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THEME: ***«Logistical support of esports project of tournament provider»***

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МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ

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T A S K

FOR COMPLETION THE BACHELOR THESIS OF STUDENT
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1. Theme of the bachelor thesis: «Logistical support of esports project of tournament provider» was approved by the Rector Directive №553/ст. of May 04, 2020.

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4. Initial data required for writing the thesis: general and statistical information about global esports market, information and production indicators of the company «Starladder», financial indicators of the «Starladder» projects, literary sources on logistics and project management, Internet sources.

5. Content of the explanatory notes: introduction, the concept of logistics management; the specifics of esports industry; the essence of project management tools; analysis of the global esports market; characteristic of global esports economy; characteristic of Starladder; project description; implementation of project management tools to the creation of logistical support of the esports event; economics component of the organization logistical support of the esports event; conclusions and appendix.

6. List of obligatory graphic matters: tables, charts, graphs, diagrams illustrating the current state of problems and methods of their solution.

7. Calendar schedule:

№	Assignment	Deadline for completion	Mark on completion
1	2	3	4
1.	Study and analysis of scientific articles, literary sources, normative legal documents, preparation of the first version of the introduction and the theoretical chapter	25.05.20-27.05.20	Done
2.	Collection of statistical data, timing, detection of weaknesses, preparation of the first version of the analytical chapter	28.05.20-29.05.20	Done
3.	Development of project proposals and their organizational and economic substantiation, preparation of the first version of the project chapter and conclusions	30.05.20-01.06.20	Done
4.	Editing the first versions and preparing the final version of the bachelor thesis, checking by standards inspector	02.06.20-03.06.20	Done
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6.	Submission work to Logistics Department	05.06.20	Done

Student_____
(signature)

Supervisor of the bachelor thesis _____
(signature)

8. Consultants of difference chapters of work:

Chapter	Consultant (position, surname and name)	Date, signature	
		The task was given	The task was accepted
Chapter 1	Senior lecturer, Volovyk O.I.	25.05.20	25.05.20
Chapter 2	Senior lecturer, Volovyk O.I.	28.05.20	28.05.20
Chapter 3	Senior lecturer, Volovyk O.I.	30.05.20	30.05.20

9. Given date of the task May 25, 2020.

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(signature of supervisor)   (surname and name)

Task accepted for completion: _____   Lokhtin Y.O.
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ABSTRACT

The explanatory notes to the bachelor thesis «<u>Logistical support of esports project of tournament provider</u>» comprises of 93 pages, 16 figures, 27 tables, 4 appendices, 57 references.

KEY WORDS: ESPORTS, PROJECT MANAGEMENT, EVENT MANAGEMENT, WORK BREAKDOWN STRUCTURE, EVENT PRODUCTION, LOGISTICAL SUPPORT

The purpose of the research is to study the theoretical foundations and problems of organizing the process of logistical support for esports events in general and the The International Dota 2 Esports Championship in particular, and to develop recommendations for event production of esports projects for tournament providers.

The subject of the investigation is the organization a logistical support of esports project of tournament provider at the example of The International Dota 2 Esports Championship and Starladder.

The object of the research is project management tools application for logistical support of esports project for tournament providers.

Methods of research are scientific inquiry, empirical studies, data analysis and synthesis, modeling, expert assessments.

Materials of the thesis are recommended for use in scientific researches, educational processes real life applications for experts in logistical departments.

TABLE OF CONTENTS

NOTATIONS

ASP   – Active Server Pages

API   – Application Programming Interface

BPR   – Business Process Reengineering

CBPR   – Construction Business Process Reengineering

CCG   – Collectible card game

CEO   – Chief Executive Officer

CPM   – Critical Path Method

CRM   – Customer Relationship Management

CSCM   – Customer Service Chain Management

ERP   – Enterprise Resource Planning

ESL   – Electronic Sports League

FPS   – First Person Shooter

ISP   – Internet Service Provider

IT   – Information technology

KPI   – Key Performance Indicators

MIS   – Management Information Systems

MOBA   – Multiplayer Online Battle Arena

MRP   – Material Requirements Planning

NPV   – Net present value

PC   – Personal computer

PERT   – Program Evaluation and Review Technique

RTS   – Real-time strategy

SCM   – Supply Chain Management

WBS   – Work Breakdowm Structure

INTRODUCTION

The modern globalized world is developing at a crazy pace. A great number of events are being held around the world at the same time. It influenced the rapid growth of the development of logistics for project and event management. Logistics plays a role of a bridge between virtual and physical reality and have also become an integral part of every project or event. To carry out a lot of events at the same time, it is required to establish a reliable logistical system, which can handle all the challenges posed. The events industry includes different types of events such as trade fairs, football matches, music festivals, or even newly arisen esports competitions. Esports is a modern time phenomenon, which becomes more and more popular. Esports events gather thousands of people under an umbrella of famous arenas and millions of viewers from all around the world who follow these events online. It is a growing world that brings people together from different states, continents, and origins with disregard of their nationality, religion, or background. Organizing and holding a big esports event is a very complicated task which is run by esports enthusiasts. The esports industry is faced with a certain lack of necessary knowledge, which in turn complicates the process of its development.

The relevance of the topic is explained by the fact that esports events are attracting more and more attention, and for the successful implementation of their projects, esports tournament providers must operate with a strong logistics system through their logistical department or a third-party supplier. In this regard, the capabilities of logistics personnel must meet the growing requirements for organizing logistical support for large events. The study of the esports industry and project management tools make it possible to develop a well-prepared plan for the organization of logistical support for a big esports event, taking into account all the nuances of this industry.

Production of quality esports events requires strong knowledge and significant experience. However, the acquisition of knowledge in esports complicated lack of wide research and accessible studies. Currently, certified academic institutions do not prepare staff for organizing and running esports events. The esports industry has a high entry barrier for new workers. Based on this, this bachelor thesis aims to justify preparation logistical support for esports events. The organization of logistical support of the project could be carried out by different project management tools, which have their advantages and disadvantages, as well as the area of application.

So far esports has numerous titles that are divided by genres or platforms, and it will be reasonable to describe major parts of this industry and show the most successful examples of an esports event. In this paper, the organization of logistical support of The International - Dota 2 world championship will be considered. the budget of the logistical cost of the event will be calculated, and all the costs associated with transportation, accommodation, venue, etc., will be taken into account. Using special computer soft as Microsoft Office (Project, Excel, Visio) can simplify the process of implementation project management tools to the logistical support of the event.

Fast and low-cost logistics is necessary for event production. Since esports events are held all over the world, tournament operators can have several events running one after another or even in parallel in different parts of the world. Therefore, the supply chain of the event should be sustainable and be ready for immediate updates to the ever-changing situation in the market. The logistical support in project management allows increasing the efficiency of the whole project by optimizing associated flows to project production. The success of esports events depends on their planning and performance quality. Every tournament provider aspires to reduce logistical cost in term of a constant increase in the cost of event production and gather more resources for own development.

The existing problem can be identified as a lack of deep knowledge of personnel. In the majority of cases, the esports industry is run by enthusiasts who love what they do, but they don't have enough knowledge of specific operating areas. Also, the

complexity of esports event production has such challenges as the need for competition with minimal delays, and for the tournament to take place, it is necessary to deliver the necessary equipment and teams from around the world to the city of the event. These problems could be solved by applying project management tools for deep planning.

The process of logistical support organization of event includes numerous tasks. After the requirements are determined, event logistics managers find suitable venues, accommodation, necessary deliveries, and vendors. In this time, other parts of the company working with different tasks such as building scene, inviting teams (if it is optional), making broadcast, content, attracting partners, and sponsors which want to use this opportunity to connect with their audience. Every tournament provider should have well-experienced personnel who are qualified to handle a wide variety of tasks.

Knowledge of project management tools, esports peculiarities, and supply chain management will help for the successful production of esports events. All these issues will be addressed in this paper.

CHAPTER 1

THEORETICAL BASIS OF PROJECT MANAGEMENT IN THE LOGISTICAL SYSTEM OF EVENTS

1.1 The concept of logistics management

There are numerous definitions of logistics. According to Heizer`s and Render`s in the textbook «Operations Management», logistics management can be identified as "an approach that seeks efficiency of operations through the integration of all material acquisition, movement, and storage activities" [3].

At the same time, Cecil C. Bozarth and Robert B. Handfield in the textbook «Introduction To Operations And Supply Chain Management» define logistics as, «the part of supply chain management that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption to meet customers' requirements.» [2] According to this definition they distinguish business activities, which cover logistics management: transportation, warehousing, material handling, packaging, inventory management, and logistics information systems.

However, Martin Christopher in the book «Logistics and Supply Chain Management» describes logistics as «essentially a planning orientation and framework that seeks to create a single plan for the flow of products and information through a business» [4].

Moreover, within this project logistics management will be considered from the point of view that it is a part of the supply chain that plans, implements and controls moving resources - people, materials, inventory, and equipment for effective using and

meet customer requirements between the point of origin and the point of consumption. Logistics is all about organization and control.

Every event can be considered as a project which incorporates several interrelated activities including the ones which refer to logistics management. However, every event has its peculiarities, which are extended to logistics management too. The major features of the event logistics management are a compressed time for holding an event, the absence of another chance for solving problems, and a backward approach for planned activities.

Every logistical company or enterprise with its logistical department has its own peculiarities. Grygorak M.Yu outlined the main feature as «the ability to coordinate the purposeful activities of other autonomous agents, plan the movement and placement of goods and/or people as a whole, adapt to rapidly changing environmental conditions and consumer inquiries, to resolve conflicts between supply chain participants, end-to-end optimization of logistics flows and processes in the coordinate system "object (flow) - time-space" in real-time.» [8].

Logistics plays a role of a bridge between physical and virtual realities. The following elements are the part of event logistics management: venue logistics; warehousing & distribution; delivery management & loading schedules; traffic management; asset tracking, freight & bump-out logistics, etc.

One source describes logistical support of the event as «a set of all means and methods associated with the organization and conduct of activities which may include administration and service as safety, medical care and health care accommodation, nutrition, technical assistance, general maintenance, installation and dismantling of structures, and equipment, transportation of passengers, goods, and consumables, mass media and communications, cleaning and garbage removal, etc.» [7].

1.2 The specifics of esports industry

Among many other events, esports is a new trend in event management that occupies its niche. Esports is a global phenomenon of nowadays which was defined by Newzoo, a leading global provider of games and esports analytics, as «competitive gaming at a professional level in an organized format (a tournament or league) with a specific goal (i.e., winning a champion title or prize money) and which has a clear distinction between players and teams that are competing against each other». [9].

At the same time, the co-owner of the global esports team - Pittsburgh Knights Rob "Leonyx" Lee defines esports as «a computer-facilitated competition. In other words, it`s an organized video gaming. » [10].
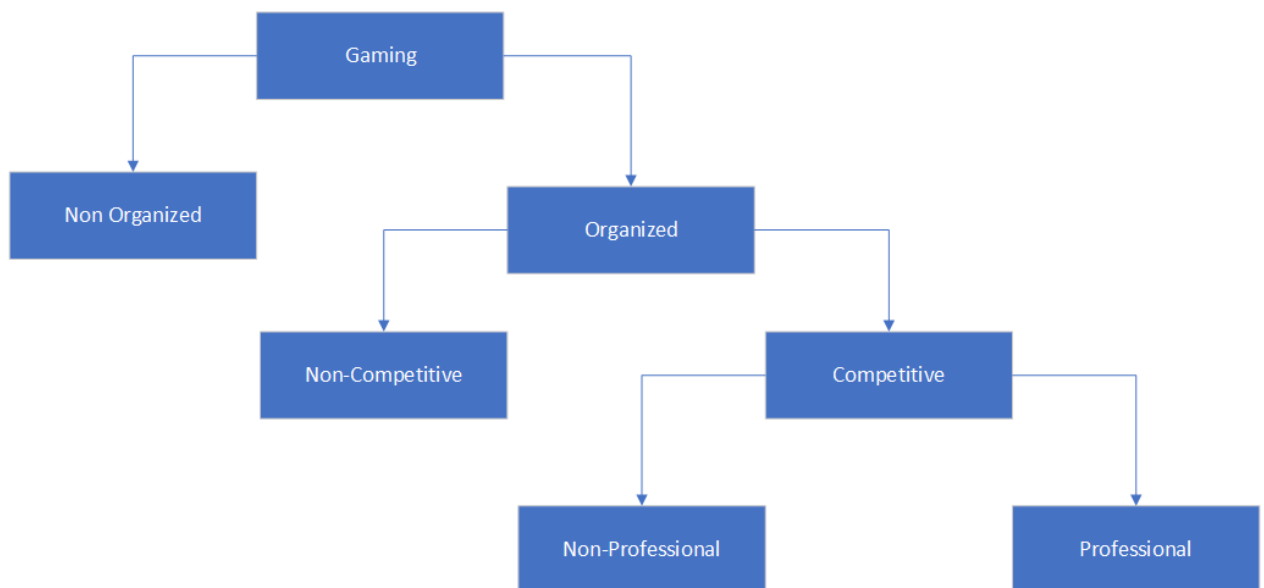
Figure 1.1 – Distribution of gaming

Esports - is a market of enthusiasts, who have a lack of basic knowledge. (Pavel Golubev Webinar «Esports for agencies»). Esports is a marketing tool that allows us to reach young people with unique sponsorship activations that organically fit on the air

and can even be integrated into a game itself. Many sponsors come to esports just to reach out to an audience inaccessible elsewhere. [43].

In 2018, Wikipedia drops using "eSports" and decided that "Esports" (when starting a sentence) and "esports" is correct writing. This resolution was made before by Associated Press, ESPN и Dot Esports. Moreover, the word "cybersports" is also existing. However, it applies only in the post-soviet area. [19]. According to the Cambridge dictionary, prefix «cyber» deals with computers and the internet. This prefix can be used in such a case as «cyberattack» or «cybersecurity». Word «electronic» defined as something that includes "based on, or used in a system of operation that involves the control of electric current by various devices". [12] This word has a wider application. Nowadays esports includes various platforms, such as PC, mobile devices, consoles and are not limited to playing online. In this case, using the word «electronic» is more appropriate. Esports also requires a lot of large physical locations for tournaments. Esports industry is a point of connection sport, entertainment, show business, and computer industry.
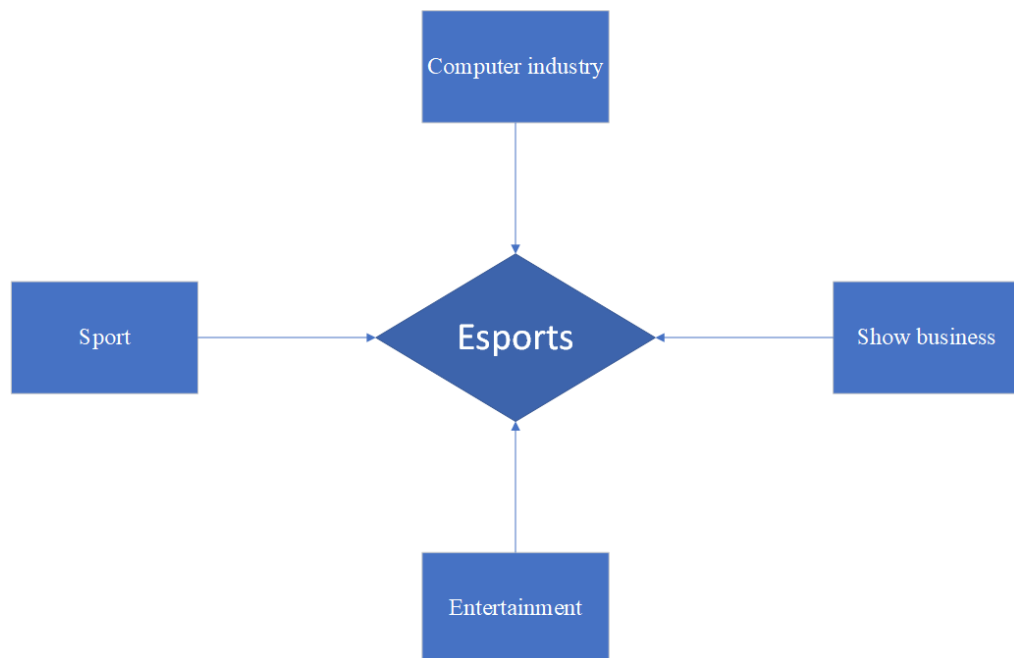

Figure 1.2 – Esports as a connecting point of different industry

Esports as a separate industry has its ecosystem, which consists of elements that interact with each other. Esports ecosystem consists of such elements as Game publishers, Event organizers, Broadcaster/Broadcasting Platform, Streamers, and Professional teams. However, brands do not constitute a part of the esports ecosystem as an integral part, but they also can have deep interaction with each element.

The key role in making decisions on legal and regulatory issues related to an esports event is played by the game publisher. According to careermatch.com, Game Publisher is a company, which finances a video game's development, handles the marketing and release of the game, and gets the returns on its sales. Game Publishers are not always are developers. They can use their staff or attract external Game Developers. However, the game publisher always manages the business end of the gaming field. Example of game publishers are Blizzard, Valve, Riot Games, Epic Games, etc. [21]

First of all, game publishers should publish a game. The game must respond to requirements to become an esports title. Not every video game can be an esports title. According to RuHub for a possibility to become a status of esports discipline, the game should have:

● Mathematical model without random events

● Opponents must be in equal playing conditions.

