ENTERPRISE COMPETITIVENESS MANAGEMENT BY INTRODUCING VIRTUAL REALITY TECHNOLOGIES

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ABSTRACT

The successful functioning of enterprises is characterized by the intensive development of innovative processes. An essential feature of this trend is the need to search for new technologies to promote own company. The widespread use of modern IT forces us to develop new ways of presenting information. It is the 3D tours that have become popular in various fields of human activity. Today it is an actual information product that allows you to show a product or service to a customer much better than you can when viewing photos, videos, reading descriptions. Their main characteristics are interactivity, representativeness, informativity and communicativeness. Placing a virtual tour on the site is an opportunity to attract the attention of potential customers by actually showing a product or service. This method of implementing a virtual tour has a significant advantage - it allows the user not only to get acquainted with the presented production facilities, but also to see their location relative to each other, which will help to understand the production technology and evaluate the technical support of the company.

Keywords: Virtual Technologies, Virtual Tours, Competitiveness Management, Competition, Spherical Panoramas, Innovations.

JEL Classifications: M21

INTRODUCTION

An urgent problem of modern theory and practice of management is the management of enterprise competitiveness. Competition, globalization of markets, large-scale penetration of goods into the market and insufficient scientific and technical support for production determine the consideration of competitiveness management as a priority management problem, the successful solution of which will ensure the survival of enterprises in the new economic environment.

In conditions of such fierce competition, there is an increasing need to find new ways to present information. The widespread use of modern information technology in recent years has forced the development of new ways of presenting it. This is especially true when you need to imagine a large object or space (tourist location, educational institution, enterprise, etc.). The most interesting form, which is increasingly causing interest among researchers, is virtual reality.

A virtual tour is a realistic three-dimensional image consisting of cylindrical, spherical panoramas assembled from photographs, three-dimensional objects and active link transitions

(hotspots). The 3D tour allows you to see the space around you and examine the details of the world in great detail, as well as to rotate and move around a virtual object. Today, the 3D tours are a relevant information product that allows you to show a product or service much better than you can when viewing photos, videos, reading descriptions. Placing a virtual tour on the site of enterprises allows you to attract the attention of potential customers; more effectively promote advertising, stand out among others, improve the image of the enterprise, and increase its competitiveness.

Consequently, virtual technology is one of the most important and pressing problems.

REVIEW OF PREVIOUS STUDIES

Some scientists believe that virtuality is an essential characteristic of modern social reality, and information technology can quite effectively replace direct communication with natural, historical, architectural and other spiritual and real objects of reality (Cheng et al., 2017). That is, the concept of *"virtual"* is understood as modeled using a computer.

Virtual tours are online or offline presentations that allow potential customers to inspect any object (Drobyazko et al., 2019 a & c).

Depending on the type of such a tour, it can be spherical or cylindrical panoramas of objects of any size (exhibits of museums and art galleries, rooms and other hotel rooms, streets and city buildings, park alleys, bird's-eye views, etc.), which move arbitrarily (Hilorme et al., 2019 a&b); Drobyazko et al., 2019b).

A virtual tour is a realistic three-dimensional image consisting of cylindrical or spherical panoramas that are collected from photographs, three-dimensional objects and active link transitions (hotspots) (Jin et al., 2017). Most virtual tours make it possible to *"move"* using interactive navigation keys and their transition indicators (Kaczmarek-Heß & De Kinderen, 2017).

So, today the 3D-tours are a relevant advertising product that allows you to show a product or service to a customer much better than you can when viewing photos, videos, reading descriptions (a much stronger presence effect is created) (Pittl & Bork, 2017). Their main characteristics are interactivity, representativeness, informativeness and communicativeness. Using the 3D tours, it's easier to imagine a person in an unknown place, showing them as real as possible. A distinctive feature of such a software product is vivid images and unforgettable impressions of what you see (Sadigh et al., 2017).

METHODOLOGY

The authors used the method of generalization and comparison, abstract-logical, theoretical generalization and comparative analysis, monographic method of graphical and tabular images of analytical data.

