths UAH was declared. In the first half of 2020, its amount increased almost 23 times to 3740.3 ths UAH.

Besides, data on the presence and amount of tax debt confirmed the State Enterprise «Electronic Health» financial instability (Fig. 2.2).

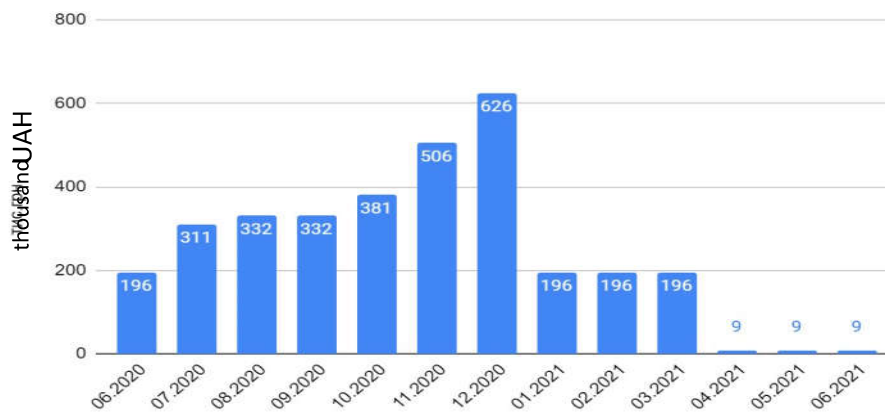


Figure 2.2 - Dynamic of tax debt of the State-Owned Enterprise «Electronic Health» Sources: developed by the authors based on [38]

Indeed, the growth of the number of connected patients, physicians, or platforms/applications indicates the development of the eHealth system in Ukraine. However, there are problems with funding for uninterrupted performance, protection, and kernel upgrade or updating the central database. It stands to mention that downturn of the above problems could nullify all advancement on digitalization of health care in Ukraine. Oderkirk [31] showed that medical data is sensitive. Data loss or misinterpretation could cause personal, social, or financial harm to citizens and devalue trust in the government and its initiatives. Therefore, it is appropriate to list some existing ways to overcome the problem mentioned above:

- developing and validating the eHealth development concept, while its strict compliance would attract the international donors to continue cooperation and finance support for system development;

- introducing paid access to secondary depersonalized data sets. Oderkirk [39] systemized the experience of developed countries. The findings showed that the national health care databases of Denmark, Finland, Sweden, and the USA are fully available for data collection. In turn, other countries provide access only to certain components of databases, such as hospital data, ambulances, prescriptions, mortality, etc. Besides, paid access could be shared specifically, for example, for scientists or external analysts. Besides, the paid access could be provided to database services, but not to data, through an internal authorized network, and so on.

Telehealth and mHealth. According to WHO approaches, telemedicine Telehealth is the interaction between the healthcare provider and the patient distantly in real-time (synchronously) and save-and-send format (asynchronously) [40]. Notably, the most promising and common types of telemedicine are as follows: Teleradiology, Teledermatology, Telepathology, Telepsychiatry, and remote follow-up of patients.

MHealth involves mobile technology (mobile phones, devices for patient follow-up, personal digital assistants (PDAs), and wireless devices) to support medical information and medical practice [40].

In Ukraine, the most common concept of telemedicine covers the extent of mobile health. It includes «a set of actions, technologies, and measures used to provide health care, using remote communication by e-mail messaging» [41]. Despite telemedicine is strictly regulated (informed consent must be signed), there is no need for an additional license. The telemedicine could be provided by health care institutions regardless of the level, form of ownership, sole trader, or private individual engaged in health businesses. Moreover, the legislative organizing of health care under telemedicine does not contain any information on its financing.

In 2016, telemedicine list of paid services provided by government, municipal health care institutions, higher medical and educational institutions was expanded by the laboratory, diagnostic, and consulting services at the request of citizens without a doctor's referral; health care for sick patients at home (diagnostic examination, procedures, manipulations, counseling, care); health care under contracts with business entities, insurance companies (including the Social Insurance Fund of Ukraine) and foreign citizens temporarily staying in Ukraine (including insurance contracts) [42]. Thus, telehealthcare could be financed from any source, including the patient's funds. The data analysis presented by the two most famous Ukraine telemedicine portals Medbrama and Telemed of Medstar Solutions showed the lack of open data on the service fee provided and funding sources.

At the same time, according to the OECD study conducted in 2015, 28 member-countries determined public funds as the main source of funding for telemedicine. Herewith, the Czech Republic, New Zealand, and Switzerland provide public and private funding, while Latvia – donor/non-public funding [43].

The WHO investigation showed that the major challenges in telemedicine development were as follows:

- lack of technical skills and experience of staff to implement and support telemedicine;
- critically low level of technology and information literacy, psychological barriers of elderly patients;
- difficulties in assessing the benefits of telemedicine by the method of Cost-Benefit-Analysis since they are long-term (aimed to overcome the effects of chronic diseases or preventive care). In terms of program-targeted budgeting, public funds are usually redistributed not in favor of delayed results;
- small private health care providers are reluctant to invest in telemedicine and create a telemedicine portal to serve only their patients.