● Aim to compete. Natural and simple competitive game mechanics. [38]

For a game to be qualified for the esports future, it must meet certain requirements, such as:

● Observer. For the spectator to see the match, it is necessary to provide the opportunity to broadcast. Broadcast of the match should include the ability of the viewer to see the interface of all sides of the match. Also, do not forget about the gameplay of the game. It should be simple for the viewer. The game should be comfortable to watch and broadcast.

● Anti-cheat. The result of the match must be protected from outside interference. The rating inside the game must be honest and high quality.

● Community Support Tools. Popular titles now appeared as modifications for other games. The game should include an open API, which will allow the gaming and business community to use the capabilities of the game creating all kinds of useful services.

● there should be no "Pay-to-Win" in the game. [47]

The conventional esports games are Multiplayer online battle arena (MOBA), First-person shooter (FPS), Real-time strategy (RTS), Fighting (FGC), Digital collectible card game (CCG), Battle Royale, Sports simulator.
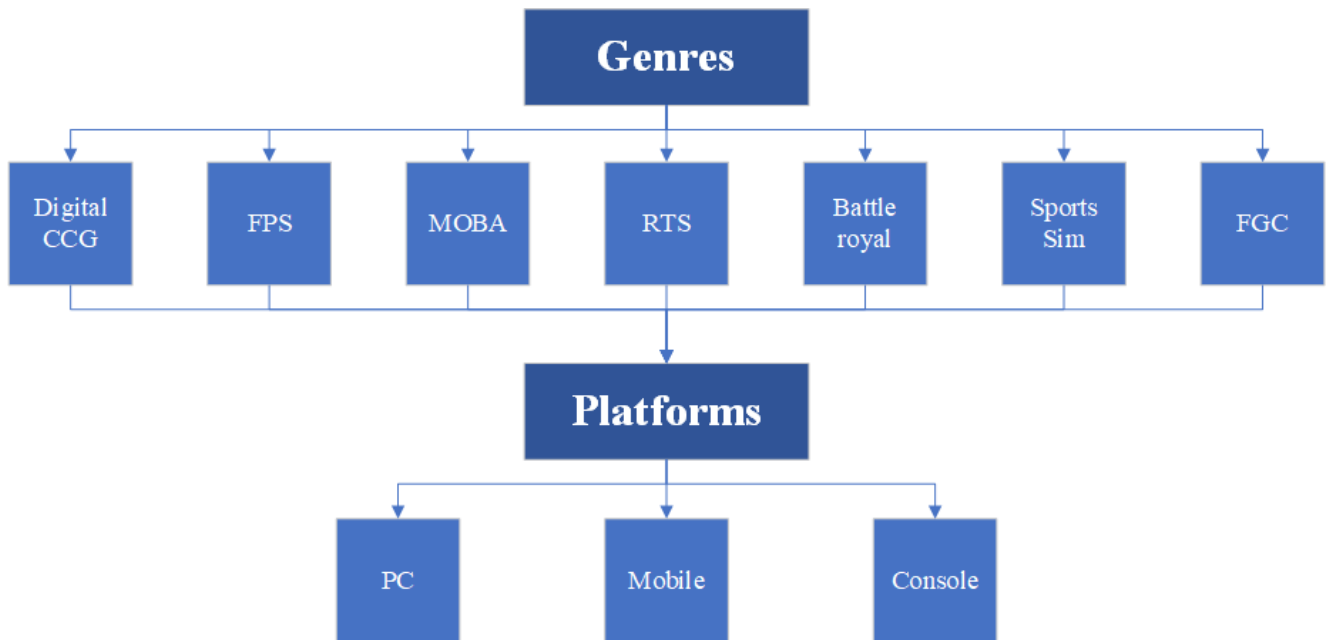
Figure 1.3 – Esports genres and platforms
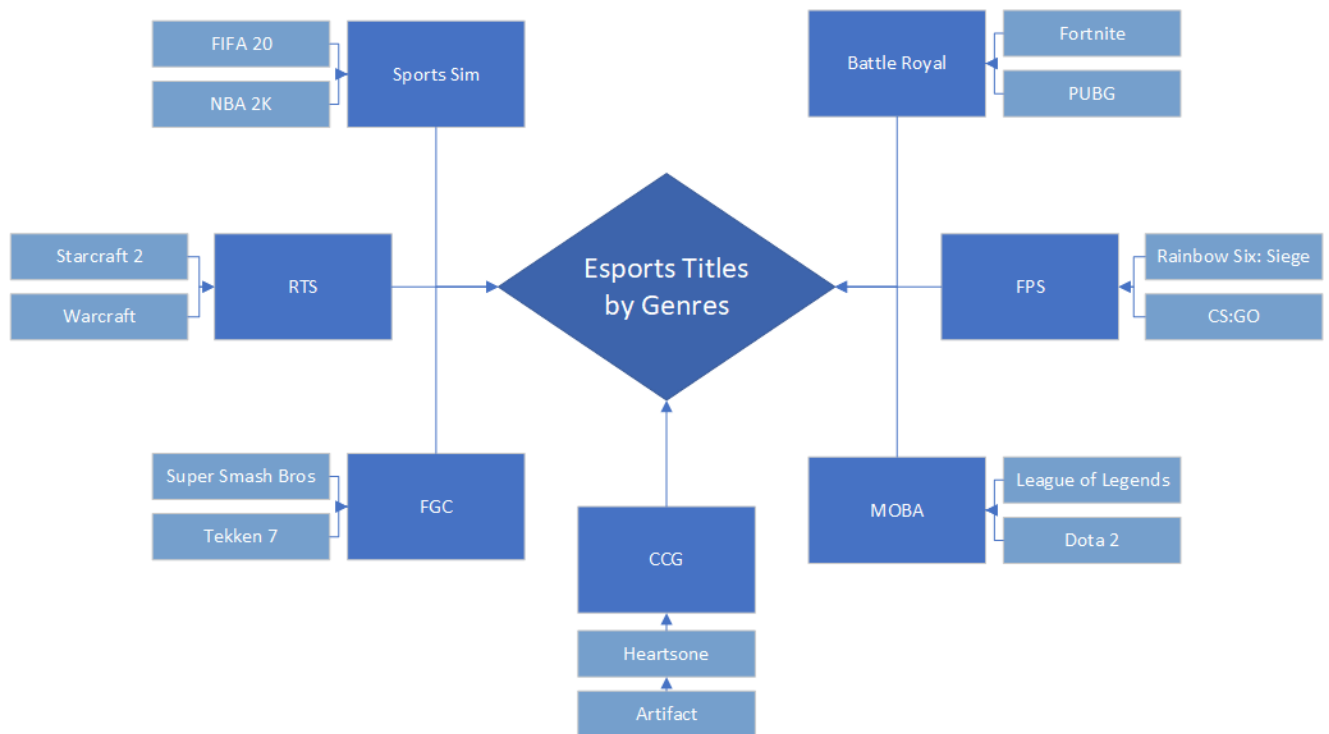
Figure 1.4 – Esports key titles by games genres

The main difference between esports and traditional sports is that the publisher has the rights to the game. Model development of each discipline is selected following the vision of its publisher. The publishers can also license their games out to external league organizers and streaming platforms. [15]

The indifference of traditional sport, the game publisher owns the full rights for the game and can change rules by own decision. Esports does not have a regulator as world or regional institutions (as FIFA / UEFA in football). Decisions of federations or associations are not binding. Full power lies in the hands of game publishers.

Nevertheless, it is important to clarify, that different game publishers manage esports competitions for their titles in different ways. According to Nielsen Esports, some of them use closed models, where they own, operate, and manage entire esports engagement with players and fans. However, another of them uses a hands-off approach. But often the state of affairs located somewhere between two ways. [17]

Game publishers can run own competition as event organizers or attract a third-party event operator. According to wizards.com, Event Organizer is a person or entity, who schedules an event, runs it, and reports on it. Organizers control their events, run and resolve any problems related to the event. [20] The most famous tournament providers are: ESL, DreamHack, PGL, Starladder, Blast, etc.

According to NewZoo, Esports Event is a "competitive gaming tournament or league in which players and/or teams compete against each other to win.

At the same time, they define Tournament as an "event that typically happens over a short period. Its format frequently includes a group stage from which teams can advance to a knock-out phase. As some teams can get dismissed before the final, not all teams will play directly against one another.'" [8].

However, according to Pavel Golubev in the webinar "Organization esports events for agencies" esports event is not only a tournament. Event classification can be dived: educational, social, business, special events (festivals, promo, activations, etc.), sport, combined.' [50]

Event organizers can manage professional esports competitions as leagues or tournaments / non-league events. A wide variety of leagues can range from the local amateur contests to highly produced, professional, global events with numerous millions of dollars in prize pools. Game publishers by self or with help of third-party operators can operate Esports leagues. A third-party organizer can be attracted to work with the publisher through granting a license or without direct publisher involvement. Leagues also can be classified as global or regional competitions, involved in larger global championships.

Furthermore, we can define all leagues as franchised and non-franchised. Esports franchised leagues require teams to purchase a franchise slot, which guaranteed participation in the league each year. Non-franchised leagues based on a result of team performance through the season. Often, leagues or separate esports events have group stage and playoff rounds. Generally, group stages of big events are playing at a studio

with playoff rounds at different venues with spectators around the world. Besides, esports events organized by tournament provider can range from online-only competitions to major tournaments through the season. Event organizers are independent of anyone's title. It allows them to unite together fans across multiple esports games. [17].

Organizers attract teams to their events with a prize pool, competition status, or other bonuses. Broadcast viewers generating by participating teams in the competition. The numbers of Broadcast viewers depend on the tier of teams/players and the quality of Broadcast coverage.

According to britishesports.org, Streaming is where someone will record their game or show by broadcasting it via streaming platforms live over the internet. Streamers can add custom graphics to their stream interact with viewers via a chat room, try to educate and entertain the viewer. [39]

Endavomedia.com define streaming platform as an on-demand online entertainment source for TV shows, movies, and other streaming media. [33]

According to dictionary.com, broadcaster is a person or thing that broadcasts radio or television programs. [11] Broadcaster/Broadcasting Platform can transmit these events to fans. Despite sold-out stadiums, online streaming is the dominant distribution method for esports. Broadcasting platforms play a role of a bridge between competition and viewers. Sometimes they can appear on broadcast and cable television.

Twitch and YouTube are the largest platforms for esports live stream viewing around the world. These platforms banned in China. However, this does not mean that esports in China not exist. They use their platforms as HuYa TV and DouyuTV. Twitch specialized in live stream, while YouTube more often as video on demand, curated clips, and non-match videos versus live streams. Besides, there are streaming platforms in social media sites like Facebook and Twitter and, also, smaller platforms (e.g., Mixer, Caffeine) operating as esports content distributors.

In conditions of increasing viewership and money, paying for media rights is becoming more common. However, rights-free distribution is also common. The structure of esports streaming/broadcast environment is complicated and inherently unique to the industry. English broadcast is the mainstreaming for almost all tournaments. However, an event organizer can sell media rights for broadcasting in a specific language to certain esports broadcasting studio. Event organizer sells rights, not only to make money but also to get the maximum coverage of his tournament. Thus, the tournament operator demonstrates the event, wants to get the attention and involvement of the audience. After acquiring broadcast rights, the esports studio can insert ads from their sponsors. [41]

Esports broadcasting studio makes a certain-language broadcasting coverage and media content (interview, documentary, etc.) for esports audiences. Examples of esports broadcasting studios can be Russian-language esports broadcasting studios such as Main cast, SLTV, RuHub, UCC, WePlay!. Since often Russian-language broadcasts take second place (after the main English) in the list of available broadcasts on twitch / YouTube.

During the broadcast, talents take part On Screen. According to coderedesports.com, esports on-screen talents can be defined as commentators, analysts, or event hosts that work on esports tournaments, shows, or corporate event. [24]

Professional teams are the participant of esports competition. Each team consists of individual players. Often, individual players or entire squads can be signed by esports clubs and compete under their tag.

According to the media channel "Esports Industry", Esports club or professional gaming organization is the same as a sports club in a traditional sport. The performance of a team is the main activity of this company. Example of esports clubs are: Astralis, Team Liquid, Natus Vincere, Cloud9, etc. [54]

The largest esports clubs own rosters in many esports titles. For example, Team Liquid has teams in Starcraft 2, League of Legends, Hearthstone, Counter-Strike: Global

Offensive, Dota 2, Smash, Fighters, PUBG, Quake, Tom Clancy's Rainbow Six, Clash Royal, Fortnite, Apex Legends, Autobattler.

Esports clubs rush to sign teams in new hype game titles. The largest esports teams can be able to adapt to ever-changing esports landscape with ease due to their scale.

However, there is another operational model, when an organization concentrates on one game discipline. This may be because the esports club is located only at the beginning of its activities or due to limited financial resources. There are, however, as the business model of specializing in one title in the long term. These are mainly teams that own slots in franchise leagues, such as the Overwatch League and League of Legends European Championship. Many professional gaming organizations are somewhere in between.

Brands can be a part of the esports ecosystem as an external environment, which can interact with each element. Companies, which make merchandise or computer devices for million fans around the world, are also part of esports as endemic brands.

Brands can use such sponsorship assets for esports events as In-broadcast digital overlays; Branded content built into competition live stream coverage; In-venue signage; Social and standalone branded content; Gaming equipment; and Apparel. [17]

1.3 The essence of project management tools

Every esports event is also a project for its organizers and is unique and highly customized, which requires innovative approaches and their implementation. According to the article "Phenomenon of "Event" in the social and scientific context" by N.A. Adrianova, 2010, event can be defined as "Organized actions or a set of actions aimed at the implementation of certain goals. [6].

It would be reasonable to apply project management techniques to an esports event. The project is "a temporary endeavor undertaken to create a unique product, service, or result." Unlike more typical business activities, projects have clear starting and ending points, after which the people and resources dedicated to the project are reassigned. [2].

The Project Management Institute (PMI; www.pmi.org) defines project management as "the application of knowledge, skills, tools, and techniques to project activities to meet project requirements." [1] Up to the mid of the 20th century, project management was considered as an art rather than an actual management discipline, and its successful and in-time completion within the stated budget was considered to be lucky. Every project can be divided into five phases:

1. Concept development: Project planners develop a broad definition of what the project is and what its scope will be.

2. Project definition: Identifying how to accomplish the work, how to organize for the project, the key personnel, and resources required to support the project, tentative schedules, and tentative budget requirements.

3. Planning: prepare detailed plans that identify activities, time, and budget targets, and the resources needed to complete each task. Furthermore, this phase is a point of putting in place the organization that will carry out the project.

4. Performance establishment: defining the standards of the project plan execution.

5. Post-completion assessment: The final phase, where the project manager or team confirms the outcome, conducts a post-implementation meeting to critique the project and personnel, and reassigns project personnel. [2].

Another approach is to consider the project phases in a broad manner restricted by three phases.

1. Planning: goal setting, defining the project, and team organization.

2. Scheduling: relates people, money, and suppliers to specific activities and relates activities to each other.

3. Controlling: monitors resources, costs, quality, and budgets. It also revises or changes plans and shifts resources to meet time and cost demands. [3].

Moreover, within this project, phases of logistical support for the esports project will be considered as Concept Development, Planning & Scheduling, Performance establishment, and Post-event assessment.

As the project has unique characteristics, a whole set of tools has been developed to manage projects. Project management tools are used for every phase of the project. At the planning phase of the project (before project) it is a work breakdown structure development.

Following Project Management Body of Knowledge (PMBOK) by Project Management Institute (PMI) term of Work Breakdown Structure (WBS) determined as "a deliverable-oriented grouping of project elements that organizes and defines the total work scope of the project. Each descending level represents an increasingly detailed definition of the project work." [1]. There is another source which defines WBS as a hierarchical description of a project into more and more detailed components. [3].

Project scheduling involves sequencing and allotting time to all project activities, which were defined at the planning phase. Project scheduling serves several purposes to show, to identify, to encourage, and to help. Project management visual tools like Gantt chart or network diagrams can serve in this stage for project planners.

Gantt chart is "a graphic display of schedule-related information. In this typical bar chart, activities or other project elements are listed down the left side of the chart, dates are shown across the top, and activity durations are shown as the date placed horizontal bars." [1]. At the same time, other sources defined Gantt chart as "a graphical tool used to show expected start and end times for project activities and to track actual progress against these time targets. As such, the Gantt chart provides both a planning and a control function." [3].

However, Gantt charts have their weaknesses as they cannot show the priority of activities and their intercalations which can limit large projects, consisting of numerous

activities. For solving this issue, scientists developed a new technique which use network diagrams.

Network diagrams are "a graphical tool that shows the logical linkages between activities in a project". Nowadays, there are two of the most popular network-based techniques: the critical path method (CPM) and the program evaluation and review technique (PERT). These methods require identifying sequences of activities and their interrelationships.

