An Analysis of Network Effects and the Financial Performance of Online Learning Platforms

Marian Stan
Mihai Ciobotea
The Bucharest University of Economic Studies, Romania
marian.stan.ro@gmail.com
mihai.ciobotea@gmail.com

Abstract

With the advances in the cloud computing, the Internet, and mobile communications technologies in the last two decades, a large number of business opportunities have emerged. The online learning providers bring together individuals and organizations so they can interact in ways not otherwise possible in order to generate value and utility. The global online learning market represents a growing and attractive opportunity for the incumbents from this sector. All of the analyzed platforms have recorded consistent growth over the years. Our research aims to develop a better understanding about the network effects and the financial performance of the major online learning platforms. We have focused on the context of Massive Open Online Course (MOOC) platforms since they have a higher impact on the online learning communities, analyzing their market segments and financial performance.

Key words: online learning platform, MOOC, network effect, knowledge marketplace
J.E.L. classification: F23, M29

1. Introduction

The online learning has recorded a significant growth due to a number of factors including attractive costs, convenience, or novelty. Universities can use the online learning to promote or extend their courses and even to offer online degrees. Individuals can address conveniently their newer skills gaps created because of rapidly changing working environment. Organizations can used online learning to train their workforce or to offer access to online learning providers as an extra benefit for their employees. Instructors can deliver training classes to an audience that could not be reached otherwise and securing a higher revenue. These can be achieved by using the online learning platforms. Their scalable software architectures can make possible an efficient interaction between a large numbers of users.

A platform is defined as "a business based on enabling value-creating interactions between external producers and consumers" (Parker et al., 2016). An online learning platform is a set of interactive online learning services that provide the actors involved in education process with the information, tools and resources to support and enhance educational content delivery and management.

The introduction of online learning platforms has represented a significant step in the process of democratizing the education at global level. Their evolution since launching until the present days is an interesting process that can be analyzed from different perspectives. These platforms have initially started as local or regional initiatives and have gradually extended to national and global level. In many cases, these were initiated by top universities such as Stanford, MIT or Harvard. If initially, the online learning platforms did not have a commercial purpose; their original promises were to deliver a free education. Later on, they become genuine corporations in which private investors of venture capital (VC) funds have invested significant amounts of money for development.

2. Literature review

In an internet-based economy, technology plays an important in enhancing demand-side economies or network effects. The companies that attract more participants offer a higher average value per recorded transaction (Van Alstyne et al., 2016).

Our research focuses on online learning platforms. They becomes more flexible, and are available for individual learners wherever they have computers, mobile phones, and internet access. They can better meet the needs of learners of different ages and different learning goals (Jie, 2021). In the academic literature, certain authors identifies distinct categories of online learning platforms such as Massive Open Online Courseware (MOOC) and Knowledge Marketplaces (KM) platforms (Cisel et al., 2021). Among MOOC platforms, the most representative are Coursera, EdX, Udacity or FutureLearn while the Knowledge Marketplaces platforms are represented by Udemy, Domestika or Skillshare. The MOOC platforms are typically collaborating with institutions of higher education or companies to produce course content in contrast with the online knowledge marketplaces that allow anyone to broadcast courses and charge a fee for them. Certain authors (Ansah et al., 2020) argue that in extending MOOCs globally, it is essentially to offer a localized courseware content. We see this already happening to a certain extent on certain online platforms such as Udemy. In the book "More than a moment" (Krause, 2020), the author describes the evolution of MOOC platform as a raise and fail, specifically, they failed to disrupt the way universities teach undergraduate students and award degrees. A slightly different opinion regarding MOOCs we find on an earlier paper (Haber, 2014), where the author states that the MOOCs have already demonstrated a "global appetite for high-quality, college-level courses and have succeeded in triggering a transformation within institutions of higher learning".

3. Research methodology

In the current research, we have examined the financial reports from the public companies running the online learning platforms such as Coursera, Udemy, EdX (U2, Inc.) in order to assess the economic performance and identify their major sources of revenues and expenses. Furthermore, we have performed a thorough review of the public data available on the official websites pertaining to the online learning platforms in order to identify the main features of their offers and the market segments addressed. Based on this information, we have conducted a comparative analysis of their business models and have examined the most important strategic moves that these companies have pursued in order to maintain a significant growth over the years.