Innovative Digital Health Projects. The analysis of the world experience showed that in addition to databases of electronic health records, telemedicine, and mobile medicine, the most relevant digital health projects are electronic medical devices, cloud computing, big data, and artificial intelligence, the Internet of Things. It stands to mention that mostly they were initiated and developed by large multinational medical corporations equipped with a resource base or startups.

In Ukraine, entrepreneurial ideas are financed by equity, banks, financial companies, insurance companies, credit unions, pension funds, and pawnshops. According to the OECD, the agricultural sector in Ukraine receives the most significant financial support. There are no state and international donor programs to support the financing of startup projects in the field of digital health [44],

Another alternative funding source for small and medium-sized businesses is crowdfunding models that «operate based on Internet platforms» [45]. Among the analyzed models in the AsiaPacific region, charitable crowdfunding is used for «health» financing, while equal business financing – for Biotechnology, Medtech, and E-health.

However, the findings showed that venture financing demonstrates the most impressive indicators of financial support. Analysis of indicators of venture capital funding of startups showed on development of medical devices showed that investors were most active in startups founded in 2013-2015 (Fig. 2.3). Thus, relatively mature projects with more than six years of experience are more attractive for investors.

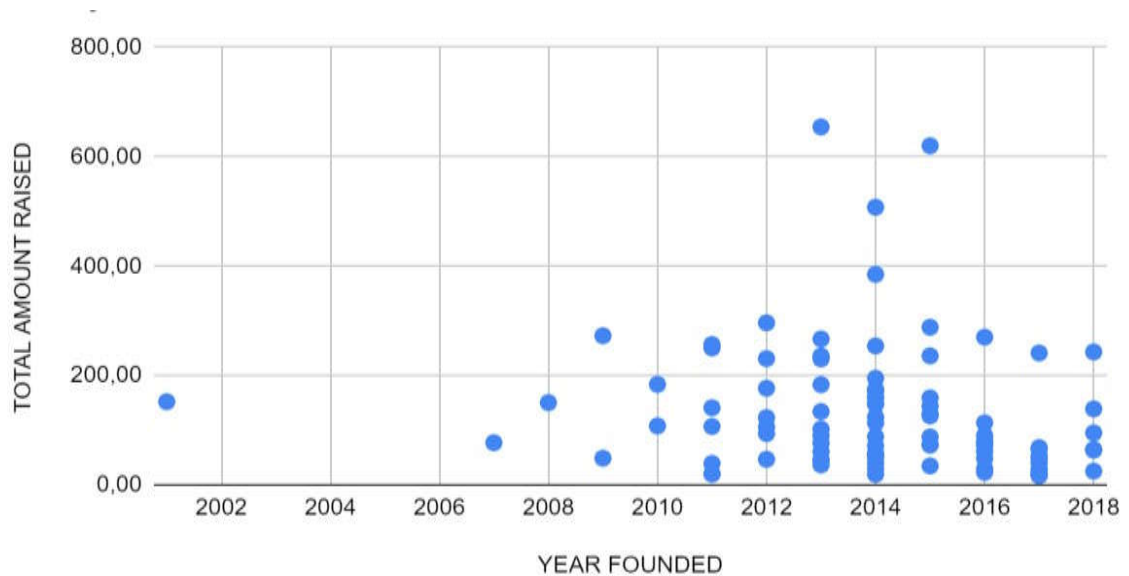


Figure 2.3 - Distribution of medical device startups by total amount raised and years of foundation Sources: developed by the authors [24].

The obtained results on the raised money by startups regarding the number of employees showed that the market for medical devices has the most significant number of small startups (with 51 to 200 employees). Thus, their financing has a great weight in venture capital (Table 2). However, the situation in the last column shows that the larger the startup, the more money it could raise.

Table 2.3 - Startup funding indicators for developing medical devices by the number of employees [24]

Number of employees 11 - 50	Number of startups 22	Total amount raised	Average amount raised per startup
		1325,1	60
51 - 200	53	7194,8	136
201 - 500	14	2353,6	168
501 - 1,000	2	365,1	183
1,001 - 5,000	1	266,7	267

This funding distribution proves that venture capital is available only from the second development stage of startups despite the flourishing digital medicine market activity[14]. Besides, most entrepreneurs consider public funding (government subsidies and funding) to be critical [24].

3 AREAS OF IMPROVEMENT OF THE STARTUPS FINANCING SUSTAINABILITY

3.1 Startups global expansion challenges

The growth and scaling of a startup is the final stage and the most important challenge of its development.

To date, there is a large amount of research in the direction of finding answers to the question of something that may hinder the growth of a startup. The answer to research studies are in 2 planes: the plane of factors that are independent of the startup and the plane that is subject to the actions of the startup owner. Shows the following factors, which are evidence that the decision to scale the startup is premature:

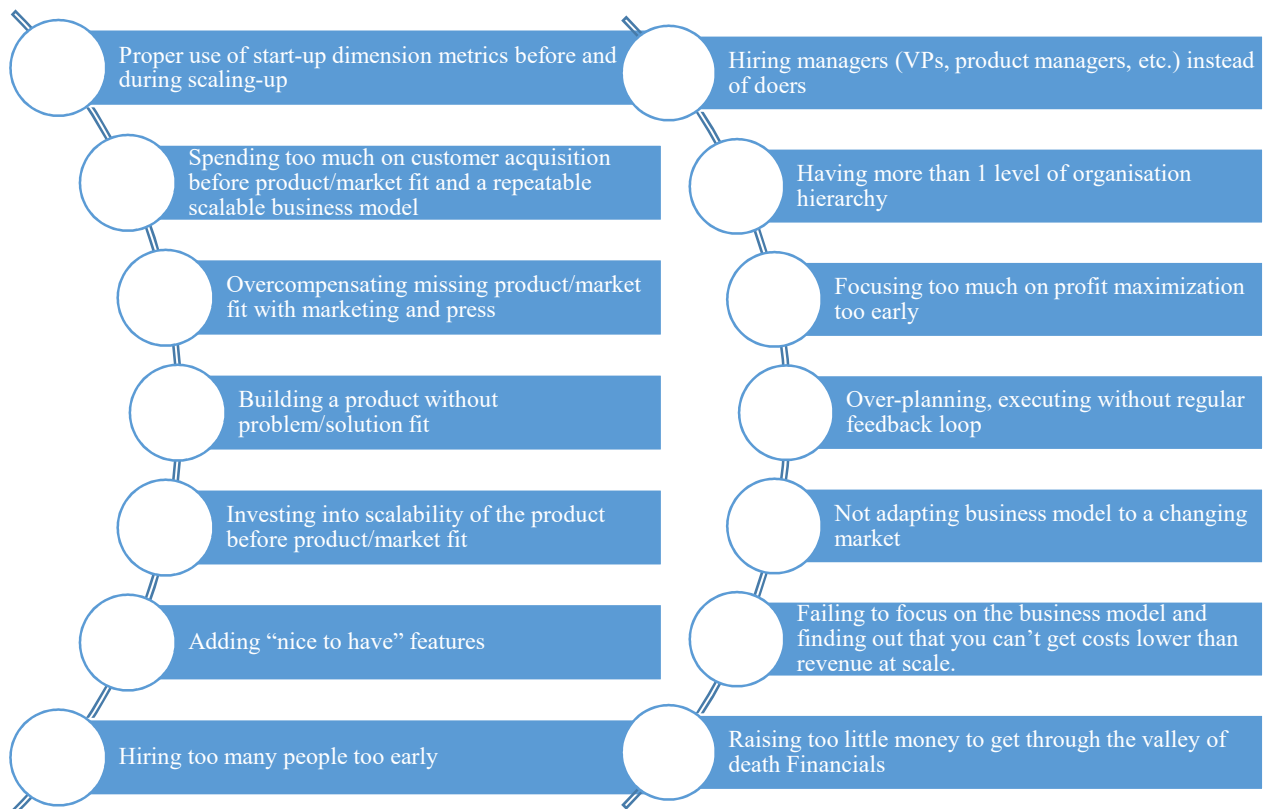


Figure 3.1 – Factors of premature scaling of startups [52].

Another one important factor is the localisation and residency of startup. It is proven by Global Entrepreneurship Monitor in 2021, “the economies with the lowest shares of national customers are those with the highest shares of local customers. There are just five economies within the 43 in which two out of five or more of those

starting or running a new business have international customers: Luxembourg, Slovenia, Cyprus, Greece and Latvia” [49]. The result of the study among 47 countries around the world is depicted on the Fig. 3.2.