Critical path method (CPM) - a network-based technique in which there is a single time estimate for each activity. CPM is used for projects where there is a single time estimate for each activity. This method uses Activity on node (AON) diagram. This type of network diagram defined as and activity which is represented by a node, or box, and the precedence relationships between various activities are represented with arrows." Program evaluation and review technique (PERT) - a network-based technique in which there are multiple time estimates for each activity. PERT is used when the time estimates are less certain and it makes more sense to provide several estimates—most likely a pessimistic and an optimistic estimate. [3].

At the same time, Heizer`s and Render`s in the textbook "Operations management" defined CPM and PERT as:

Critical path method (CPM) – is a project management technique that uses only a one-time factor per activity. CPM assumes that activity times are known with certainty and hence require only one factor for each activity. The basis of CPM belongs to a critical path point. It is an operation with the longest path in the network.

Program evaluation and review technique (PERT) - a project management technique that employs three-time estimates for each activity. The major difference is that PERT employs three-time estimates for each activity. These time estimates are used to compute expected values and standard deviations for the activity. In this method, the network diagram Activity-on-arrow (AOA) is applicable. The AOA defined as a network diagram in which arrows designate activities."

Both methods use the same underlying logic. Network Diagrams show relations between each activity in time and sequence. They also show how separate areas of activities become unite in one project. There several ways to construct network diagrams. Every technique involves performing the major standard steps which are clearly outlined in [2]

Even though the above methods developed a project execution algorithm from the preparation stage to the final implementation, as well as the fact that these methods are aimed at standardizing the project management process, each project remains unique in itself and requires great flexibility to obtain the maximum possible result. If in the last century, when these methods were developed, the main goal was to establish a repetitive process, in the 21st century, the main direction of gaining a competitive advantage was the development of unique projects in large quantities, which is the main characteristic of mass customization.

Based on the general situation and based on the totality of all the previously listed and mentioned facts, it is necessary to consider the organization of an esports event as the production system of Mass Customization. This interesting and flexible production system aims to meet customer needs within a very personalized issue. Customer-centered approaches imply that industrial products or even services have to be considered as unique and of high, both economic and social, importance due to their complexity and demanding production processes. Each ultramodern piece is, beyond question, a project encountered by companies, because it frequently involves research or design carefully planned to achieve a particular aim. It is also a temporary system coexisting with the permanent organization and the commonplace tasks and procedures. As commonplace tasks can be considered those comprising Mass Production but on the contrary, Mass Customization embodies. [5]

1.4 Conclusions to Chapter 1

Every event is considered to be a project, so project management approaches are relevant and applicable. Every project undergoes the following stages: Concept Development, Planning & Scheduling, Performance establishment, and Post-event assessment. There are a lot of tools that can simplify project design, its implementation, and control. The graphical approaches such as Gantt charts, AON and AOA network diagrams, and CPM and PERT methods are widely used for project management in different industries. WBS tool determines the necessary tasks and their hierarchy at the project but its limitations significantly restrict a whole vision of the projects and it is inefficient at the control and performance stages. CPM is very important as the activity lying on it need to be of particular attention and focus in terms of logistical support operations. The basis of CPM belongs to a critical path point. It is an operation with the longest path in the network.

The tools mentioned above are used in different application areas for different purposes. The effectiveness of using these tools determines how successfully a project will be implemented. With their help, it becomes possible to make every stage of project management more efficient and accurate. The selection of specific project management tools at various stages of preparation should be based on fundamental knowledge and understanding of their application.

Esports as a trend of modern times is organized in the form of competitive gaming, which in turn can be both professional and amateur. The essence of the esports ecosystem has its specifics in terms of organization and implementation which are determined by peculiarities of its industry. Esports is a point of connection sport, entertainment, show business, and computer industry. Esports events gather thousands of both participants and viewers in online and LAN format.

CHAPTER 2

ANALYSIS OF ESPORTS INDUSTRY ON CERTAIN TOURNAMENTS PROVIDER

2.1 Analysis of the global esports market

The modern world is developing at breakneck speed. Esports has become a super popular trend. It is a multimillion industry, which gathers millions of fans around the world. The major events of top esports events have significant prize pools and impressive broadcast viewership peaks.

However, it has not been always this way. Starting from the first official competition and ending with modern events in stadiums, esports has come a long way and is only at the growth stage now. However, despite that esports had origin in 1972, modern esports began only in 1997.

According to ISPO.com, the origin of esports began in 1972. It happened at Stanford University. Workers of the artificial intelligence research laboratory and students competed in "Space war" for a one-year subscription to Rolling Stone magazine. [36]

The next significant step was taken in 1980. In this year was happened first large-scale event at that time. More than 10,000 players competed for each other in "Space Invaders" following to hotspawn.com. [35]

According to the IGN.com, First world championship was run in 1990 as Nintendo World Championships. This event had a qualification system, stops in 30 cities around the USA and Canada with finals at Universal Studios in Hollywood, California. [45]

According to Forbes, the first true esports tournament happened in 1997. ID Software organized competition Red Annihilation, where a player in Quake won red

Ferrari 328 GTS (near $60,000). This point considers as the birth of modern esports. [49]

Progress of networks and private internet connections laid the foundation for the development of player's competition. Tournaments become more and more popular and began making profits for their organizers. As a result, were founded first esports leagues at the end of the 1990s. Such companies as CPL (Cyberathlete Professional League), PGL (Professional Gamers League), ClanBase, Deutsche Clanliga (DeCL), ESL (Electronic Sports League). In 1999, "Gamers' Gathering" happened in Duisburg, Germany. There are over 1600 players from all over Europe competed against each other in various games. [46]

WCG (World Cyber Games), ESWC (Electronic Sports World Cup), and Major League Gaming (MLG) becomes major events in the 2000s. The period of the first decade was marked by the appearance of numerous tournament providers, professional esports, gaming organizations. At this time, esports competitions grew up from the level of computer clubs in the basements to large pavilions. However, growth to sold-out stadiums levels took place in the next decade. The end of the decade was marked by a certain decline in popularity, which was caused by the change of generations of video games, but everything changed for the better in 2011. [48]

In 2011 becomes a year of changes. This year has been founded on live streaming platform Twitch. This platform opened online broadcasting of events for everyone around the world. Also, this year becomes a point of origin of large prize pools in esports. The International 2011 on the beta game DOTA 2 was an important event in esports history. It was the first time when sixteen invited teams had to share a prize pool of $ 1.6 million. Ukrainian team Natus Vincere was the first TI champions. They took a $1 million prize for 1st place. [37]

Esports event collected sold-out stadiums in 2019. The big esports events attract huge crowds in famous venues across the world. Esports keeps growing. Today, many interested viewers account for almost 300 million people. [14]

To sum up, in the second decade of the XXI century, esports moved from origin to growth. It was a period for becoming the esports industry more sustainable. However, it is still the beginning of the journey.

Nowadays esports represented the ninth key regions. These regions determined by several factors as server location, gamer population, and shared languages. Sometimes, games publishers make changes in the list of regions and countries which included in their esports circuit. However, Africa, the Middle East, and Middle Asia are not a part of global esports. It is explained by the lack of servers of games publishers for these regions. But, some of them play with high ping at neighbor servers. This is due to several social, political, and economic factors such as insignificant internet users, closed countries from the outside world, etc.

Table 2.1 – General distribution of key esports regions

№	Name of Region	States
1	2	3
1	Europe	EU, Switzerland, UK, Turkey, Norway, Serbia, Bosnia and Herzegovina, Albania, Montenegro, North Macedonia, Kosovo and Iceland.
2	North America	USA and Canada
3	CIS	Russia, Ukraine, Belarus, Kazakhstan, Georgia, Armenia, Moldova, Azerbaijan.
4	Mainland China	People's Republic of China
5	Brazil	Brazil
6	Latin America	Argentina, Bolivia, Chile, Colombia, Costa Rica, Dominican Republic, Cuba, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela.
7	SEA and APAC	Macao, Hong-Kong, Taiwan, Japan, Malaysia, Thailand,
8	South Korea	South Korea
9	Oceania	Australia and New Zealand

According to the NewZoo report, we can define key figures and data:

- Global esports revenues are equal to $950.6 million in 2019. Expecting to grow to $1.1 billion in 2020.

- Globally, the total esports audience will grow to 495.0 million people in 2020.

- In 2019, there were 885 major events. Together, they generated $56.3 million in ticket revenues, up from $54.7 million in 2018.

- Total prize money in 2019 reached $167.4 million, a slight increase from 2018's $150.8 million.

- The League of Legends World Championship was 2019's biggest tournament by live viewership hours on Twitch and YouTube, with 137 million hours. [8].

- According to HitmarkerJobs, the number of vacancies increased by 87% in 2019. [16].

- According to esportsearnings.com the largest overall Prize Pools in Esports in 2019 was $34,330,069.00 at The International 2019. [22]

Table 2.2 – The largest overall Prize Pools in Esports in 2019

№	Name of event	Game	Game publisher	Prize pool
1	2	3	4	5
1	The International 2019	Dota 2	Valve	$34,330,069.00
2	Fortnite World Cup 2019	Fortnite	Epic Games	$33,637,500.00
3	PUBG Global Championship 2019	PUBG	PUBG Corporation	$4,080,000.00
4	Overwatch League - Season 2	Overwatch	Blizzard	$3,500,000.00
5	Worlds 2019	League of Legends	Riot Games	$2,225,000.00
6	Honor of Kings World Champion Cup 2019	Arena of Valor	Tencent Games	$2,166,994.20
7	Call of Duty World League Championship 2019	Call of Duty: Black Ops 4	Blizzard	$2,000,000.00
8	Six Invitational 2019	Rainbow Six Siege	Ubisoft	$2,000,000.00

The International of Dota 2 is a tournament with the largest prize pool in esports for many years. The history of The International began in 2011 with $1,600,000 as a part of Gamescom – trade for videogames in Cologne, Germany. Further, the tournament was hosted in Seattle (six times), Vancouver (1 time), and Shanghai (1 time). Since 2013, a compendium has been introduced, 25% of the sales revenue of which goes to the prize pool of the competition. In February of 2020, Valve published Request for Proposal: 2021 Host City for The International Dota2 Esports Championship, where it gives possibilities for tournament providers to take part in the tender.
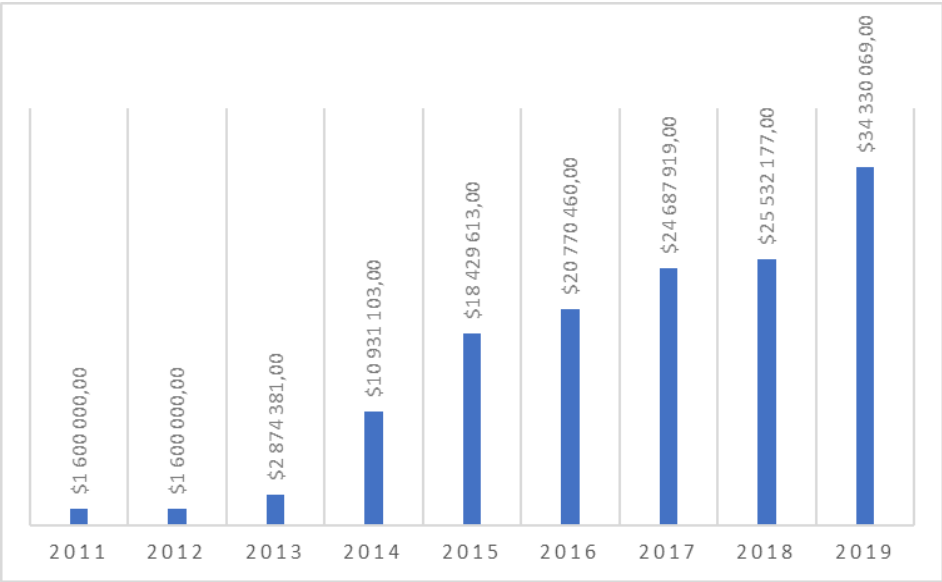

Figure 2.1 – Prize pool of Dota 2 The International by years

Table 2.3 – Prize pool of Dota 2 The International by years

Year	Total prize pool
1	2
2019	$34,330,069.00
2018	$25,532,177.00
2017	$24,687,919.00
2016	$20,770,460.00
2015	$18,429,613.05

1	2
2014	$10,931,103.00
2013	$2,874,381.00
2012	$1,600,000.00
2011	$1,600,000.00

Esports gather millions of fans around the world. Esportscharts.com collects data from broadcasting platforms by different indicators. This statistic excludes data from Chinese platforms. The highest viewership peak on a stream of esports events in 2019 was 3,985,787 people. In comparison, more than 4 million people watched the broadcast of the launch of the first manned flight of the Space Crew Dragon at the peak time on YouTube, namely 4,061,891. It was the first launch of a manned flight to space from the territory of the USA for nine years. [44] The most popular esports discipline based on watch hours in 2019 was:

Table 2.4 – Esports events in 2019 by viewership peak [18].:

№	Event name	Game	Viewership peak
1	2	3	4
1	Worlds 2019	League of Legends	3,985,787
2	Fortnite World Cup 2019 Finals	Fortnite	2,334,826
3	Free Fire World Series 2019 Rio	Fortnite	2,016,157
4	The International 2019	Dota 2	1,968,497
5	Mid-Season Invitational 2019	League of Legends	1,704,326

Table 2.5 – Esports events in 2019 by Watched hours [37]:

№	Event name	Game	Watch hours, millions
1	2	3	4
1	Worlds 2019	League of Legends	137,876,707

(Table 2.5 continued)

1	2	3	4
2	The International 2019	Dota 2	88,785,044
3	IEM Katowice Major 2019	CS:GO	53,240,709
4	StarLadder Major Berlin 2019	CS:GO	45,163,430
5	Mid-Season Invitational 2019	League of Legends	43,799,752

Table 2.6 – The most expensive esports companies in the world in 2019 [53]:

№	Name	Price	Revenue
1	2	3	4
1.	Cloud9	$400 Millions	$29 Millions
1.	Team SoloMid	$400 Millions	$35 Millions
3.	Team Liquid	$320 Millions	$24 Millions
4.	FaZe Clan	$240 millions	$35 millions
5.	Immortals Gaming Club	$210 millions	$11 millions

Figure 2.2 – The most relevant PC video games in Q1 2020

The Esports observer has a ranking of most relevant PC videogames. This ranking based on several key performance Indicators as monthly Active PC players, Hours watched Distributed winnings, Concurrent streams, Esports hours watched, and Number

of tournaments. They do a new rank after every quarter of the year. According to their last report (Q1 2020), we can highlight League of Legends, Counter-Strike: Global Offensive, Dota 2, and Rainbow Six Siege as tier 1 games. The reaction of different game publishers for the worldwide pandemic of novel coronavirus (COVID-19) made significant changes in rank positions of several games. [27]

Unfortunately, the new decade began with the coronavirus pandemic, worldwide quarantine, and the impending economic crisis. In these conditions, a significant part of the world has been isolated in their homes.

Unlike traditional sports, esports has not suspended it is activities. It is a time of width opportunities for the esports industry. Esports become the number one sport for betting and viewers since all competitors (traditional sport, concert, festival, etc.) can`t running now. Today, many celebrities and athletes around the world go online to keep in touch with their audience. Often, many of them are associated with esports. The most striking examples are an epic concert of rapper Travis Scott at Fortnite, which was attended by over 27.7 million unique player players; The Formula 1 organizers hold weekly esports tournaments using the Formula 1 simulator; Athletes of football, basketball and hockey leagues compete in their sports simulators. [56]

Since streaming is the main way of connecting the industry with the audience, it is important to study the changes that have occurred over this period. March 2020 marked the beginning of quarantine around the world. According to Esports Charts data, by the end of March, the growth rate of streaming was so impressive and equal +37% to hours watched, +26,1% for airtime, and +30,6% for the number of streamers. Such a result shows the sustainability of the industry in times of social distancing. [34]

On the other hand, online availability did not save the industry from several problems. Return to an online format is a return to many years ago. Despite audience growth, it is not always a way of income growth. Given the fact that a significant part of the esports market is sponsorship money, it is worth expecting decreases in their flows.

Crisis times usually accompanying by marketing budget cuts but not their redistribution. Under these conditions, it should consider the impact on different sides of the esports ecosystem. Now, the expected significant decrease in sales of sponsorship & media rights in the esports industry. Merchandise sales will also fall significantly. It is expected that some companies will not be able to survive through this crisis due to an instable business model. It will be a hard time for tournament providers. All offline events will be canceled to 6-12 months. They lose all income from sales of tickets. Professional teams will be forced to leave some esports titles, as well as cut salaries for players. However, broadcasting studios can make growth if they will have enough content for the audience. Since all sports events canceled. The only option for betting is esports. Significant integration of betting companies can bring needed funds to the esports industry. In these conditions, problems with interruptions in Internet connections and technical problems during matches became more frequent. [51]

At the time of social distancing and "stay at home" online games break new records in terms of viewership and player count. For example, Counter-Strike hit over 1.3 million concurrent players, its highest-ever peak or 11 seasons of the ESL Pro League was the most successful in the history of the competition.