RESULTS AND DISCUSSIONS

In the real estate industry, the 3D tours are also extremely popular. For designers and planners, this is a convenient way to present own work. A virtual portfolio allows a large-scale assessment of the creative idea, to consider everything in detail, to feel the volume and space. In a real estate environment, virtual tours can save time and money. Many companies have adopted this technology and have already a significant increase in sales.

For commercial establishments, travel presentations provide an opportunity to increase their prestige; for customers, this is an additional convenience (they are invited to walk in rows, examine the goods, find out which brands are represented in various departments, and make sure that you can find the necessary products in this place).

Choosing a tourist trip, you also want to get complete information about the place of rest. 3D tours allow you to do this quickly and efficiently (you can see exotic islands, attractions and cultural centers; appreciate the beauty of the landscape).

Some airlines also offer their passengers to evaluate the convenience of aircraft cabin using virtual tours. Viewing the 3D panoramas of the salons of airliners, train compartments, as well as the interior of submarines and spaceships will help you choose the most suitable means of transportation, decide on the choice of profession and fulfill your dream.

For sellers, the main advantages of spherical panoramas and the 3D tours are increasing interest in the company, attracting new customers (virtual tours are of great interest to most visitors, increase the number of potential customers, increase company revenue); originality and attractiveness (presentation and advertising in a way different from most competitors, causes more interest than ordinary photos or text); reduction of time between the creation of a virtual tour and the acquaintance of the buyer with it. If it takes a lot of time to create a booklet and distribute it among potential customers, a virtual tour becomes available to millions of Internet users immediately after its creation.

Virtual panoramas contribute to increasing the company's image of its high-tech, innovative and investment attractiveness (there is something to show partners). They also provide the opportunity to conduct virtual tours for new potential customers; demonstrate equipment of salons, centers, complexes, etc.

As we can see, the expansion of modern business is associated with an increase in the number of regular customers, cooperation with investors and partners.

Given the above, it is worth to determine the advantages and disadvantages of virtual tours (Table 1).

Table 1
ADVANTAGES AND DISADVANTAGES OF VIRTUAL TOURS (AUTHORING)

Advantages	Disadvantages
Availability (the ability to inspect any objects without material costs)	It is impossible to ask a question while watching the tour.
Repeatability (the ability to repeatedly view a 3D tour)	Dependence on developers (professionalism of developers is a determining factor in the final quality of a product)
Constancy (the tour can be seen everywhere and always)	–
Cost (affordable cost of technology implementation)	–
Easy to use	–
Increased company interest	–

At the same time, it is necessary to pay attention to the following threats that arise during the introduction of a virtual tour: the emergence of new competitors who will introduce similar technology; change in the type of industrial premises; inadequacy of development methods; non-repayment of innovation.

From the above we see that the relatively new technology for creating the 3D tours has come a long way from experimental innovation into a powerful tool for visualizing the environment. They can be used in various fields of human activity. With the help of the 3D tours, you can clearly demonstrate the appearance of an office, a store, show inside and out houses and cars for sale, get acquainted with interior decoration, and demonstrate the sights of a tourist trip, allow you to wander through the halls of museums and exhibitions, position the institution. For sellers - this is a real opportunity to declare themselves, for buyers - an opportunity to remotely get acquainted with a product, service, and place at a convenient time for them.

Having considered all the advantages and disadvantages of creating the 3D tours and threats during their implementation, we consider it appropriate to develop an algorithm for the company's actions. The sequence of actions of the company to introduce the 3D tour can be divided into the following 4 stages.

Stage 1: Selection of the developer

This requires a clear statement of the goals and objectives of the project. For a better selection of the enterprise that will develop the tour, a preliminary list of 10-15 enterprises should be formed. The main selection criteria should be: portfolio (at least 5 quality tours), professional experience (from 3 years of presence on the market), and reviews on the Web. It is advisable to include additional video shooting in the selection criteria; details of the cost of services and resources, warranty service conditions.