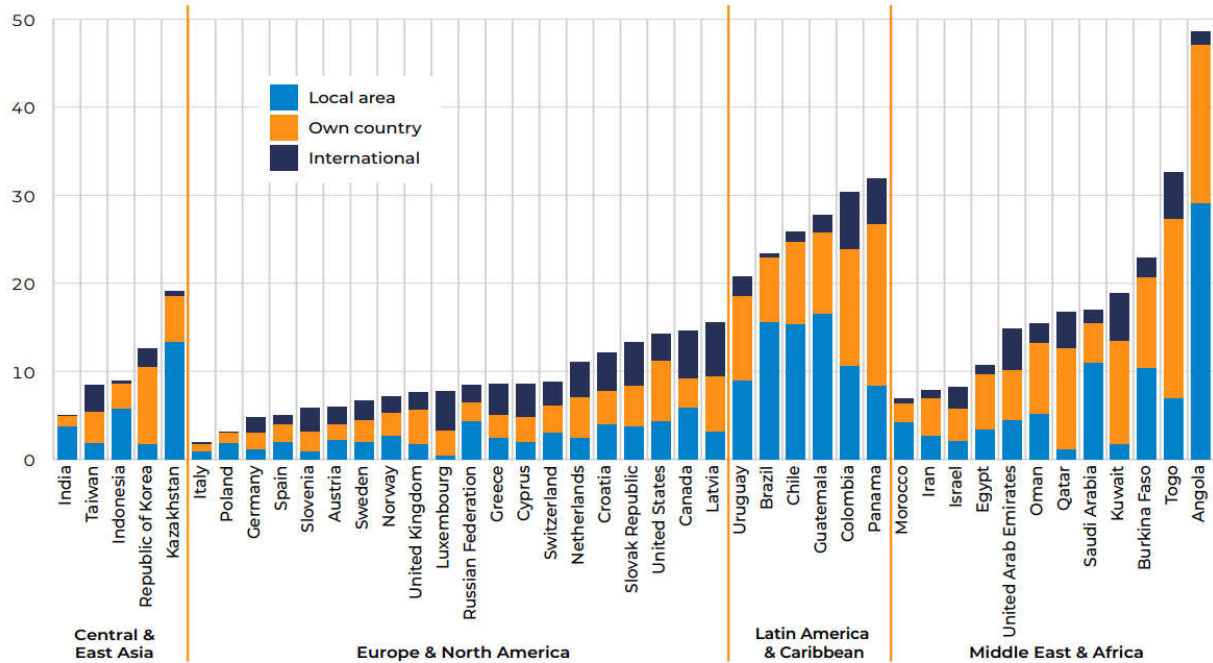


Figure 3.2 - The level Startups Activity having customers only within their local area, only within their own country, and those with international customers (adopted by authors from [49])

The language of the site is also really important. According to a study conducted in 2018-19 years on the language used in communication and on websites with different content in the world, it was found that in everyday life most users use Chinese and Spanish, while most websites have content in English (Figure 3.3)

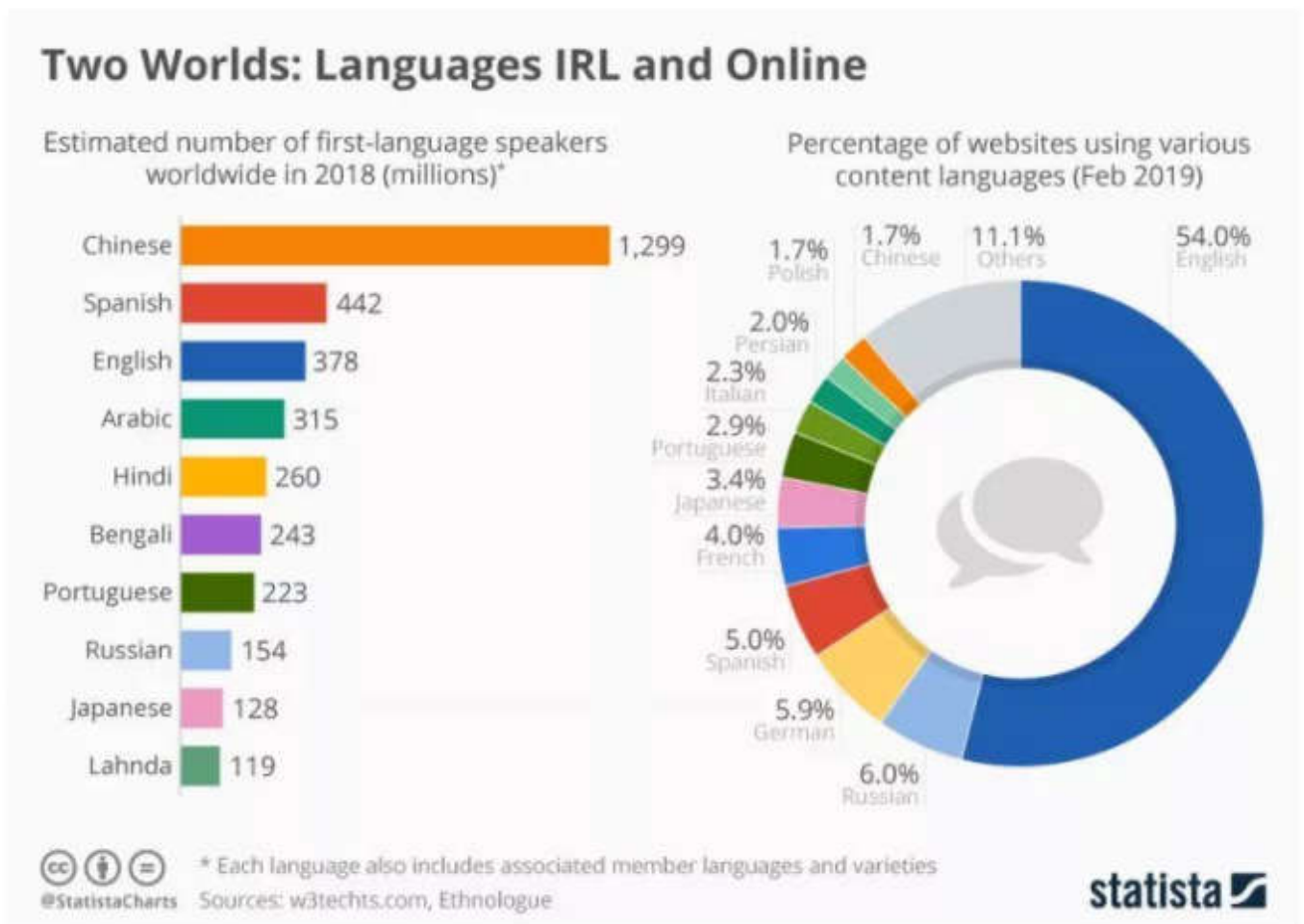


Figure 3.3 - Use the world's languages in everyday life and on websites [46]

There is no way out of the situation how to get more attention from potential users and investors of the startup just translation and appropriate localization. Of course, this case is not cheap, but it is believed that such costs will be reimbursed twice. It is worth noting that not only differences in language but also culture should be taken into account when developing a site and drawing up a business plan for a startup. Poor translation is seen as one of the 4 factors that are very likely (up to 23 %) to lead to misunderstandings with cross-cultural communication [46].