Table 2.7 – Viewership indicators of ESL Pro League by seasons

ESL Pro League	Season 11 North America	Season 11 Europe	Season 10 Finals	Season 9 Finals	Season 8 Finals	Season 7 Finals
Average Viewers	142,519	150,474	162,670	136,723	61,434	58,650
Hours Watched	8,610,483	33,869,131	9,787,252	7,417,210	3,015,350	2,536,581
Peak Viewers	251,349	489,120	369,117	422,593	160,918	117,452

The shutdown of sporting events hit many of the industry's workers, especially freelancers and contractors who make income from LAN tournaments. Tournament

operators' plans were filled with various offline events for 2020, which required significant human resources. Freelancers are regulars in the circuit of esports events production. Under quarantine, some teams fell into a situation where some of the players in the squad were in another part of the world. In this case, they can't play together in one region. Teams such as NIP, BOOM, Renegades, Chaos, and Sharks made forced replacements or refused to participate in certain events.

2.2 Characteristic of global esports economy

As previously defined, the major part of revenues in the structure of esports is money from sponsorships. Mainly, games publishers invest in development esports the competitive environment of their games. It can be as organizing big tournaments or payment for professional teams or tournaments providers. It is a way to promote their games for new players and keeping the existing audience. Except for game publishers, the Esports market is interesting for brands (from hardware producers to FMCG). Investment in esports is a simple marketing instrument for advertisers. It gives them possibilities to use the new format of interacting with their audience and use open statistics with data of viewers' amount, hours watched, involvement, and reaction.

Brands that enter esports make it for forming a pool of loyal buyers. For example, the Gillette brand of Procter & Gamble entered to esports many years ago. It gave the possibility to become brand #1 for young boys which will use the razor in the future. Investment in esports for them is a "play in the long term". Just as often, companies create an individual brand for gamers. For example, HP made brand Omen, which consists of computers and accessorizes oriented for esports players and gamers-enthusiasts. This industry has a feature of high rates of return on investment. This is due to the high audience loyalty to brands that investing in esports.

Tournaments providers host LAN events. They make income from sponsorship, ticket sales, merchandise sales, media rights. Their customers can be game publishers or different brands. Games publishers conduct tenders where tournaments providers can compete for the right of hosting games publishers tournaments (Valve - Dota 2 The International or CS:GO Major). However, different brands order esports events in tournaments providers. Often hardware producers spend money in esports competitions, as Intel in IEM (Intel Extreme Masters is a circuit of tournaments around the world).

Streaming platforms is a nowadays trend. Many companies compete with others for an audience that chooses according to available content. In this case, streaming platforms sign a multi-millions of contracts with tournaments providers and influencers for the promotion of their platform and keeping an existing audience. For example, Mixer (Microsoft streaming platform) lured Ninja as the most popular streamer for an exclusive partnership for six years contract with more than $900 million. This streamer had a peak of viewers of nearly 650 000.

Another example, Tournament organizers of Modern Times Group (ESL & DreamHack) have entered a three-year broadcast partnership with live streaming platform Twitch. This agreement includes all ESL Pro Tour tournaments for CS:GO, StarCraft II, and Warcraft II.

Streaming studios (as RuHub or MainCast) buying media rights for tournaments. It gives the possibility to make broadcast coverage of certain events. They make a purchase of media rights for sells advertising time in broadcasts to other sponsors. For example, Main cast, an esports content/production company, make a deal with ESL and DreamHack for exclusive broadcasting rights of Counter-Strike and Dota 2 competitions for Russian-language streams for three years. Another example, Secretlab, a leader of producing gaming chairs made a deal with different tournaments providers for official esports competitions such as MDL Disneyland® Paris Major, Starladder Berlin Major, WePlay! Bukovel Minor etc.

According to the words of owners of esports organizations, mainly their teams are unprofitable. However, nearly 10% of them have a sustainable business model, where the team makes operational activities by own income. Often esports clubs own rosters in several game titles and they have their personnel. According to cybersport.ru, the main costs of export organizations are Team keeping (salaries, trips, boot camps, etc.), Maintenance of own infrastructure (website, social networks, video, personnel, managers, office, etc.), Contractual obligations: (marketing activity, making a form, branding a training zone, photo and video shooting, etc.), Club development: (re-investment in new teams, development of promising projects for business development, etc.)

The main part of the income structure of esports clubs is sponsorship money according to sponsor's contacts. Prize money cannot be as a base of a business model. No one team can guarantee victory in tournaments. Part of prize money can be only as a bonus. However, there is an additional flow of income. It is a participation in franchise leagues. If the club has a roster in the franchise league, they can expect sharing revenues from tournaments provider/game publisher. For example, Riot Games with their franchise leagues of LoL in NA and EU regions. Sometimes, game publishers enter in-game items. Teams can receive part of revenue, which makes from their sales, for example, in-game stickers with teams' logo and player autographs. The most famous teams have their merchandise line. Sales of it are an essential revenue stream. In the transfer window, teams can attract money from selling players.

Table 2.8 – Structure of revenue at esports market

Element of Industry	Source of income
1	2
Games publishers	Sales of games, in-game items, in-game battle passes, merchandise
Tournaments providers	Sales of tickets, merchandises, media rights and sponsorship money, fee from publishers

1	2
Streaming platforms and Broadcasting studios	Sales of advertising on streams, Sponsorship money
Professional teams	Sponsorship money, sales of media rights, sales of merchandise, prize money, revenues from the franchised league (only for participants of franchised leagues)
Professional players	Salaries from the team, prize money, donations on streams, personal sponsorship contacts
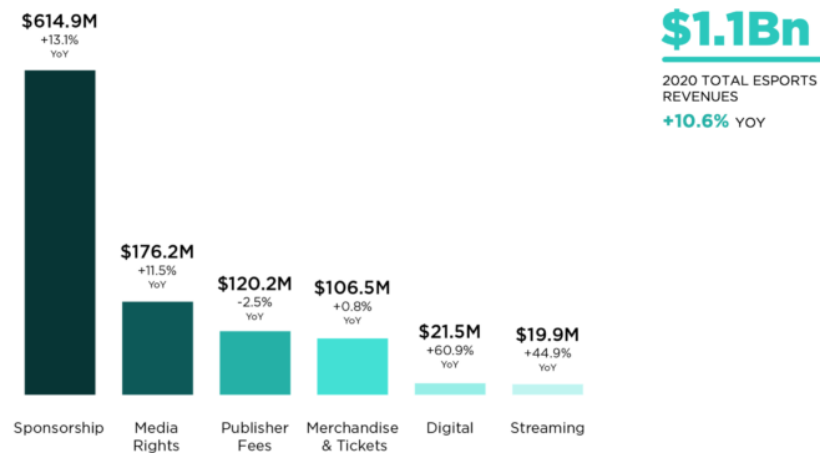
Figure 2.3 – Global esports revenue streams in 2020

According to wizards.com, responsibilities of event organizers in esports as event industry consist of:

• Creating the event. Determining the time, place, structure, format, cost, etc. This includes sanctioning the event.

• Booking the site. Making sure that there will be enough space for the players. Paying for the site if necessary (for larger sized events).

• Advertising the tournament. Fliers, internet, etc.

- Recruiting qualified staff. This includes a judge, a computer person, gophers, etc. as necessary. At small events, the Tournament operator usually handles all of these responsibilities or assigns an employee to handle one or more of them).

- Making sure that enough products will be on hand for the tournament. (Sold by your store to participants in limited events)

- Dealing with any problems on the day of the event (leaky roofs, not enough play space, not enough basic land, computer malfunctions, delays, etc.). Note: Some things will fall under the Head Judge's department (if you use a DCI Certified Judge), but if it is outside of gameplay, it is the Tournament Organizer's responsibility.

- Cleaning up the play area when the tournament is over. (Unless assigned to a store employee)

- Reporting the results in a timely fashion [20].

Deliveries in esports events include heavy goods vehicles with physical equipment (computer monitors, high-end performance computer, gaming chairs, tables, professional broadcasting and computer equipment) which had been imported into venue specifically for the competition and people (numerous esports players as participants, on-screen talents and staff) whom will make the event. [40]

For implementing an event, we need such resources as:

- Significant financial resources. The proximal cost of running big esports event is equal to $1-2 million (without prize pool) Logistics and venue cost could be 35% of the total cost. It requires attracting huge money from sales or investors. [46]

- Human resources.

a) Highly-qualified staff. One of the most issues in esports is that industry is running by enthusiasts. Now, we have a lack of an educational program for staff in esports. There is only one way to acquire knowledge - be a part of a company operating in esports. To conduct a successful event, the organizers need highly qualified personnel. According to hitmarker.net, organizers attract experts in the following areas:

broadcasting, observing, technical support, tournament support, post-production, media, sales, marketing, management, design, decoration, assembly, software development, design, etc.

b) Professional gaming teams as participants. All esports tournament providers want to get all of the top teams. The best teams can attract more viewers in broadcast and make more responsiveness in media. It can attract significant financial resources, which esports tournament providers can get from sponsors and partners.

- Informational resources. An important part of running esports events is information and media resources. Coverage on the internet and social media also make an impact on sales success.

- Inventory and raw materials: materials, structures; energetic resources; fuel; For example, materials are used to decorate used rooms. A scene is assembled from the constructions. Energy resources are electricity, the Internet, water, and fuel is used in transport.

- Technological resources: machines, mechanisms, equipment. The production of an esports event includes modern high-tech equipment. Video, sound, and light equipment are not possible to provide a high-quality picture. Also, sometimes cranes, drones, confetti machines, and the rest of all kinds of equipment are necessary. [52].

2.3 Characteristic of Starladder

StarLadder is the largest in the CIS and one of the largest esports operators in the world. One of the main business areas of the company is the organization of esports championships. The company was founded in 2008. StarLadder is currently holding championships in the main esports disciplines: Dota 2, Counter-Strike: Global Offensive, PUBG, Free Fire, StarCraft II, PUBG Mobile, Hearthstone, etc.

The company owns the largest esports venue in the CIS - Kyiv CyberSport Arena (1200 sq.m.) with a wide history of hosting big esports events.

StarLadder covers a wide range of services in organizing esports events: webcasts, media content, live and post-production, advertising, professional commentators, analysts, and presenters. Their employees have extensive experience and many successfully implemented esports projects. World-class championships are held under the StarLadder brand, and StarSeries tournaments have become one of the most prestigious in the international esports arenas. [29]

StarLadder works with large esports companies. A key partner is a leading platform for streaming video game content streaming - Twitch tv.

The main operational activities of the company from beginning till 2015 were its tournaments in Dota 2, CS:GO, CS 1.6, Point Blank, World of Tanks, Tanki Online, etc. The company had own ladder system of tournaments, which mainly include three divisions: Star series – best teams compete which each other with LAN finals in Kyiv, Pro series – competition with losers of star series and winners of Amateur series, Amateur series – free open leagues in European and CIS regions.

The Year of 2016, becomes a real revolution for the company. In this year company entered into a partnership with ImbaTV. As part of this partnership have been carried out events such as StarLadder i-League StarSeries XIV in Minsk Arena, Dota 2 StarLadder i-League Invitational Season 1 in Kyiv CyberSport Arena, StarLadder i-League Invitational #1 in Kyiv`s Olimpiyskiy Football Stadium, CS:GO StarLadder i-League StarSeries Season 2 in National Palace of Arts "Ukraina", Dota 2 StarLadder i-League StarSeries Season 2 in Los Angeles, USA and WESG Regional Finals of Europe & CIS in Kyiv, Middle East & Africa in Dubai and Americas in São Paulo. Also, the company had numerous events with an online format. This year was a real leap for the company.

The following year, the company consolidated and improved the results achieved. StarLadder i-League CS:GO StarSeries Season 3, StarLadder i-League Dota 2

Invitational Season 3 was held in Kyiv. While other big events such as StarLadder i-League Dota 2 Invitational Season 2, StarLadder i-League Dota 2 StarSeries Season 3, and StarLadder i-League CS:GO Invitational #2 was held on Shanghai, China. Moreover, one event - WESG Europe Finals was held in Barcelona, Spain.

In 2018, StarLadder took second place in the ranking of the organizers. The company lost the first position only to the ESL (Electronic Sports League). This result has been achieved through the production of high-quality esports events. In these years, the company hosted numerous events, mainly in Ukraine and China. Kyiv CyberSport Arena and National Palace of Arts "Ukraina" becomes venues for events in Ukraine such as SL i-League StarSeries CS:GO Season 4,5 and 6, StarSeries i-League PUBG 2018 Season 1&2, Bets net Challengers Series #1, WESG 2018 Ukraine Finals, Dota 2 StarLadder & ImbaTV Invitational Season 4 and RedBull River Runes 2018 Ukraine. The list of events in China includes StarLadder & ImbaTV Invitational Season 3&4 and WESG World Finals. Special attention should be paid to the PUBG Europe League - Closed Qualifier. It was originally planned to be held in Kyiv. However, due to the sharp ban on visiting the country for citizens of the Russian Federation, the event was moved to Minsk.

In 2019, the company significantly increased its influence. During the year, the company held two major-level events for Valve - Chongqing Major (Dota 2) and Berlin Major (CS:GO). The company also received the right to host the main European league of PUBG in Berlin. Besides, the company held many competitions in Dota 2, Counter-Strike: Global Offensive, PUBG, StarCraft II, PUBG Mobile, and Heartstone. Kyiv was a host place for such tournaments as StarLadder ImbaTV Dota 2 Minor Season 1&2, WCS Spring & Summer 2019, RedBull River Runes 2019 Ukraine. Turkey host two events of Starladder such as OPPO R.T.K. Series Finals and StarSeries & i-League CS:GO Season 8. Shanghai became a host city of StarSeries & i-League CS:GO Season 7. Other tournaments and qualifications had an online format. [30]
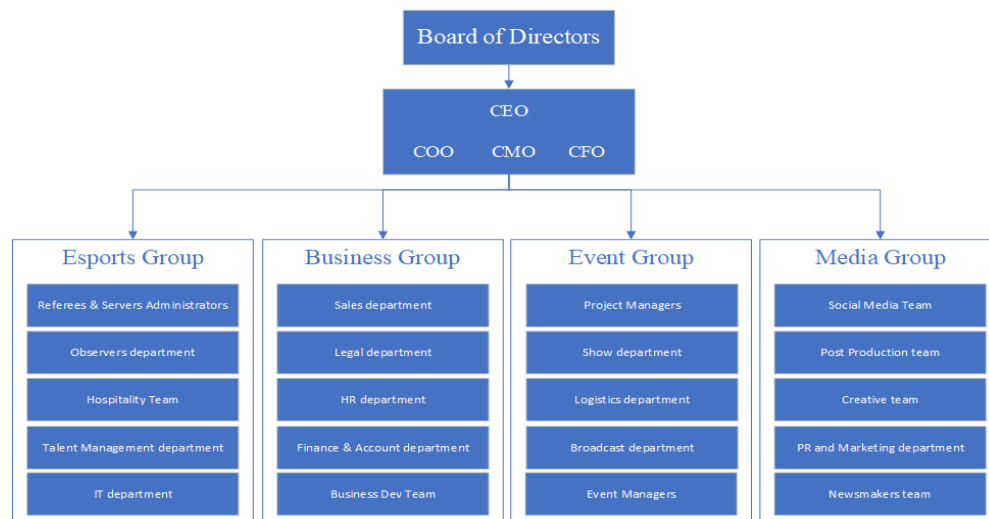
Figure 2.4 – Organizational structure of company

The organizational structure of every tournament provider is so complicated. In the case of this company, the organizational structure consists of four major groups (Esports, Business, Event, and Media) which consist of several departments. Also, the company attracts significant freelance workers for event production. Every esports project has a matrix organizational structure.

Esports Group is the set of departments that deal with the competitive component of the project. Referees and Servers Administrators deal with starting and controlling the match. The observer's department is the department that deals with game observing for broadcasting. This department also consists of personnel, which operating with AR-technology. The hospitality team communicates with teams and players. Talent management Department is the department that deals with talent management. On-screen talents can be defined as commentators, analysts, or event hosts that work on esports tournaments, shows, or corporate event. The IT department is responsible for the web site, computers, and the company`s network maintenance. Also, this department includes developers of IT products of the company.

A business group is the set of departments that operation with necessary and urgent processes for company performance and growth. The Sales Department is the

department responsible for attracting new sponsors, partners, and executing all commercial deals. Legal Department is the department that deals with legal matters. HR department performs human resource management, overseeing various aspects of employment, such as compliance with labor law and employment standards, administration of employee benefits, organizing of employee's files with the required documents for future reference, and some aspects of recruitment and employee offboarding. The finance and Account department consists of business functions as planning, organizing, auditing, accounting for, and controlling its company's finances. Business Development team is responsible for the business development of the company.

The event group is the set of departments, which plays a significant party in event production. Project managers are responsible for the management of esports projects of the company. Show Department is a department that deals with making a show for viewers. The logistics department is responsible for all logistical processes within company activity. Broadcast Department is a department that deals with the distribution of audio or video content to a dispersed audience via any electronic mass communications medium. Event managers deal with event production and coordination and consist of personnel, which involved in the event management process.