Stage 2: Drawing up technical specification (TS)

In order to transfer all or part of the functions to third-party specialists, it is necessary to develop and coordinate technical specification that will serve as a guide for further actions. The TS includes the following provisions: a) vocabulary of terms and definitions used below in the text of the TS (necessary to ensure that the customer and the contractor interpret the concepts used in the same way); b) set of requirements for the implementation of a project on ergonomics and aesthetics (optimization for the screens of various devices without scrollbars and empty fields); terms of acceptance of the completed project, including compliance with the deadlines; formats, volume of transfer of content materials to the contractor; procedure for providing the distribution kit and transferring the tour to the site; period of free correction of errors after the adoption of the project; c) the rights and obligations of both parties, including the possibility and permissible limits of changes/additions to the TS in the course of work, aimed at eliminating disputable issues, improving the quality of the future product. The more detailed the TS describes all aspects of creating a tour, the less disagreements will arise and the final cost of the project will be more accurately determined.

Stage 3: 3D tour development

Requirements for the tour being developed begin with the statement of wishes (structure, placement of additional information, overlaying background sound for more information). In general, the tour development process is almost entirely laid down in the TS, on which the result depends.

Stage 4

Further support is needed to correct errors in the structure of the tour, or in its display on the user's screen.

That means that in order the development of a virtual tour for the enterprise will be successful; one must adhere to the above algorithm of actions.

In order to develop the 3D tour by yourself, you should follow a certain sequence of actions. It is worth considering the technology of creating a virtual tour and analyzes the technical means and software. It can be divided into the following 4 stages: search for an idea, photographing an object, processing the resulting images, final design (Figure 1).

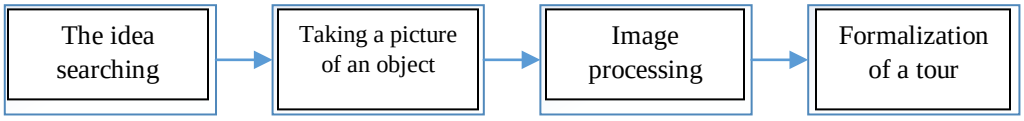

FIGURE 1
STAGES OF THE VIRTUAL TOUR 1 DEVELOPMENT PROCESS (AUTHORING)

So, the first stage of the 3D tour creation process is related to the search for an object. First, the main goal and objectives are clearly formulated. Further, in order to establish contact with representatives, a review of potential objects for the development of the tour and their detailed analysis is carried out. At the previous meeting, the interlocutors are convinced of the practical value of creating the 3D tour. When inspecting production, a survey plan is necessarily discussed and all the wishes of the customer are taken into account.

Today it is possible to create a panorama without using professional equipment and software. However, the best results can be achieved using a digital SLR camera or a modern digital compact, which allows you to mount a wide-angle lens.

RECOMMENDATIONS

For the convenience of creating and using virtual tours, we recommend using the capabilities of Google, which specialists began to actively explore it, improve it and look for new areas of application, as a result of which Google Maps and Google Business View appeared. According to MOZ (https://blog.uamaster.com/google-business-view/; a web resource that raises websites in search engines), the presence of the 3D tour on Google is a positive factor in ranking the site, associated with the *"My Business card"*. If a certain tour is a virtual tour in Google, then, ceteris paribus, the position of the site according to the results of organic issuance will be higher than that of competitors.

CONCLUSIONS

The rapid development of computer technology is constantly increasing the level of competition between enterprises. Regardless of the scope of production, the latest technologies make it possible to stand out among others, improve the image of the company. The main positions in which enterprises are competing today are highly qualified specialists, brand recognition, reputation, investors. It is believed that precisely because of the introduction of the virtual tour it is quite possible to improve the state of the enterprise in the above positions.

The experience of introducing the 3D tours at enterprises shows that such a direction of activity creates the conditions for increasing their competitiveness. The product, which is presented in the form of the 3D tour is *"more informative"*, more representative and attractive. The introduction of the 3D tours will provide an opportunity to increase the number of regular customers and establish cooperation with investors and partners.

Consequently, the decision to provide information about the company with the help of the 3D tour will become an effective tool, thanks to which the potential investors and future employees will be more interested in the brand. Placing the 3D tour on the company's website stimulate many competitors to think about implementing similar technology in their enterprise.

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