Commit also points another important issues every startups is needed to consider then trying to develop and expand globally: “Show your foreign audiences you value them by speaking their language and speaking it well; this by itself can be a huge differentiator. ‘Digital’ might be an all-encompassing term but the translation and localization approaches for digital content are anything but invariable; they can cover pretty much the whole bandwidth of loc services. From transcreation and marketing localization for websites and social media, to SEO-optimized local copy for blog articles, to software localization,

to raw machine translated output for user reviews. So, consider partnering with professional agencies who can provide the entire gamut of services and guarantee local teams for the required insight. Translation must be seen as a revenue stream, as an investment, and customer experience is a key indicator for that. As with every investment, you need to plan and prioritize. Not all content has the same purpose and value, thus not the same share in your localization budget. Prioritize by intent and allocate funds accordingly”[46].

3.2 Marketing tools to attract startup online personal financing through psychological constructs

Today, to find and attract the attention of new investors, a startup is not enough to have a good idea and a well-designed business plan. The community requires unique and personal experiences as well as creating additional value for the investor, understanding of strategic competitive advantages. The variety of product information forces buyers, potential investors to seek inspiration and individual solutions to their problems. So in our opinion for Crowdfunding, like one of the best ways to finance startups online, the most promising method of finding and attracting funding is to encourage investor inspiration.

There are several marketing strategies, which can imply motivational drivers and need to be adopted to different digital investor touchpoints. To successfully inspire investors, it is necessary to design inspiring sources (triggers) which refer to the stimulus object that evokes inspiration (e.g., a person or idea) and targets to refer to the object toward which the resulting motivation is directed (e.g., a possible self, personal goal, or creative product) [47]. According to Google Trends, the interest in most digital marketing issues is high, although its level decreases during the last quarter (Figure 2).

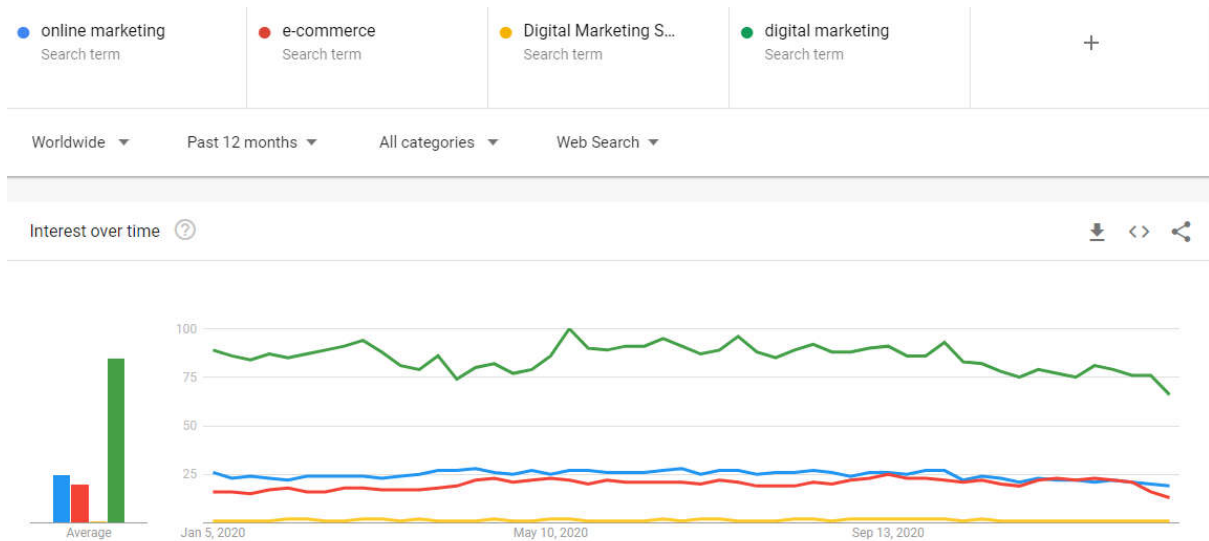


Figure 3.4 - Google Trends Analysis of search terms Online marketing, E-commerce, Digital Marketing Strategy, Digital Marketing over past 12 months.

There are 121 billion results to google “e-commerce marketing channel”. Most of them are followed by the number of possible channels starting from the main four, finishing with dozens of appropriate variants.

As inspiration holds a unique position at the very beginning of the customer journey that links the activating reception of a new idea with the intention to pursue a consumption-related goal 5 main inspirational marketing strategies and their triggering features will be introduced and linked to online investors touchpoints. These strategies aim to evoke inspiration via external stimuli in order to inspire customers to seek and to be receptive to new ideas:

1) Video Marketing

More than 80% of all traffic will be video by 2021.

74% of people who have the opportunity to see a product in action via video will buy it (Web).

Video marketing as a tool to inspire the investors:

1. Creates a strong first impression

Imagine being shown two commercials in a row. One was just informative, the other made you laugh or sad. Most likely, you will remember the second one better. In order to make the right impression, advertising materials need to evoke the right emotion, and it's up to marketers to help shape it. Then the promoted startup will stand out against the background of similar ones and will remain in the memory of investors.