The Media Group is the set of departments that deal with the creative media product of the company. Some departments are there responsible for the development of the company`s media channels such as the website, Twitter, YouTube, Instagram, Facebook, Weibo, Reddit, Twitch, Discord, LinkedIn, VK, email newsletters, etc. Media departments create and promote entertaining or sponsored content throughout all media. Also, this department consists of a PR team responsible for increasing the number of references. Executive management Department - a team of individuals at the highest level of management of an organization who have the day-to-day tasks of managing that organization

	Opportunities 1) Increased demand for esports 2) Increase the flow of investment in esports 3) Release of new esports games 4) Development of current esports titles by the games publishers 5) Entering to new markets 6) Entering to partnership with games publishers or sponsors	Threats 1) The difficulty of obtaining the rights to broadcast some tournaments. 2) High market competition 3) World pandemic and economic crisis 5) The possibility of drastic changes in migration policies 6) A Busy schedule of venues 7) Projects are getting more and more expensive
Strengths 1) The presence of additional activities. 2) Modern equipment. 3) A wide range of services offered. 4) Experienced staff. 5) Own venue 6) Own commenting studio 7) Major level competition experience 8) Long-term collaboration with major gaming publishers 9) Experience in holding a large number of competitions around the world	**S-O field** ● Entering to meeting with Games Publishers about running major events for their esports titles. ● Entering to meeting with non-endemic brands about their involvement to investing in esports. ● Hosting competitions of current esports titles at the own venue ● Entering to meeting with smaller tournament providers about media rights and broadcasting of their events	**S-T field** ● Increase the quality of broadcasting of own commenting studio ● Hosting online events with top teams ● Entering to race for media rights ● Conclude agreements about cooperative streaming.
Weaknesses 1) A part of the staff with extensive experience leaves the company to participate in third-party projects 2) The absence of long-term contracts 3) The high cost of production of large events 4) The presence of downtime equipment and personnel	**W-O field** ● Conclude long term agreements with games publishers ● Attracting more sponsorships ● Getting more contracts from customers	**W-T field** ● Increase diversification of business ● Conclude partnerships with different venues

Internal environment

Figure 2.5 – SWOT analysis of Starladder

Tournament organizers incur expenses ranging from hundreds of thousands to millions of dollars for each event. They are responsible for the production, talents, location search, flights, visas, hotels, computers, food, security, the Internet, electricity,

backup generators, insurance, arena payments, prizes, as well as the hundreds of employees' salaries that make everything work. It's worth it because of the resulting show.

Sponsors, brands, and partners work with tournaments because of guaranteed airtime, advertising of goods or services, and the possibility of unique activations. If you are not present at the event personally, all this happens through the broadcast. Part of the value proposition for the tournament organizer is that this is a very welcome content, and fans can watch it only through the official broadcast. Sponsorship packages are usually divided as follows: Title Partner, General Partner, Official Partner, and tier-3 partner. These packages differ in terms of sponsorship fees and the number of advertising positions. [13]

According to Pavel Golubev`s Webinar "Esports for agencies" common rate of return for esports event equal 10-20%. However, not every event is profitable. But sometimes major events could earn more money than expected. [19]

The main operational activity of Starladder is an event production. The event as a unique project has separate financial data. Every event has an aim to increase profit. It will be reasonable to analyze the financial data of certain events.

The company published some data on possible events in the National Palace of Arts "Ukraina" on-site gb.kyivcity.gov.ua has taken part in the election. According to this information, the total cost of the event could be 14,110,278.00 UAH. These calculations exclude salaries and additional costs.

Table 2.9 – Budget of «Organization and holding of the World Championship in computer games of the "Starladder" series» [57]

№	Name of costs	Total cost, UAH
1	2	3
1.	Rent cost of venue - NPA Ukraine	3,226,920.00

(Table 2.9 continued)

1	2	3
1.1	Operational services for daily installation of equipment 4 days (09:00-18:00)	780,000.00
1.2	Operational services for night installation of equipment 2 nights	297,000.00
1.3	Operational services for the event 3 days (09:00-22:00)	1,125,000.00
1.4	Operational services of additional premises (7 days)	1,024,920.00
2.	Technical equipment and support of location functioning	3,783,839.00
2.1	Lighting equipment	935,000.00
2.2	Sound equipment	134,265.00
2.3	LED screen	1,352,780.00
2.4	Stage decorations and other designs for branding	1,176,794.00
2.5	Special effects	185,000.00
3.	Organization of the tournament broadcast	3,640,000.00
3.1	English broadcast	1,245,000.00
3.2	Chinese broadcast	1,245,000.00
3.3	Russian broadcast	1,150,000.00
4.	Information support and advertising campaign	136,450.00
4.1	Placement of announcements and advertising publications on profile Internet resources	41,500.00
4.2	Contextual advertising in CMN (contextual media network) Google	52,300.00
4.3	Advertising in the social. networks (Twitter, Facebook, Youtube, Instagram)	42,650.00
5.	Organization of flight of professional teams	1,854,769.00
6.	Local transfers of event participants	59 800,00
7.	Organization of accommodation of participants in a hotel of a certain type	1 408 500,00
7.1	Hotel "Alfavito", Standart single room-80	936 000,00
7.2	Hotel "Alfavito", Standart twin room-35	472 500,00

(Table 2.9 continued)

1	2	3
	Total cost	14,110,278.00

Table 2.10 – Organization of flights of professional teams [51]

№	Route	Quantity	Price, UAH	Sum, UAH
1	2	3	4	5
1.	Atlanta-Kyiv-Atlanta	7	29,110.00	203,770.00
2.	Los Angeles-Kyiv- Los Angeles	7	29,624.00	207,368.00
3.	New York-Kyiv-New York	7	25,610.00	186,270.00
4.	Berlin-Kyiv-Berlin	7	13,680.00	95,760.00
5.	Stockholm-Kyiv- Stockholm	21	9,328.00	195,888.00
6.	Warsaw-Kyiv-Warsaw	14	7,001.00	98,014.00
7.	Moscow-Kyiv-Moscow	14	8,532.00	119,448.00
8.	Shanghai-Kyiv-Shanghai	7	38,402.00	268,814.00
9.	Beijing-Kyiv-Beijing	7	28,297.00	198,079.00
10.	Paris-Kyiv-Paris	21	13,398.00	281,358.00
	Total cost	112	1,854,769.00	

After analyzing the calculation of «Organization and holding of the World Championship in computer games of the "Starladder" series», we can talk, that logistics costs of the event are equal 6,549,989.00 UAH (46,42%). Logistics costs play a significant role. The most expensive part of the logistics cost is the venue cost. It equals nearly half of total logistics costs.

Table 2.11 – Structure of logistics costs of the event

№	Name of costs	Total cost, UAH	%
1	2	3	4
1.	Venue costs	3,226,920.00	49,27%
2.	Flights of professional teams	1,854,769.00	28,32%

(Table 2.11 continued)

1	2	3	4
3.	Local transfers	59,800.00	0,91%
4.	Accommodation	1 408 500,00	21,5%
5.	Total cost	6,549,989.00	100%
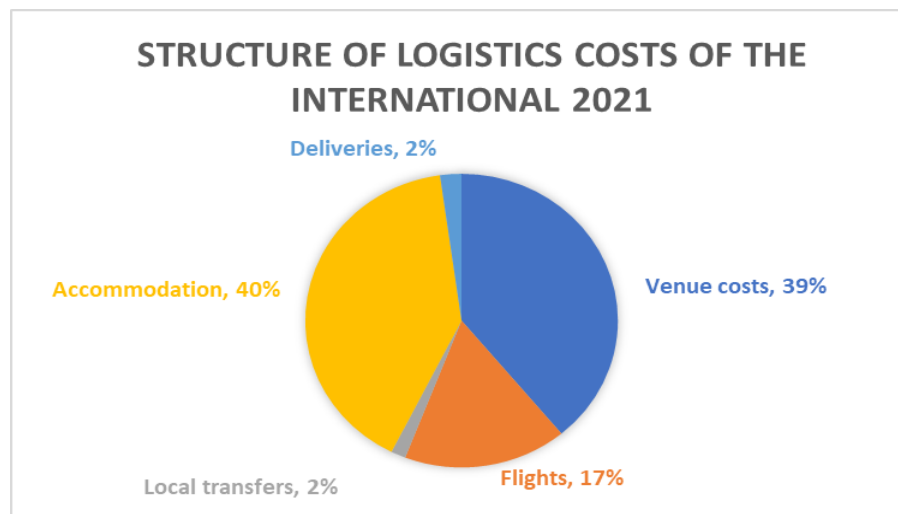
Figure 2.6 – Structure of logistics costs of the event

The last event at the National Palace of Arts "Ukraina" was in May of 2018 (28.05 - 03.06). It was a StarSeries & i-League CS:GO Season 5 with 16 teams. This event has 11 partners: LOOT.BET, CS Money, DreamTeam, HellCase, NVIDIA GeForce, Twitch, ZOWIE Gear, PandaTV, 5EPlay, DXRacer, and HP Omen. The total prize pool of this tournament was $300,000.00. According to the web page of the tournament provider, general partners of the event were LOOT.BET, CS Money, DreamTeam, HellCase, NVIDIA GeForce, and Twitch. If we transfer the prize pool and event production cost, we will get nearly $850,000.00 (with additional cost). [32]

The average rate of return for esports event equal 15%. It can be assumed that this event earns $127,500.00 as profit. Other expenses were covered by sponsors and ticket sales. In 2018 the company had 11 significant events, which could earn $1,402,500.00 if all were profitable.

2.4 Conclusions to Chapter 2

Esports is a progressive industry, which is growing and attracting more and more people across the world. The number of esports titles, players, teams, competitions, and, what is most important, the size of the prize continues to grow. It is a modern time phenomenon that gathers thousands of enthusiasts for turn esports to reality. It's worth mentioning about esports impact on the world. Despite the global lockdown caused the COVID 19 pandemic, esports has become the only sport in the world which has not been terminated. While traditional kinds of sports were suspended, video gaming and esports competitions attracted more and more people. However, so far it has not raised huge funds to the whole industry.

In the last decade, the economy of esports has become more sustainable, but the overall size of the esports market still has great potential to grow. However, the first signs of increasing market liquidity already appear. The world-known brands enter to esports more and more.

Starladder as one of the major esports tournament providers of the world which holds a significant part of the market. Cooperation with different game publishers and running own competitions made the company well experienced in esports event production of every size. The company known as a provider of quality wide range services in organizing esports events, webcasts, media content, live and post-production, advertising, professional commentators, analysts, and presenters.

The major logistics costs in the production of events are flights, accommodation, and venue`s rent. Last year, the company reached a whole new level, realizing very important events on the orders of game publishers. Conducting Majors in Dota 2 and CS: GO for Valve, as well as the main European League in PUBG for PUBG Corp, significantly raised the bar of the company.

CHAPTER 3
LOGISTICAL SUPPORT ORGANIZATION FOR THE INTERNATIONAL DOTA 2 EVENT

3.1 Project description

As previously defined, the paper topic is the organization of logistical support for esports project for a tournament provider. This topic implies launching logistical support for a certain event. Esports industry is suffering from a lack of expert-level knowledge. As it was determined before esports "is a market of enthusiasts, who have a lack of specific knowledge". Implementation of project management tools is important for the successful realization of every esports event.

The most vivid example of esports event is a Dota 2 The International. It is a multi-week tournament with a multi-million prize pool and the strongest teams of Dota 2 in the world. Valve Corporation, a game publisher of Dota 2, announced specific requirements for the proposal of a host city for their major event – The International 2021The best eighteen teams of the world compete for the largest prize pool in a history of esports. (total prize pool of USD 34.3 million in 2019) The International is a logical completion of the professional season in Dota 2. During the season, teams compete in the DPC (Dota Pro Circut) tournaments. In these competitions, teams along with winning a prize also play for rating points. These points are necessary to secure participation in the most important championship of the year. Tournament operators participate in tenders from the game's publisher to be able to conduct official tournaments as part of the DPC. These events are divided into Majors and Minors. At the end of the season, the best twelve teams in the world ranking receive direct invitations to the group stage, and six more are selected based on the results of the

regional qualifiers. Such a system existed to identify the participants of the latest The International in 2019, which was held in Shanghai, China.

Historically, these events attracted between 50,000 and 60,000 unique visitors to arenas with 18,000 seats. To ensure global viewership, international draw, and attendance, this event is as expanded as the Eurovision Song Contest. This event has a significant impact on the host city's economy. According to Tourism Vancouver, The International injected 7.8 million dollars flowed into the local economy of the city. Also, event runners develop a partnership with local suppliers and service providers. Therefore, a huge benefit of the event for a host city of The International determines its success and attractiveness.

Typically, The International is not limited to the only group stage in a hotel and play-off stage in an indoor arena with a fantastic crowd. This event includes vendor villages, fan zones, merchandise shops, a full-scale festival event space, and nightly after-parties and post-game shows hosted at unique venues in the city. [28]

This project requires maximum performance from the tournament operator. Like every event, there is no room for error or a long delay. All processes should be done in the specified time-frame. Organization of The International is a very difficult task. Overall, logistical support for The International consists of the following groups of tasks:

• Venue. The tasks which involve venue issues and belong to the logistic department. This combines the processes such as search and negotiation with a possible venue, a report to higher management to decide on a choice, control of the processes involved in the preparation, and conduct of the event and dismantling of equipment. The last process in the relationship between the logistics department and the venue is billing control and subsequent payment.

• Accommodation. This group of tasks includes the organization of accommodation during the event. The processes that ensure the fulfillment of this group of tasks are very similar to those used when interacting with the venue. To carry out such a large-scale

and important event, it is necessary to place a significant number of teams, talents, and personnel. Also, assistance in hotel accommodation can be useful for VIP guests, sponsors, and partners.

- Transportation. Event production such as The International Dota 2 or every major esports event requires numerous transportation services. It is necessary for both personnel logistics for event participants and for equipment. The selection of the best options for the delivery of participants and goods lies in the responsibility of the logistics support of the event. For the effective implementation of these tasks, a clear and deferred communication both between units within the company and with the participants of the competition is extremely necessary. For the implementation of transportation, it six recommended to involve third-party contractors. For the implementation of personnel logistics in the city of the event, travel companies can be involved, as well as local road carriers for urban travel. In the case of equipment, customs brokers are involved, as well as companies that transport goods.

- Vendors. Event organizers solve certain problems by hiring third-party contractors. These companies usually operate in those areas of responsibility where the organizer cannot manage on its own. When producing an event like The International, the tournament operator attracts companies that deal with such tasks as equipment, catering, construction, décor, fireworks, printing, marketing, security, travel, insurance, transportation, and entertainment as contractors. In the case of Starladder, the company owns a large amount of its equipment, which reduces the need for local rental. The process of working with suppliers is not much different from working with the venue and location.

3.2 Implementation of project management tools to the creation of a logistical support of the esports event

One of the main problems in esports event production is a lack of specific knowledge. Using project management tools could facilitate the process of planning and execution of the esports project. First of all, it concerns logistical support of the event. Only after careful planning of the logistics of the event, it becomes possible to proceed to other important issues of event production. Therefore, it is very important to organize the process of logistical support of the project as efficiently as possible.

First of all, it is necessary to divide the project into phases. There, logically divide logistical support of the project into four phases, such as Concept Development, Planning & Scheduling, Performance establishment, and Post-event assessment.

Table 3.1 – Life cycle of the logistical support of project

Phase of project	Duration	Main tasks		KPI
1	2	3		4
Concept Development	2 days (Working days)	1. 2. 3.	Requirements gathering Risk Analysis Concept design	1. Concept development
Planning & Scheduling	25 days (Working days)	1. 2. 3. 4. 5. 6.	City selection Venue selection Accommodation selection Vendors selection Creation logistics set up Budget calculations	1. Finalization of request proposal

(Table 3.1 continued)

1	2	3	4
Performance establishment	57 days (Calendar days)	1. Organizations and controlling for personal logistics 2. Organizations and controlling for necessary deliveries 3. Implementation of logistics set up 4. Controlling of vendors 5. Venue control	1. No schedule delays 2. Just in Time
Post event assessment	21 days (Working days)	1. Control of the invoicing 2. Control of the payment	1. Speed and accuracy of payment

The concept phase outlines the objectives of the event. In this stage, the tournament provider gathers requirements and conducts logistical risk analysis of taking part in the event production of The International. According to the results of this stage company`s management designs a concept of the project.

The next phase of logistical support for the project, Planning & Scheduling, consists of logistics planning operations. Their logisticians working with creation logistics set up for the project. In this phase, the main tasks consist of City selection, Venue selection, Accommodation selection, Vendors selection, and Budget calculations. Upon completion of this phase, the company receives the final version of the request proposal for the game publisher. Upon completion of this phase, the logistics staff switches to other projects, and operational tasks are transferred to other departments.

At the point, when teams, talents, staff, and equipment lists are already formed, logistical support returns to implementing logistical support of this project. The Performance Establishment phase involves the planning and execution of necessary components in event production. Such tasks as Organizations and controlling for

personal logistics, Organizations and controlling for necessary deliveries, Implementation of logistics set up, Controlling of vendors, and Venue control are under responsibility logistical support of the project.

