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BE AWARE OF FIFTEEN REVOLUTIONARY IT TRENDS TODAY IN BUSINESS EDUCATION

Today at least five richest companies by market value in the world are IT companies. This fact illustrates the current shift in World Business from one hand. From the other hand, such IT trends as Artificial Intelligence, Superfast Internet, Smart Homes and Smart Cities, Mobile Technologies, Electric cars, Robots and Automation in industry, 3D printers, VR and AR, Exploration of Space, Smart and clean energy – entered our life so rapidly that we may not be prepared enough. In the article we list fifteen revolutionary IT trends, how they affect our daily life, we list current difficulties concerning IT teaching and how shall business education react accordingly. We talk about project management agile approach, about information and data, about intellectual analysis, data processing and data visualization.

Keywords: *information technologies, artificial intelligence, business intelligence, data analysis, data visualization, teaching information technologies in business education*

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ПЯТНАДЦАТЬ РЕВОЛЮЦИОННЫХ ИТ-ТРЕНДОВ В БИЗНЕС-ОБРАЗОВАНИИ

Сегодня по крайней мере пять богатейших компаний в мире – это компании с бизнесом в IT-сфере. В статье перечислены пятнадцать революционных трендов в мире IT, искусственный интеллект, супербыстрый Интернет, умные дома и умные города, мобильные технологии, электромобили, роботы и автоматизация в промышленности, 3D-принтеры, виртуальная и дополненная реальность, освоение космоса, умная и чистая энергия, стремительно ворвавшиеся в нашу жизнь. Обсуждаются текущие трудности преподавания предмета «Информационные технологии» в бизнес-образовании, а также как преподавание предмета должно учитывать изменения в нашем мире. Мы говорим о гибком подходе планированию проектов, об информации и данных, интеллектуальном анализе, обработке и визуализации данных.

Ключевые слова: *информационные технологии, искусственный интеллект, бизнес-аналитика, анализ данных, визуализация данных, преподавание информационных технологий в бизнес-образовании*

Such highly ranked IT companies as Apple, Amazon.com, Alphabet (Google), Microsoft, Facebook, Alibaba estimate more than 500 billion U. S. dollars market value each in 2018 and lead in the list of the most valuable companies in the World [1, 2, 3]. Dramatic changes in the World economy have taken place just recent ten years. Such IT trends as Social Networks, Video Blogging, Online Sales and Mobile Phones not just changed our life but also became quite usual.



Fig. 1. Set of software tools studied at IT course *versus* game-changing world IT trends

Other IT trends (see Figure 1) are taking over. The first issue in the list is superfast Internet, including cellular 5G and 6G technologies, American president Donald Trump likes to see 6G in the United States alongside 5G “as soon as possible” [4]. Another trend, is Artificial Intelligence (AI). Elon Musk, currently most famous engineer and tech entrepreneur known by his innovative companies Tesla, SpaceX, Open AI has been warning the world calling AI more dangerous than nuclear warheads and saying that there needs to be a regulatory body overseeing the development of super intelligence [5]. Concerning electric vehicles, Belarusian president Alexander Lukashenko is the first president in the World who gave sincere compliments to the electric car Tesla [6] talking at the meeting with the members of the National Academy of Science about clean energy, electricity, nuclear power plant, cars and electric cars [6].

In this article, we list 15 game-changing IT trends (see Figure 1) that we had better be aware of, when teaching Information Technologies in Business Education. Besides conventional topics on Microsoft Windows, MS Office (Word, Excel, PowerPoint, Publisher, Access), Data Bases, Enterprise Information System, Computer Graphics, Computer Networks, Computer Hardware, Introduction to Programming, it is very beneficial to present also new things. Student might be very interested in Project Management tools, Computer Design, Web Design, Video Creation, Cloud Technologies, Internet Services, Mobile Technologies, Artificial Intelligence, Business Intelligence and Business Analytics (see Figure 2), Virtual and Augmented Reality in Education.