2. Helps people make decisions with their hearts

The KEY Coffee Grinder is a great example. The video of which is aimed at the process of coffemaking, causes such pleasant emotions as calmness, optimism, self-love. This, in turn, leads to higher sales.

3. Encourages action: A happy video makes you want to share it. A sad video makes us feel empathy and a desire to keep in touch. Videos that cause surprise and fear make us stay where we are comfortable. Videos that cause anger and passion make us stubborn.

Video marketing is a powerful tool for engaging your audience, provoking their reactions and prompting them to take action. To make it work, you just need to formulate your goals and act according to certain principles:

1. Remember that Inspiration are not about physical sensations, but about a state of mind. Inspiration are many and varied, so it is important to clearly understand what kind of emotion you want to evoke in the audience, and with this in mind, develop and design video materials.

2. Video marketing creates a strong first impression of a product and nudges people into making a purchasing decision.

3. Inspiration determines people's behavior. Joy makes you want to share and distribute your content, sadness to help others, fear to stay close to those who inspire trust and to express brand loyalty, anger encourages stubbornness and distribution as well.

4. Before you can apply video marketing, you need to get to know your audience in order to understand exactly how to reach them and get a lively response.

5. It is imperative to evaluate the effectiveness of video marketing using audience surveys, a specially organized platform for feedback, focus groups and based on the analysis of audience actions under the influence of evoked emotions.

2) Content marketing

Content marketing offers the opportunity to introduce people to a brand and build trust in it without any apparent end in itself of marketing, thus resembling service-oriented thinking [48]. In contrast to striking advertising, content marketing offers actual added value through beneficial problem solutions to meet investor's needs [49]. Thus, inspiring and eliciting creative ideas in the investors' minds that stimulate them to put these ideas into practice.

Hence, startups can for example present videos or picture series on how to use their products properly or even in other unexpected ways. Ideally, they could introduce an innovative product that provides a new and better means of achieving existing goals. These digital formats can then be displayed on their websites, social media platforms, corporate blogs or other video- and picture sharing platforms, where they can trigger the realization of new ideas referring to the object toward which the resulting motivation is directed.

Moreover, content marketing thrives primarily on the emotional and visual preparation of topics as well as social media. Relevant topics to trigger a marketer's target group can be derived from social networks, Google Search or through influencers. Startups can generate more attention, visibility and leads through content marketing. In addition, they can strengthen their brand identity. (source)

3) Influencer Marketing.

Influencer marketing offers a way of promoting purchasing decisions that appears more trustworthy to the customer. The user motive of personal and emotional proximity can be satisfied through the use of influencers, as they build up personal relationships with their fan base to a particular extent. According to Influencer Marketing Hub, [50], almost 80 % of consumers will pay attention to goods or services, as well as possible areas of investment, if they get information about them from opinion leaders. That is why more and more startups are using this kind of promotion of their idea and their product, realizing that due to the lack of recognition of their brand and influencers trust and its quality may lose potential partners and money. In recent years, the global market influencer-marketing services is growing rapidly and consumer confidence in the recommendations reaches almost 95%. The effectiveness of such a strategy can be measured by classical indicators, and therefore more and more evidence is emerging in favour of such a tool. Moreover, the possibility of automation has emerged due to the damage of artificial intelligence, machine learning and natural language processing, which have significantly changed the context of specialists. Today, marketing technology is based on neural networks, helping startups navigate key areas such as recruiting new bloggers, creating content, and generating conversions.

4) Pay-Per-Click Advertising.

PPC is an online marketing- and advertising strategy that transfers internet users to enter corporate websites or landing pages by clicking an PPC ad, which has been placed on the network. Advertisers pay for each click made by the user to enter their website. PPC ads are placed on the network with the help of contextual advertising providers - search engines like Google.Adwords, Yandex.Direct, MSN adCenter, Begun, advertising platforms of social networks Facebook, Twitter, LinkedIn, Vkontakte, etc. PPC is a convenient tool in the field of attracting quality traffic to the landing, as advertisers are able to select business-related keywords or criteria for which their advertisement should appear online. Hence, being precisely able to inspire their target segments. Whereas traditional forms of advertising on television or in the press may be available to a random audience, PPC advertising is ideally shown only to potentially interested users.

PPC ads usually act as an auction model. It is needed for advertisers to place bids to appear their adverts on Search Engine Results Pages (SERP). The simplified scheme of PPC mechanism is established on Figure 3.5.