As soon as the last match is played, the award ceremony will be completed, the dismantling of equipment from the venue begins, and the participants in the event begin to leave the host city. Upon completion of all these processes, the functional responsibility of logistic support is to control the correct billing and subsequent payment. As soon as all these operations are completed, the project is considered to be closed.

After the project has been divided into four phases, it is necessary to set the main tasks and key performance indicators. Based on these tasks, it is necessary to build the Work Breakdown Structure (WBS) to visualize the hierarchical structure of the tasks to be performed and related activities. Using WBS is an effective way to reflect the entire scope of a project graphically. In the case of logistics support, WBS allows us to outlines the boundaries of logistics tasks visually.

Despite its wide functionality, WBS has certain disadvantages. This is manifested in the absence of the possible determination of the duration of each task in the time frame of the project. Gantt chart is developed to graphically display information related to the schedule. However, despite all the advantages, the Gantt chart does not show the priority of actions. This may manifest itself in restricting the production of a large project consisting of smaller and more numerous activities.

To solve this complexity, specialists in the field of project management appeal to using Network diagrams - the critical path method (CPM) and the program evaluation and review technique (PERT). The critical path method (CPM) is a network diagram that is characterized as a method with the only possible option for the duration of tasks. CPM covers two phases of the project such as Concept Development and Planning & Scheduling There be determined two critical path his method uses the Activity on node

(AON) network diagram. The AON network diagram was applied for Concept development and Planning & Scheduling phases.

At the same time, the peculiarity of the Program Evaluation and Review Technique (PERT) is that when calculating the duration, the project planner can calculate three different options for the duration of each task, namely, optimistic, pessimistic, and most expected. PERT determined the project duration as 21 working days for post-event assessment with 9 tasks. This method uses the Activity-on-Arrow network diagram. Using these tools allows us to prepare a more accurate schedule of the project, which is very important in modern realities. The AOA network diagram was applied for post-event assessment with 2 dummy activities.

Implementation of these key project management tools can take the preparation and implementation of global projects to a new level. Thus, providing a solid foundation for any business - a stable and reliable logistics system.
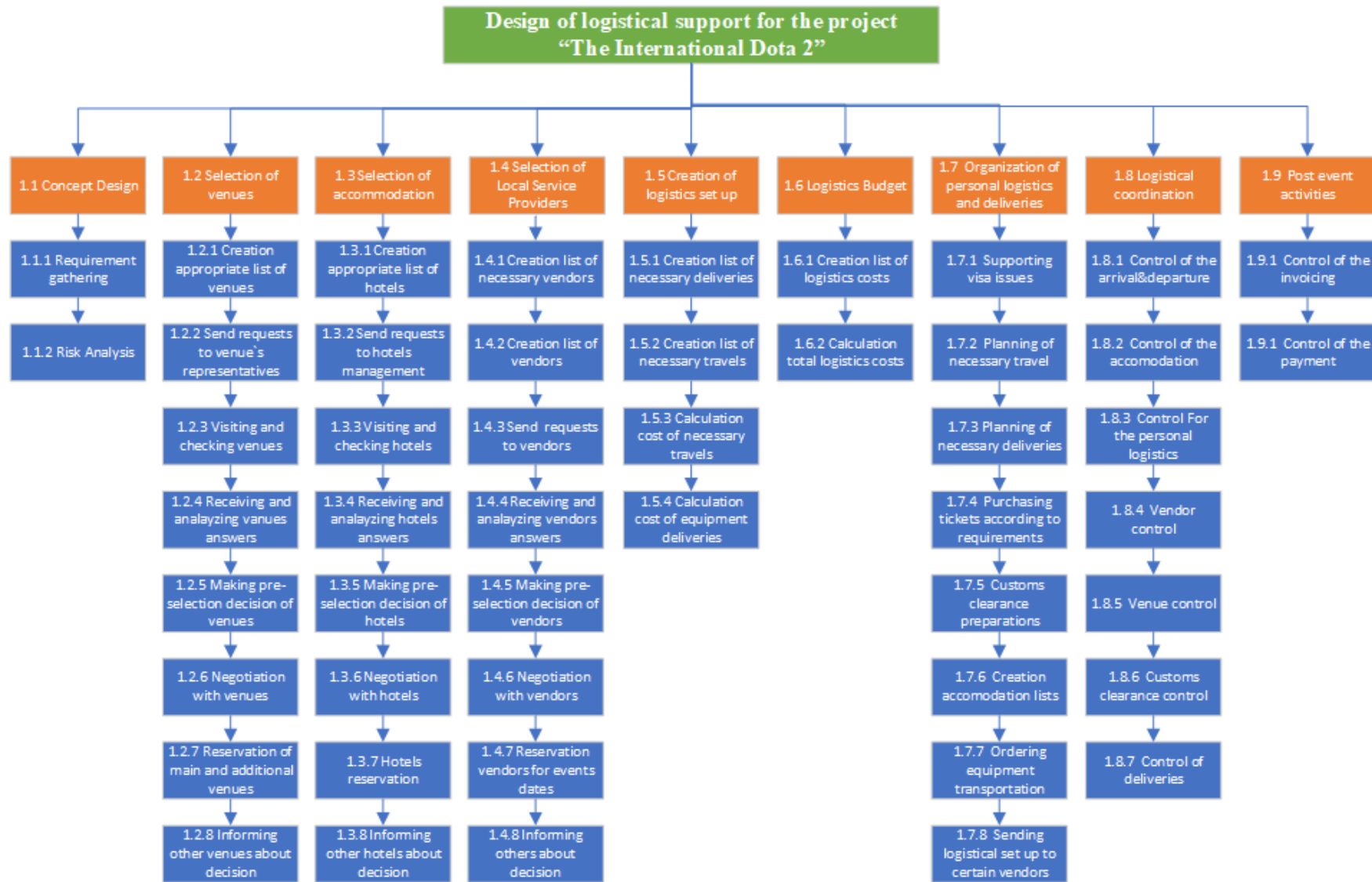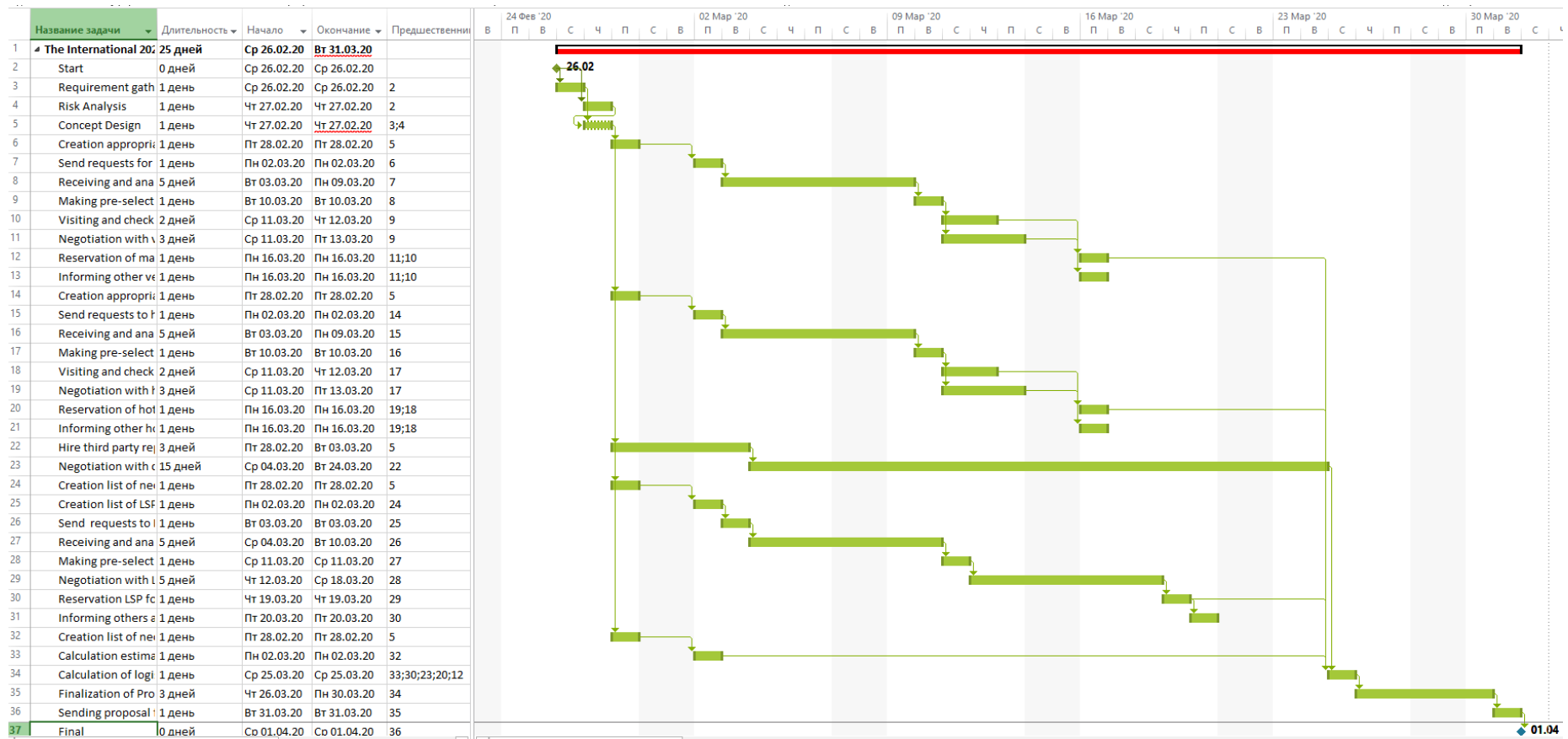
Figure 3.1 – WBS of logistical support of the event

Figure 3.2 – Gantt Chart of logistical support of the event on the design phase

Figure 3.3 – AON of logistical support of the event

Table 3.2 – CPM of Logistical support

No	Task	Duration (days)	Predecessors	ES	EF	LS	LF	Slack time
1	2	3	4	5	6	7	8	9
1	Requirement gathering	1	-	0	1	0	1	0
2	Risk Analysis	1	-	0	1	0	1	0
3	Concept Design	1	1,2	1	2	1	2	0
4	Creation appropriate list of venues	1	3	2	3	8	9	6
5	Send requests for venue`s representatives	1	4	3	4	9	10	6
6	Receiving and analayzing venues answers	5	5	4	9	10	15	6
7	Making pre-selection decision of venues	1	6	9	10	15	16	6
8	Visiting and checking venues	2	7	10	12	17	19	7
9	Negotiation with venues	3	7	10	13	16	19	6
10	Reservation of main and additional venues	1	8,9	14	15	19	20	5
11	Informing other venues about decision	1	8,9	14	15	19	20	5
12	Creation appropriate List of hotels	1	3	2	3	8	9	6
13	Send requests to hotels management	1	12	3	4	9	10	6
14	Receiving and analayzing hotels answers	5	13	4	9	10	15	6
15	Making pre-selection decision of hotels	1	14	9	10	15	16	6
16	Visiting and checking hotels	2	15	10	12	17	19	7
17	Negotiation with hotels	3	15	10	13	16	19	6
18	Reservation of hotels	1	16,17	13	14	19	20	6
19	Informing other hotels about decision	1	16,17	13	14	19	20	6
20	Hire third party representative in selected city	3	3	2	5	2	5	0
21	Negotiation with city`s government	15	20	5	20	5	20	0
22	Creation list of neccessary Vendors	1	3	2	3	4	5	2
23	Creation list of Vendors	1	22	3	4	5	6	2
24	Send requests to Vendors	1	23	4	5	6	7	2
25	Receiving and analayzing Vendors answers	5	24	5	10	7	12	2
26	Making pre-selection decision of Vendors	1	25	10	11	12	13	2
27	Negotiation with Vendors	5	26	11	16	13	18	2
28	Reservation Vendors for events dates	1	27	16	17	18	19	2
29	Informing others about decision	1	28	17	18	19	20	2
30	Creation list of neccessary Deliveries	1	3	2	3	18	19	16
31	Calculation estimated price of Deliveries	1	30	3	4	19	20	16
32	Calculation of logistcs costs for the event	1	31,29,21,18,10	20	21	20	21	0
33	Finalization of Proposal for game publisher	3	32	21	24	21	24	0
34	Sending proposal for game publisher	1	33	24	25	24	25	0

Table 3.3 – PERT of post event invoicing and payment operations

OPERATION	DESCRIPTION	PREDECESSORS	OPTIMISTIC a	MOST LIKELY m	PESSIMISTIC b	EXPECTED TIME t=(a+4*m+b)/6	VARIANCE v=(b-a)/6
A	Verification of own accounting	-	2	4	5	4	0,25
B	Sending request to Vendor	A	0,5	1	3	1	0,17
C	Receiving act of work performed	B	2	3	5	3	0,25
D	Receiving invoices	B	2	3	4	3	0,11
E	Reconciliation of vendor`s data with own accounting	C,D	1	2	5	2	0,44
F	Entering new data to the data base	E	1	2	5	2	0,44
G	Transfer invoice for payment	E	2	3	7	4	0,69
H	Control for payment	G,F	3	5	7	5	0,44
I	Sending report of successful payment	H	1	2	5	2	0,44
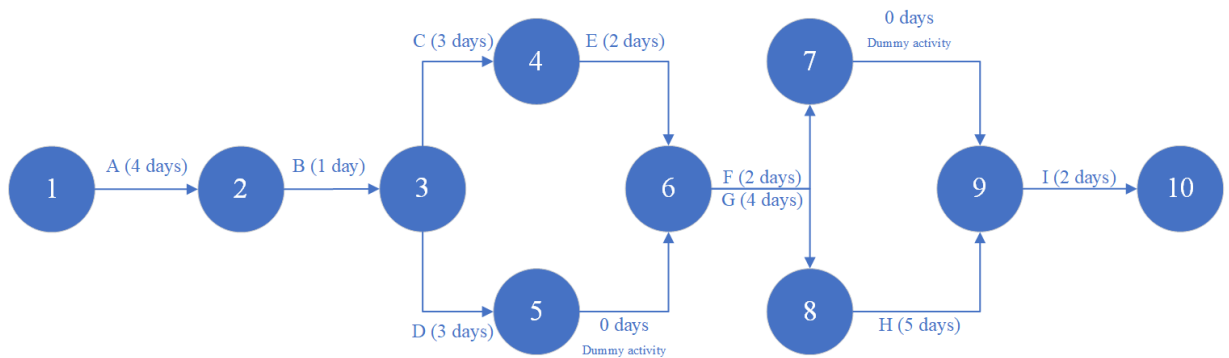
Figure 3.4 – AOA of post event invoicing and payment operation

3.3 Economics component of the organization logistical support of the esports event

The International is the main event of the Dota 2 game's publisher in the esports ecosystem who is responsible for all associated costs. For tournament operators, this is an opportunity to rely not on their funds or the quality of sales of sponsorship packages, rather on the significant financial resources of the game publisher. This also reduces the financial risks for the tournament operator.

The Planning & Scheduling stage of an esports event for the publisher's order begins with collecting the requirements and performing logistical risk analysis. On February 26th, the game's publisher posted the requirements in "Request for

Proposal: 2021 Host City for The International Dota 2 Esports Championship". Valve, as an owner rights for The International, determined terms of event and specific requirements. In addition to those logistics requirements, city and national governments should have the ability to meet specific consideration.

Table 3.4 – Term of The International 2021 [28]

№	Date	Name of activity
1	2	3
1	August 1	Valve and local skilled labor force begin groundwork for event
2	August 9	Players and hosting/broadcasting talent arrive
3	August 12-15	Group stage
4	August 16	Rehearsal for main event
5	August 17-22	Main Event
6	August 23-26	Valve and local skilled labor force tear down after event

Table 3.5 – Logistics requirements for The International [28]

№	Name of specific logistics requirement
1	2
1	A modern indoor arena or stadium with a capacity between 15,000 and 80,000 (which must be available for at least a 10-day period in August 2021)
2	Additional space for ancillary events (e.g., vendor villages, fan zones, after parties)
3	Ample hotel space for upwards of 30,000 individuals
4	Fiber network connectivity from a local service provider
5	Proximity to an International Airport
6	A strong local transportation system

Table 3.6 – Specific considerations for city and national governments' [28]

№	Specific considerations for city and national governments'
1	2
1	Ensure the safety of The International's contestants, workers, and fans

(Table 3.6 continued)

1	2
2	Maintain clear and continuous communication with Valve leading up to and during the event
3	Assist Valve with permitting and negotiating local regulations
4	Help Valve navigate immigration and visa issues for The International's contestants, workers, and fans
5	Support potential road closures
6	Commit to unfettered movement of event trucks on surface roads

Like any undertaking, holding an esports competition like International Dota 2 has certain risks for the organizers. Most of these risks can be solved in advance, taking care of a more detailed analysis and finding ways to solve them. Logistics is faced with a large number of all kinds of risks. Risks can be divided from a small issue with traffic jams at the crossroad to denial of entry to the hosting country. Better planning helps avoid these problems.