Students should know about the modern information technologies already at the earliest stage of their study at university. Unfortunately, it happens much later already after university at work when young specialist faces practical need to master IT. The authors of this article believe that this process should start much earlier, student should get acquainted with the up-to-date changes in IT already in the beginning of their study. And this is not so easy to be aware of the newest changes in the sphere and introducing corresponding changes into the educational process.

When we teach IT to international students most of the time we use English language. It means that the all necessary software for practical lessons has to be in English. And that is more or less technical issue unlike the lack of the licensed versions of the modern software tools. In addition,

most of the time modern software requires costly up-to-date hardware facilities, computers or laptops. Universities can't afford it.

The advantage of teaching students IT in Business Education nowadays is that most of students possess modern and fast personal laptops and tablets, and so the language of software interface can be easily switched into English for them. Very often students take their computers to the classes and so we may rely on them too during practical classes. An important step is to get proper software, and here the students themselves often help again finding and reviewing free alternative software applications. We have also had experience of students writing emails to the software developers and requiring an academic version or the license key for a limited period of use (which is usually enough to get acquainted with the software). One point in mind, the Western software might not be adapted to the Belarusian reality.

What could really help a lot is if we could attract the professional developers, business analytic experts, project managers from IT to contribute the educational process. From the other hand, make bridges with IT companies the producers of the modern software and request not just plain demo version but a more advanced version of the software with demos and tutorials that will additionally promote their software on the Belarusian IT market.

The teacher in many case may improve if on top of the plain new software overview he or she may organize good and practical examples how the software tools may address real problems and real tasks.

We have listed several issues that are valid not just for students and their IT teachers but for those who study at the magistracy, retraining and various educational courses.

Often, people find out about a new software product after a commercial offer that arrives at their organization (the seller shows the best aspects of the product, but in fact everything turns out differently). If these issues are solved at the level of training: to conduct a comparative analysis, to teach students with examples, the results of preparing new workers for our Belarusian business can be much better.

Project management agile approach with Kanban and Scrum methodologies made team work more productive and teams more competitive in comparison to those who stick to traditional approach in computer software development. Similarly, traditional educational process may gain from application of the agile approach. In addition, here we suggest introduction students into such software project management tools as Jira, Trello, Basecamp, Asana, MS Project Manager, Slack, Easy Redmine etc. [7].

Nowadays free online courses provide universal access to the world's best education. Web platforms for online courses and online study are: Coursera (Stanford), EdX (Harvard), MIT Open Courseware, Udacity, Codecademy, Khan University and others [8].

Most known collaboration platforms are Office 365, G Suite, Dropbox Business but actually vast range of collaboration software is available nowadays too [9]. Google services in general are becoming increasingly popular due to a number of advantages over commercial desktop versions.

Another extremely important issues nowadays in Big Data, and any kind of tools that help to work efficiently with data and with information. We would like to draw your attention to the field of software for Analytics and Business Intelligence. Very illustrative figure of well-known Garter Analytic agency is so called "Magic Quadrant for Analytics and Business Intelligence Platforms" (see Figure 2) [10], showing most popular, most powerful, world widely used software platforms that help see and understand your data, and armor decision maker business man with adequate dashboards full of most meaningful real-time from one hand, and interactive from the other, tables and graphs.

Thus the examples of reputable analytical agencies may open new horizons to us. And we finally learn to include in the curriculum new disciplines, the contents of which correspond to the new challenges that IT throws to us.



Fig. 2. Magic Quadrant for Analytics and Business Intelligence Platforms [10]

In conclusion, we would like to share our personal experience of teaching the information technologies in business education – as professors and teachers we can often rely on our young students when teaching them IT subjects. Our experience shows that once you succeed to get students interested in the topic they could provide very important and valuable contribution to the educational process and at the same time keeping the focus and interest of the rest of the students to the numerous topics.

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