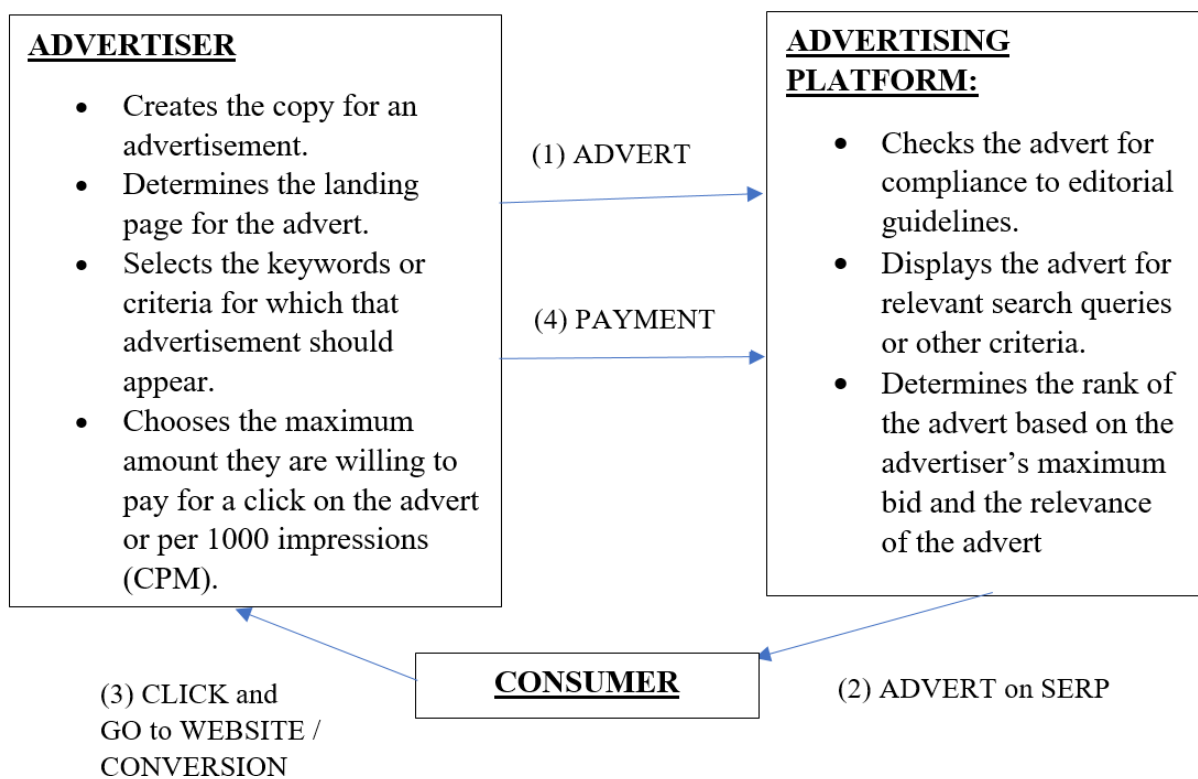


Figure 3.5 - Simplified scheme of PPC procedure

The advertising platform determines when adverts are eligible to appear and serves them as appropriate. The most important triggers to inspire investors are supposed to appear on the stage of description of advert. But the main platforms on the market strictly limit advertisers in using opportunities attract attention like special marks, symbols, phrases, and length of the text. Also, to make advertiser plays platform's rules, they propose different automatic and AI tools not just to pay the advertising platform when their advert is clicked on, but also for conversions.

3.3 Implications marketing strategies for Startups financing attraction on practice.

The following table depicts which marketing strategies trigger consumer inspiration and can be applied on diverse digital touchpoints:

Table 3.2 - Marketing strategies trigger consumer inspiration application on diverse digital touchpoints

Marketing Strategy	Display-Advertising (Pay-Per-Click Advertising)	Content Marketing	Influencer Marketing	Video Marketing
Achieved hedonic drivers in online financing	<ul style="list-style-type: none"> - Exploration/curiosity - Sensation seeking / entertainment - Intrinsic enjoyment 	<ul style="list-style-type: none"> - Exploration/curiosity -Sensation seeking/entertainment -Visual attraction - Escape - Hang out 	<ul style="list-style-type: none"> - Exploration/curiosity -Sensation seeking/entertainment - Visual attraction - Intrinsic enjoyment -Enduring involvement with a product/service 	<ul style="list-style-type: none"> - visual attraction; - sensation seeking / entertainment; - exploration /curiosity
Inspiring factors	offer inspiration through the short and capacious message create a sense of scarcity or urgency	<ul style="list-style-type: none"> - offer solutions in the form of relevant and helpful content - answer questions and point out solutions - offers actual added value through beneficial problem solutions to meet customer needs 	<ul style="list-style-type: none"> -companies can benefit from the attraction that influencers have for their followers -advertising messages can be amplified through being used by influencers -content sharing through viral effects -satisfying personal and emotional proximity of customers 	<ul style="list-style-type: none"> - creates a strong first impression; - helps people make decisions with their hearts;
Applicable on Digital touchpoint	Search Engine Corporate Website Price-comparison sites Online Community Blogs	websites, social media platforms or other video- and picture sharing platforms Blogs	-Influencer's pages on social media have links for online shopping and can make the customers easily connected to products and services, Viral effects and likes can amplifies this aspect	<ul style="list-style-type: none"> - Video sharing platforms. - Social and media platforms. - Online Video shop. - Video Blogs

Considering possibility to implicate methods of startups investors inspiration into marketing practices it is needed to consider safety as the main problem of e-commerce. Trying to maximise the level of investors inspiration startups might infringe intellectual property rights and make malicious falsehood in competition between e-commerce companies [51].

Also, the regional factors are needed to be considered. As it is shown on the Figure 3.6, “China grew the fastest among the emerging regional markets and in recent years, its e-commerce market has not only become the biggest in the world, but also has a growing proportion in the global market. Its market size will reach US \$1.422 trillion by 2020, far exceeding the United States”[51].