Table 3.7 – Risks analysis of logistical support of The International

№	Possible issue	Way to solve
1	2	3
1	Flight delayed / postponed / canceled	Travel agency should be available 24/7 for event dates with possibilities to find right solutions.
2	Refusal to enter the state	Negotiation with city government about special invitation letter for players, talents and staff. Sending invitation and cover letter for players, talents and staff with a sufficient margin of time.
3	Delays with installation or deinstallation work	Carefully calculate the required number of hours and the number of personnel with a sufficient supply. Be able to order additional staff to carry out these operations.

(Table 3.7 continued)

1	2	3
4	Issues with customs	It is necessary to study the customs rules for the temporary importation of equipment into the country (customs union). Enlist the support of a local customs broker. Carefully verify the completed customs documentation.
5	Holding large-scale events on the days of the event	Examine and regularly update the calendar of major events like exhibitions and fairs. Based on these data, make advance reservations.
6	Traffic Jam	Make analysis of traffic in city. Plan a larger margin in time.

After completing these actions, it is necessary to start creating the concept of the event. The concept is based on the features of the event, the formulation of ideas for the design of the stage, the choice of the host city, and other equally important issues. Even though the company is based in Kyiv, this city does not meet the requirements set by the game publisher in the full scope. Therefore, it will be logical to choose a city in which the company has already held major events. In this case, Berlin becomes the most suitable place.

Berlin has strong experience as a hosting city of esports competitions. In the last two years, this city has become one of the most important places in the esports industry. PUBG Global Invitational 2018 (Mercedes-Benz Arena) [26], CS:GO Major 2019 (Mercedes-Benz Arena & Verti Music Hall) [31], LoL Worlds 2019 (Verti Music Hall) [23] and PUBG European League (Berlin Messedamm) [25] were played there as the largest esports competition. Besides, this city also headquarters such esports organizations as G2 and Berlin International Gaming. Teams like FaZe and Natus Vincere have boot camp house. The regular season of the European League of Legends Championship Series (LEC) playing at LEC Studio in Berlin, Germany. In 2019, Starladder hosted Starladder Berlin Major CS:GO (with minors) and PUBG European League. It means that the company has an excellent opportunity

to successfully hold this event in strong cooperation with local vendors. Other big advantages of hosting esports competition in Berlin involve visa issues. The Government of Germany issues esports visas for professional esports athletes from non-EU countries. This German esports visa will be a great advantage for events held in Germany. Since most players taking part in The International are non-EU citizens it is one of the key success factors in deciding on the country's location. [42]

In addition to the above, it is worth paying attention to the strong transport network of the city which meets the requirements of the game publisher for hosting The International. Berlin has two international airports (TXL and SXF), a large network of roads and public transport means. The City authority can ensure the safety of event contestants, workers, and fans, workers, and fans. In addition, the city has a large number of venues. Overall, Berlin can be a fantastic place for running The International in 2021. This city meets the requirements of the game publisher.

The next important step that can be carried out simultaneously is the calculation of the logistics-related costs of the event. It includes a process of selected venues, accommodation, vendors, and calculation of the logistics budget. It is required to hire a local vendor to perform some of the ley activities. Key factors when choosing a vendor are pricing policy, loyalty, willingness to work 24/7, and a pleasant atmosphere.

First of all, the tournament operator makes a selection of the venue. Berlin has only one suitable indoor venue. It is a modern Mercedes-Benz Arena with 17,000 seats available, underground parking, and a good location on the East side of Berlin. Places around this arena can be used for vendor village. Also, this place is located at the point with a good transportation infrastructure (Bus, Tram, Subway, Rail). The cost of renting the venue was calculated by market indicators and include additional services.

Selecting appropriate accommodation is another important issue in event production. The task of accommodation for The International consists of the allocation of all event participants and special guests on request. Every team has five players, a coach, an analyst, a manager, etc. While calculating the logistics of the

teams, a value of six people was used. Hotel is an establishment that provides accommodation, breakfasts, and other additional services for players, teams, talents, and staff. The hotel should have enough capacity to allocate all players, talents, and staff. Moreover, ballroom and conference rooms should create possibilities for locating their practice rooms for each team and stage for the group stage of The International.

Table 3.8 – Selection of accommodation

№	Company name	Price	Comment
1	2	3	4
1	Viena Andels House Berlin	115 EUR for twins 91 EUR for single 50 EUR for conference room	+Good price; +Experience of hosting Minors for CS:GO Major in 2019 +Enough rooms for event participants +Big conference and ball rooms for pracc and stage zones -Non fabulous district -View for dormitory area
2	nhow Berlin	154 EUR for twins 134 EUR for single 90 EUR for conference room	+Good location +Beautiful view to river +Thematical hotel for musicians +Experience of hosting CS:GO Major in 2019 -Small room -Pricing policy -Lack of big conference rooms
3	Hampton By Hilton Berlin City East Side Gallery	124 EUR for twins 114 EUR for single 70 EUR for conference room	+Nearest hotel to venue -Not enough quantity of rooms -Lack of big conference rooms

After comprising available variants, it is possible to make a selection. Despite the location, Viena Andels House Berlin is the best variant for organization accommodation for The International. The hotel could provide additional services for

event participants as handling catering for practice rooms and feeding. Prices were received from the hotels' web sites.

Table 3.9 – Accommodation of event participants

№	Description	Total cost, EUR
1	2	3
1	Accomodation for players (3 twin per team)	€ 80 870,40
2	Pracc rooms (1 conference hall per team)	€ 17 280,00
3	Accomodation For talent (1 single per talent)	€ 106 704,00
4	Accomodation For staff (1 single per Manager)	€ 45 600,00
5	Accomodation For staff (twin)	€ 115 200,00
6	Total	€ 365 654,40

Besides logistics personnel performs calculations of flight expenses. First of all, it is necessary to agree with a travel company - an organization engaged in the sales of flight, rail and bus tickets. One of the major things about the selection of a travel agency is the size of available payment balance because a great number of airline tickets will be purchased simultaneously. Also, the company should have enough staff that can be allocated for the need for a specific event to be able to work on a 24/7 basis.

Table 3.10 – Selection of a travel company

№	Company name	Price policy	Features
1	2	3	4
1	TUI	Mid	Good reputation, wide lists of customers, one of the largest German travel company
2	Poehalisnami	Mid	Significant resources, don't have personnel for individual customer
3	Join Up	Low	Doubtful reputation

After comprising available variants, it is possible to make a selection. TUI owns one of the largest lists of customers that could ensure significant financial resources for the company. Also, the Parent company has German origin.

According to the team list of the last The International, it is possible to calculate approximate costs of flights for professional teams for the event. The total cost of the ticket in the budget is based on the price of a particular ticket with the same period to which 20% of the price is added. The same method applies to other calculations of flights for this project.

Table 3.11 – Calculations of necessary flights

№	Types of flights	Quantity	Total cost, EUR
1	2	3	4
1	For professional teams	108	€ 65 864,40
2	For talents	90	€ 57 483,60
3	For personnel	120	€ 28 656,00
4	Total	318	€ 152 004,00

Personal logistics does not end on arrival at the airport. Event participants who arrive at the airport should be met and delivered to the hotel. As the group stage of the event is usually played in the hotel, it removes the needs to transport event participants from the hotel. The main stage (Play-off) of The International will be played in the indoor arena. Players and talents should be at the venue without any delays. According to the fixed format of The International, it is possible to calculate the number of transportation units for the event participants. At the end of the event, the players must be provided transportation to the airport according to the schedule of their flights. A transport company should meet the following requirements: fleet size, transport condition, English speaking staff, pricing policy. For every event, the preferable car type is Mercedes Vito with a capacity of 6-7 pax. The cost is calculated based on the price of one trip for 6-7 pax in Uber, adding to this 20%.

Table 3.12 – Selection of a transport company for personal logistics

№	Company name	Pricing policy	Features
1	2	3	4
1	Shuttle direct GmbH	Low	Old cars, Low cost, Turkish speaking drivers
2	DAS Company Group GmbH	Mid	Perfect reputation, significant fleet, English and Russian speaking drivers
3	RST Berlin GmbH	High	Russian speaking drivers, good reputation

After comprising available variants, it is possible to make a selection. DAS Company Group owns numerous car fleet, perfect reputation, and English and Russian speaking drivers.

Table 3.13 – Local transfers of event participants

№	Description	Quantity	Price per 1	TOTAL COST EUR
1	2	3	4	5
1	From/To TXL	108	€ 64,80	€ 6 998,40
2	From/To SXF	48	€ 92,40	€ 4 435,20
3	From/To Hotel-Venue	115	€ 19,20	€ 2 211,84
4	Total	271		€ 13 645,44

Cargo transportations operations by different transport companies compared to personal transportations. From Kyiv to Berlin, the event operator should transport a lot of things, as gaming monitors, high-end PCs, gaming chairs, tables, cables, cameras, stage constructions, etc. It requires numerous trucks with significant capacity. The cost was calculated according to prices given at web site ua.transportica.com.

Table 3.14 – Equipment deliveries for event

№	Description	Quantity	Price per 1	TOTAL COST EUR
1	2	3	4	5
1	Kyiv-Berlin Cargo 10t	6	€ 1 654,99	€ 9 929,95

1	2	3	4	5
2	Berlin-Kyiv Cargo 10t	6	€ 1 651,20	€ 9 907,20
3	Total	12		€ 19 837,15

Table 3.15 **–** Calculation of logistical support of The International

№	Name of costs	Total cost, EUR
1	2	3
1	Rent cost of venue	€ 350 000,00
2	Organization of flights of professional teams	€ 65 864,40
3	Organization of flights of talents	€ 57 483,60
4	Organization of flights of staff	€ 28 656,00
5	Local transfers of event participants	€ 13 645,44
6	Organization of accommodation	€ 362 774,40
7	Organization of deliveries	€ 19 837,15
8	Total cost	€ 898 260,99

Table 3.16 – Structure of logistics costs of The International

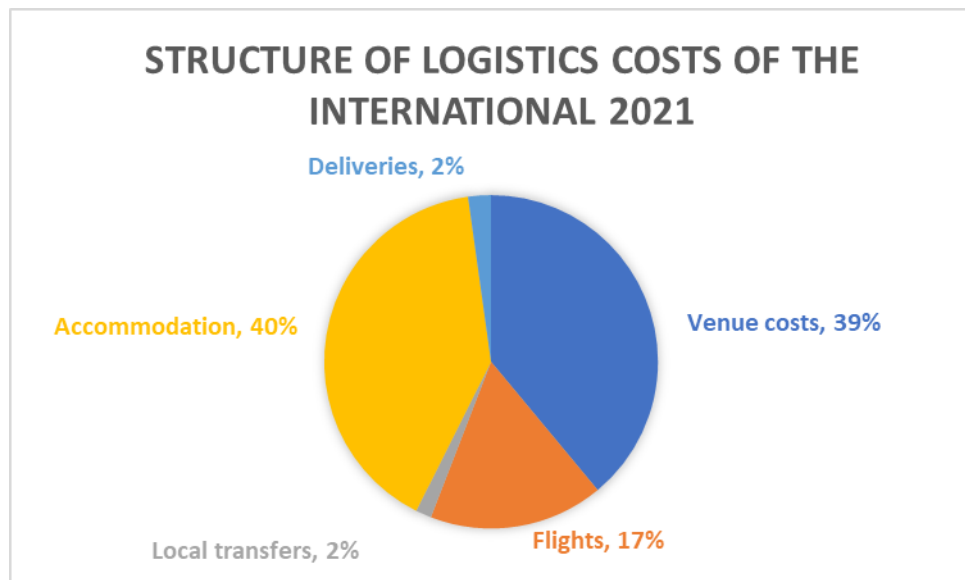| №	Name of costs	Total cost, EUR	%
1	2	3	4
1	Venue costs	€ 350 000,00	38,96%
2	Flights	€ 152 004,00	16,92%
3	Local transfers	€ 13 645,44	1,52%
4	Accommodation	€ 362 774,40	40,39%
5	Deliveries	€ 19 837,15	2,21%
6	Total cost	€ 898 260,99	100%

Figure 3.5 – Structure of logistics costs of The International

Finishing operations of selection and budgeting, it necessary to determine organizations' structure of Logistical support for this event. The logistics department of the tournament operator gets subordinate entities of vendors and some temporary personnel of the company for managing logistical support of the event.
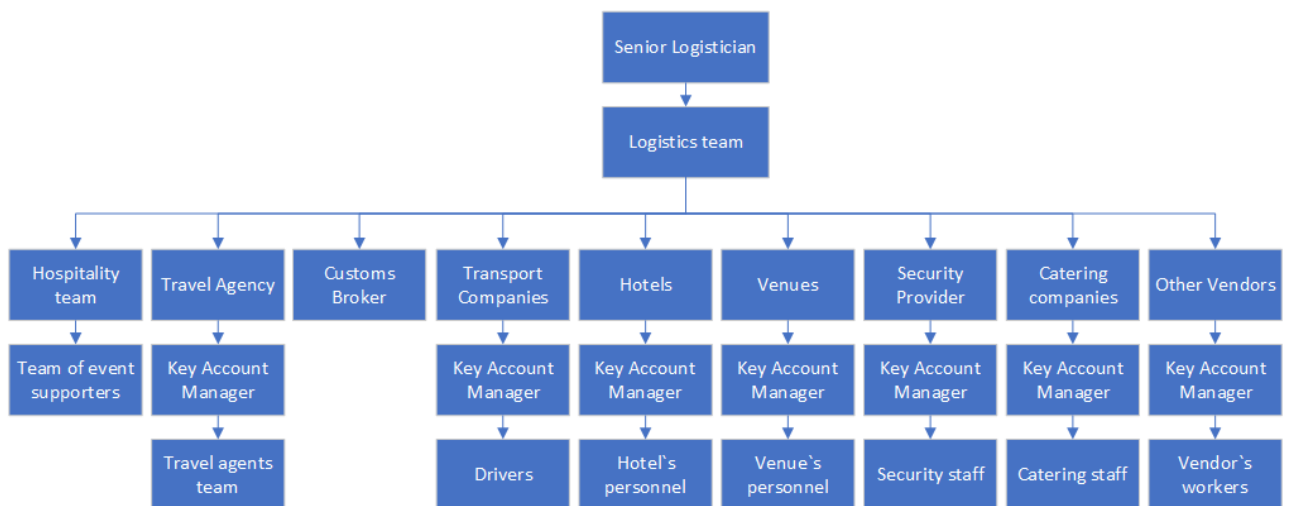

Figure 3.6 – Organizational structure of logistical support

3.4 Conclusions to Chapter 3

Such project management tools such as WBS, Gant chart, AOA, AON, are applied for The International. The WBS hierarchy was presented in figure 1 and demonstrated a large variety of activities which determined as solid logistical support. The Gant Chart determined the project duration as 25 working days for the concept and development stage in figure 3.2. The project has two critical paths: 1) Start – 1 – 3 – 20 – 21 – 32 – 33 – 34 – End; and 2) Start – 2 – 3 – 20 – 21 – 32 – 33 – 34 – End; (Refer to table for full description of the numbered activities). The PERT technique summarizes optimistic and pessimistic time assessment and provides 21 days of the possible completion time of the project. The AOA network diagram was applied for post-event assessment with 2 dummy activities. There was also a risk analysis that showed five main possible problems during this event and how to solve them.

Therefore, to solve a so complicated task as an organization of logistical support for esports events such as The International it was decided to apply such project management tools as WBS construction, GANTT Charts, AON, CPM, and PERT. It was investigated that the project management tools can facilitate the process of planning and execution of esports project. Scientists developed different project management tools for different operating areas. Modern project management tools ensure a possibility for implementation in event production. Considering the example of implementation project management tools for esports projects such as The International Dota 2 Esports Championship, it can be concluded that the area of application of these techniques is wide. To organize logistical support for The International, the implementation of project management tools was formed.

All the necessary costs and decisions for the planning logistical support of the project were indicated. The total cost of logistical support will be €898 260,99. This amount is covered by the customer of the event.

CONCLUSIONS AND RECOMMENDATIONS

Modern esports collect fully sold out indoor arenas. Millions of spectators around the world online and thousands of visitors in stadiums are watching esports events. These events are the point of connection in different industries such as sport, show business, entertainment, and high technology. The organization of major esports events is a very difficult matter, which requires the organizers to solve many issues and know the features of both esports in general and a single game. In the modern world, there is a need to use the best management tools to ensure the effective functioning of the activities of both private companies and states as a whole. Like any type of economic activity, the planning, production, and realization of large projects - events, require the implementation of the best management solutions for individual tasks.

In short words, Logistics support for large-scale events in esports consists of organizing the movement and accommodation of participants, as well as interacting with the venue and the contractors involved. The complexity of this process lies in the large number of tasks assigned to the organizers. The major logistics costs in the production of events are flights, accommodation, and venue`s rent.

This bachelor thesis considered the implementation of project management tools for the side of logistical support on the esports event production. The use of project management tools was implemented when planning one of the largest esports competitions - The International Dota 2 Esports Championship.

At the beginning of the project was performed an analysis of the project management tools and global esports market. Every event is considered to be a project, so project management approaches are relevant and applicable. Every project undergoes the following stages: Concept Development, Planning & Scheduling, Performance establishment, and Post-event assessment. There are a lot of tools that can simplify project design, its implementation, and control. The graphical approaches such as Gantt charts, AON and AOA network diagrams, and CPM and

PERT methods are widely used for project management in different industries. WBS tool determines the necessary tasks and their hierarchy at the project but its limitations significantly restrict a whole vision of the projects and are inefficient at the control and performance stages. The tools mentioned above are used in different application areas for different purposes. The effectiveness of using these tools determine how successfully a project will be implemented. With their help, it becomes possible to make every stage of project management more efficient and accurate. The selection of specific project management tools at various stages of preparation should be based on fundamental knowledge and understanding of their application.

Esports is getting closer and closer to traditional sports. Esports has become a phenomenon in the modern world that gather thousands of enthusiasts for turning esports to a reality. Enthusiasts are faced with the problem of a lack of fundamental knowledge in certain issues, which complicates their work. This problem is close to all new directions that have appeared relatively recently and do not have sufficient research and scientific base for training specialists.

Esports industry has a complex ecosystem that running in each separate game differently due to game publisher decisions. This is what distinguishes management in esports from traditional sports - all the key decisions are made by the game publisher. The esports audience is growing more and more every year. The number and scale of events are constantly increasing. The prize pools of individual events already exceed their counterparts in traditional sports.

Major international events play a significant role in the global economy, job creation, and establishment of new or improvement of existing relations between states, corporations, and people themselves. It's impossible not to mention esports impact on the world. Tournament providers hast these events.

Then, the analysis of one of the biggest tournament providers - "Starladder" was made. According to this analysis, the company has a strong position on the market with the well-experienced event production for different customers. Financial

indicators show that cost of event production continues to continue growing. So, the company is ready to deal with game publishers to operate major events.

The next step was the creation and logistical support for the esports event. Such project management tools such as WBS, Gant AOA, AON, are applied for The International. The WBS hierarchy was presented in figure 1 and demonstrated a large variety of activities which determined as soled logistical support. The Gant Chart determined the project duration as 25 working days for the concept and development stage in figure 3.2. The CPM covers two phases of the project such as Concept development and Planning & Scheduling and determines the duration 25 working days. The CPM technique determines two critical paths: 1) Start – Requirement gathering – Concept Design – Hire a third-party representative in the selected city – Negotiation with the city`s government – Calculation of logistics costs for the event – Finalization of Proposal for game publisher – Sending proposal for game publisher – End; and 2) Start – Risk Analysis – Concept Design – Hire a third-party representative in the selected city – Negotiation with the city`s government – Calculation of logistics costs for the event – Finalization of Proposal for game publisher – Sending proposal for game publisher – End. The AON network diagram was applied for Concept Development and Planning & Scheduling and consist of 2 dummy activities Start and End. The PERT technique determines the project duration as 21 working days for Post-event assessment with 9 tasks. The AOA network diagram was applied for post-event assessment with 2 dummy activities: Start, 5-6, 7-9 and End. There was also a risk analysis that showed five main possible problems of logistical support during this event and how to solve them. The logistics costs structure of The International Dota 2 Esports Championship divided as follows: Venue costs - 38,96%; Flights - 16,92%; Local transfers - 1,52%; Accommodation - 40,39%; Deliveries - 2,21%. The calculation showed the total costs of logistical support are estimated in €898 260, 99. This amount will be covered by the customer of the event. However, it is possible to optimize the costs of logistical support by reducing the cost of flights. It can be achieved through a deal with a specific airline on the introduction of a special tariff for the transportation of event participants.

As a result of the work done, logistical support for The International Dota 2 Esports Championship was justified, the use of which will allow "Starladder" to generate additional income from this order, strengthen the reputation, and increase the financial sustainability of the enterprise as a whole. Using project management tools simplify the task of providing logistical support for a major event. This recommended using the proposed tools when organizing all the esports events of the company.

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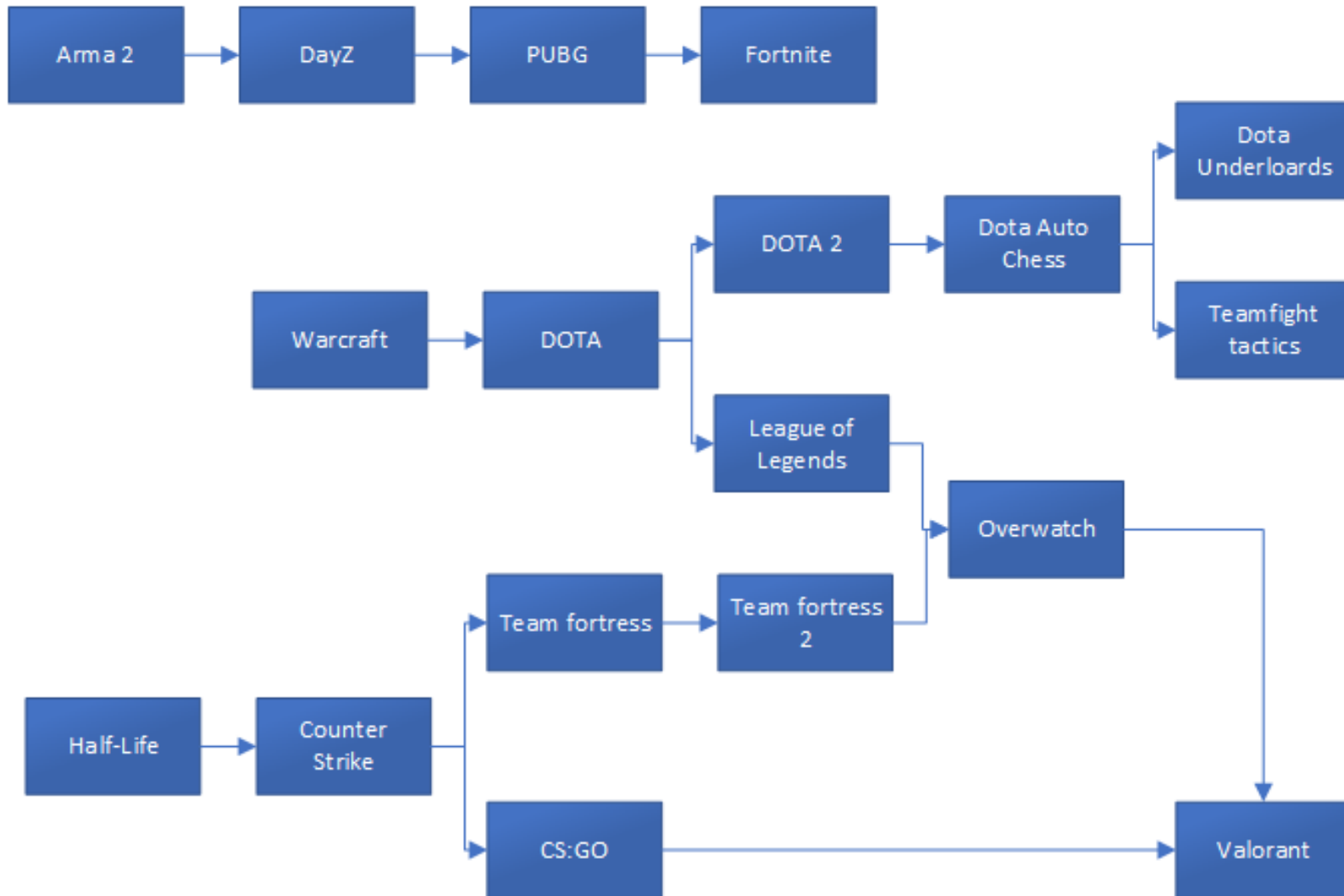
Appendix A

Esports ecosystem diagram
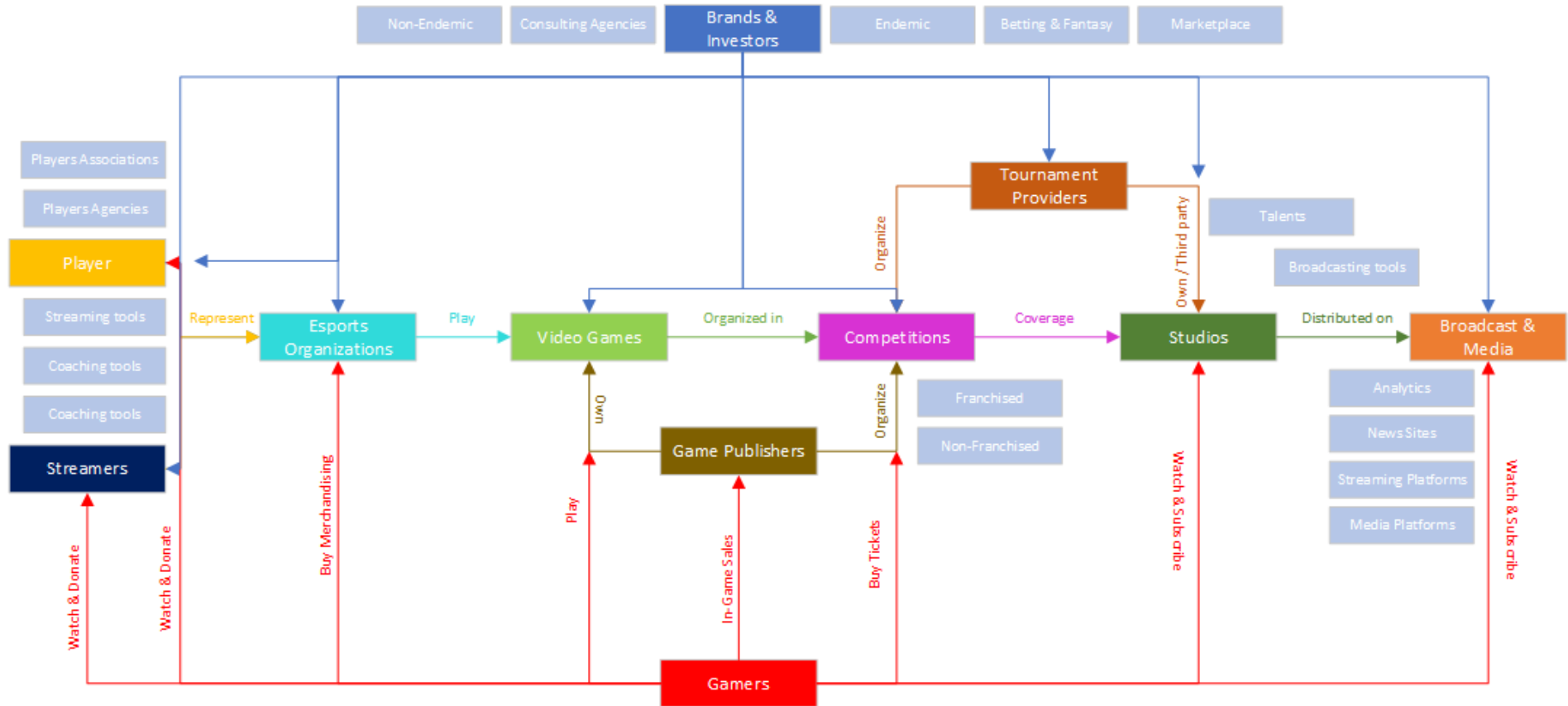
Appendix B

Evolution of esports titles

Appendix C

Accommodation costs expected for The International

№	Description	Quantity of rooms	Number of nights	Price/night	Price +20%	TOTAL COST EUR
1	Accomodation for players (3 twin per team)	54	13	€ 96,00	€ 115,20	€ 80 870,40
2	Pracc rooms (1 conference hall per team)	18	16	€ 50,00	€ 60,00	€ 17 280,00
3	Accomodation For talent (1 single per talent)	90	13	€ 76,00	€ 91,20	€ 106 704,00
4	Accomodation For staff (1 single per Manager)	20	25	€ 76,00	€ 91,20	€ 45 600,00
5	Accomodation For staff (twin)	50	20	€ 96,00	€ 115,20	€ 115 200,00
6	Total	232				€ 365 654,40

Appendix D

Flight Costs expected for The International

№	Destination	Quantity	Price	Price +20%	Total cost, EUR
1	2	3	4	5	6
1.	Flights of professional teams				
1.1	Shanghai-Berlin-Shanghai	22	€ 788,00	€ 945,60	€ 20 803,20
1.2	Manila-Berlin-Manila	9	€ 848,00	€ 1 017,60	€ 9 158,40
1.3	Stockholm-Berlin-Stockholm	8	€ 108,00	€ 129,60	€ 1 036,80
1.4	Moscow-Berlin-Moscow	7	€ 227,00	€ 272,40	€ 1 906,80
1.5	Kuala Lumpur-Berlin-Kuala Lumpur	6	€ 583,00	€ 699,60	€ 4 197,60
1.6	New York - Berlin - New York	6	€ 698,00	€ 837,60	€ 5 025,60
1.7	Frankfurt-Berlin-Frankfurt	5	€ 123,00	€ 147,60	€ 738,00
1.8	Copenhagen-Berlin-Copenhagen	4	€ 107,00	€ 128,40	€ 513,60
1.9	Lima-Berlin-Lima	4	€ 943,00	€ 1 131,60	€ 4 526,40
1.10	Seoul-Berlin-Seoul	4	€ 738,00	€ 885,60	€ 3 542,40
1.11	Helsinki-Berlin-Helsinki	3	€ 100,00	€ 120,00	€ 360,00
1.12	Kyiv-Berlin-Kyiv	3	€ 199,00	€ 238,80	€ 716,40
1.13	Sydney-Berlin-Sydney	2	€ 902,00	€ 1 082,40	€ 2 164,80
1.14	Sofia-Berlin-Sofia	2	€ 188,00	€ 225,60	€ 451,20
1.15	Tel Aviv-Berlin-Tel Aviv	2	€ 193,00	€ 231,60	€ 463,20
1.16	Amman-Berlin-Amman	2	€ 488,00	€ 585,60	€ 1 171,20

(Table continued)

1	2	3	4	5	6
1.17	Bishkek-Berlin-Bishkek	2	€ 534,00	€ 640,80	€ 1 281,60
1.18	Islamabad-Berlin-Islamabad	2	€ 670,00	€ 804,00	€ 1 608,00
1.19	Toronto-Berlin-Toronto	2	€ 747,00	€ 896,40	€ 1 792,80
1.20	Paris-Berlin-Paris	2	€ 83,00	€ 99,60	€ 199,20
1.21	Sucre-Berlin-Sucre	1	€ 812,00	€ 974,40	€ 974,40
1.22	Sarajevo-Berlin-Sarajevo	1	€ 258,00	€ 309,60	€ 309,60
1.23	Tallinn-Berlin-Tallinn	1	€ 139,00	€ 166,80	€ 166,80
1.24	Beirut-Berlin-Beirut	1	€ 359,00	€ 430,80	€ 430,80
1.25	Skopje-Berlin-Skopje	1	€ 177,00	€ 212,40	€ 212,40
1.26	Oslo-Berlin-Oslo	1	€ 94,00	€ 112,80	€ 112,80
1.27	Warsaw-Berlin-Warsaw	1	€ 106,00	€ 127,20	€ 127,20
1.28	Bucharest-Berlin-Bucharest	1	€ 150,00	€ 180,00	€ 180,00
1.29	Singapore-Berlin-Singapore	1	€ 635,00	€ 762,00	€ 762,00
1.30	Bangkok-Berlin-Bangkok	1	€ 533,00	€ 639,60	€ 639,60
1.31	Minsk-Berlin-Minsk	1	€ 243,00	€ 291,60	€ 291,60
2.	Flights for talents				
2.1	Shanghai-Berlin-Shanghai	33	€ 788,00	€ 945,60	€ 31 204,80
2.2	New York - Berlin - New York	17	€ 698,00	€ 837,60	€ 14 239,20
2.3	Kyiv-Berlin-Kyiv	15	€ 199,00	€ 238,80	€ 3 582,00

(Table continued)

1	2	3	4	5	6
2.4	Moscow-Berlin-Moscow	10	€ 227,00	€ 272,40	€ 2 724,00
2.5	London-Berlin-London	3	€ 93,00	€ 111,60	€ 334,80
2.6	Stockholm-Berlin-Stockholm	2	€ 108,00	€ 129,60	€ 259,20
2.7	Sydney-Berlin-Sydney	2	€ 902,00	€ 1 082,40	€ 2 164,80
2.8	Minsk-Berlin-Minsk	2	€ 243,00	€ 291,60	€ 583,20
2.9	Amsterdam-Berlin-Amsterdam	1	€ 99,00	€ 118,80	€ 118,80
2.10	Frankfurt-Berlin-Frankfurt	1	€ 123,00	€ 147,60	€ 147,60
2.11	Seoul-Berlin-Seoul	1	€ 738,00	€ 885,60	€ 885,60
2.12	Zagreb-Berlin-Zagreb	1	€ 179,00	€ 214,80	€ 214,80
2.13	Copenhagen-Berlin-Copenhagen	1	€ 107,00	€ 128,40	€ 128,40
2.14	Toronto-Berlin-Toronto	1	€ 747,00	€ 896,40	€ 896,40
3.	Flights for staff				
3.1	Kyiv-Berlin-Kyiv	120	€ 199,00	€ 238,80	€ 28 656,00