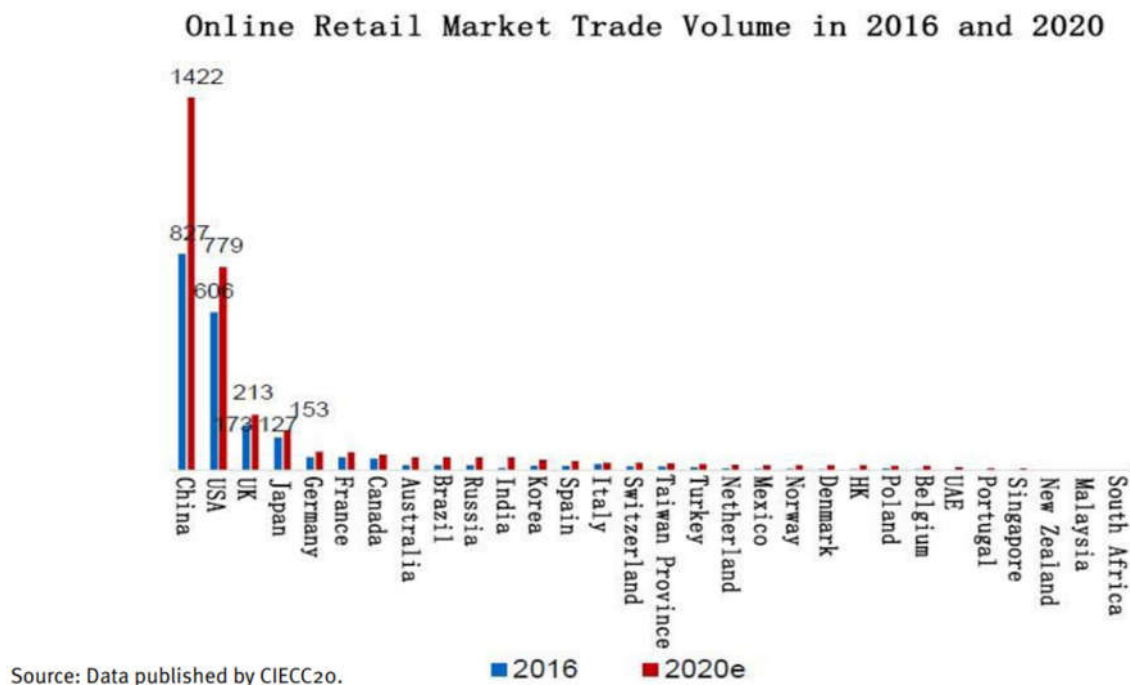


Figure 3.6 - Online retail market trade volume 2016 and 2020 [51].

According to these trends, to reach better investors inspiration the following should be considered developing marketing strategies:

- 1) regions – traditions, customs, religious;
- 2) devices used when purchasing;
- 3) Online payment methods available (for instance, absence of Paypal in Easter European countries) [52]

CONCLUSIONS

Based on the study on the theoretical and methodological principles of the process of financing startups and its sustainability and analysis of current trends in the development of startups in Ukraine and the world, the following conclusions can be drawn:

To date, there is a single theoretical and methodological approach to defining the concept of a startup and its classification.

The study of the viability of startups and the problems of sustainability of their funding made it possible to propose approaches to optimize the selection of sources of fundraising in accordance with the stages of the life cycle and motivation of startup founders.

In conclusion, there are no universal recipes for ensuring the sustainability of funding that suits everyone. Sustainability should be seen as an adaptation process rather than an end goal, which means that startup founders face the challenge of permanently assessing the internal capacity of a product or project, donor priorities and external influences that are particularly sensitive to change by NGOs and social startups.

The study findings showed that the modern digital medicine system aims to achieve three key goals: 1) improving medical services, 2) protecting patient data, and 3) reducing costs.

On the other hand, the national and international experience in funding the e-health projects showed that the main challenge is the deficit and sometimes lack of sustainable funding of budget expenditures to ensure the uninterrupted operation, improvement, and development of e-health. Besides, exacerbating the problem is the sensitivity of the data used to external threats, which requires an extraordinary cybersecurity approach with additional funding.

Using AI, Big Data, blockchain technologies, the Internet of Things could solve the technical problems of digital health. However, these technologies are high-value, while their applications are innovative and sometimes risky. Therefore, it is critical to establish cooperation between the private, public sectors, academia, and non-

governmental organizations in limited public funds (particularly topical for developing countries).

Almost every day the new e-commerce channels and online marketing strategies appear. In just over twenty years of its existence in the market, e-commerce has already had a great impact on startups and their investors. The number of companies involved in this process, both companies and regular users, is growing steadily every year. Online fundraising platforms provide the startups with more information and allow you to compare product and price, more choice, convenience, easier to find anything on the Internet.

Online fundraising bring more satisfaction to modern investors and donors who are looking for convenience and speed. Almost every day the new e-commerce channels and online marketing strategies appear. They are needed to be considered, for instance the followings: dropshipping (selling a product on a website for a commission, but all the shipping is handled by the brand); affiliate marketing (selling someone else's product on a website in exchange for a commission); subscription (offering to continue sending a product or offering a service in return for a monthly payment); private labeling (the brand makes, labels, and packages the products themselves); white labeling (purchasing a product from a manufacturer, rebrands, and repackages it), etc.

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