4. Findings

4.1 The global online learning market

The current estimations for 2022 for the segment of online learning platform are as follows: the revenues of the online learning platforms will reach 57.25 billion US dollars. By 2026, the revenue is expected to reach 63.21 billion US dollars and the number of learners is expected to amount to 936.8 million (Statista, 2022). This suggests that there is a huge opportunity for online learning platforms to extend on different market segments.

4.2 Online learning and Higher Education

The most prestigious universities such as Stanford University and Harvard University have offered free access for a number of online courses of from various domains such as computer science, mathematics, engineering, business and personal development. Furthermore, the major online learning platforms have collaborated with universities to generate learning content. Recently, it can be seen that more and more courses are created by the top technology companies such as Microsoft, Google, Salesforce, Amazon Web Services, DeepLearning.AI, etc. For example, Coursera has increased the percentage of such classes from 31% in 2020 to 39% in 2021, as illustrated in the Table 1 below.

Table no. 1 The percentage of new non-university courses

| Online learning platform	2020	2021
Coursera	31%	39%
EdX	16%	26%
FutureLearn	38%	51%

Source: ClassCentral.com, 2021

4.3 Network effects on online learning platforms

According with certain authors, "a network effect describes what happens when products get more valuable as more people use them" (Chen, 2016). The same author argues that the network effects can help as a protective barrier against competition. The online learning platforms brings together different categories of actors (instructors/trainers/professors or course producers, the students/learners/users and institutions). The platforms connect these actors that otherwise would not easily connect. As a result, the platforms generates network effects. To be more specific, the online platforms generates cross-side network effects, which means that the process of enrolling more students will attract more course producers or instructors to generate content on the platform. This in exchange generates more revenues for both platforms and instructors.

At Udemy, revenue incentives attract and motivate sixty-eight thousands instructors to create and regularly refresh the online learning content, currently totaling over 196000 courses. (Udemy.com, 2022). According with company data, the payments to course instructors have reached 180 million US dollars in the last 12 month, with top instructors earning more than one million US dollars per year. The courses are provided in 75 different languages, each language acting as a mini-marketplace. The figure 1 below illustrates the content generation engine as a result of cross-side network effect.

Figure no. 1 Udemy content generation engine
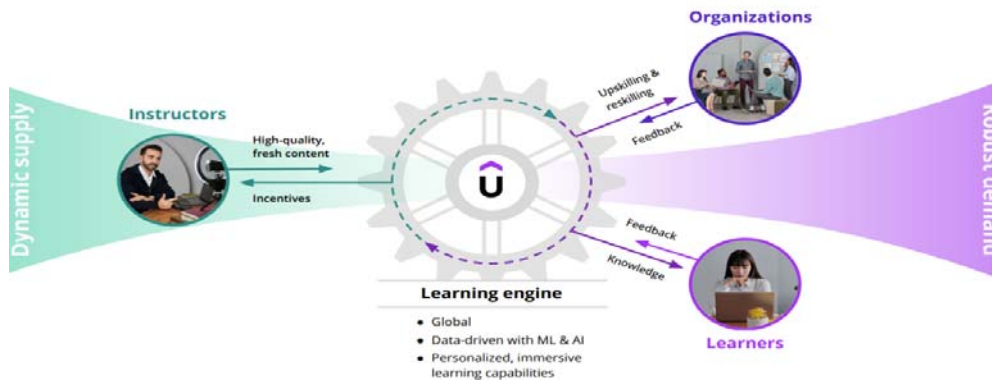
Source: Udemy Investor Presentation Q1 2022

At Coursera, the high number of learners and potential for revenues attract more content to be generated from universities or industry content providers. Consequently, the "fremium" content and credentials from top universities and technology companies attracts more learners. Equally important, quality content from top universities attracts various institutions (private and public organizations or campuses) which in return generates more learners and revenue for the platform and content producers. The Figure 2 illustrates the cross-side network effects for Coursera.

Figure no. 2 Coursera platform advantage and cross side network effects.
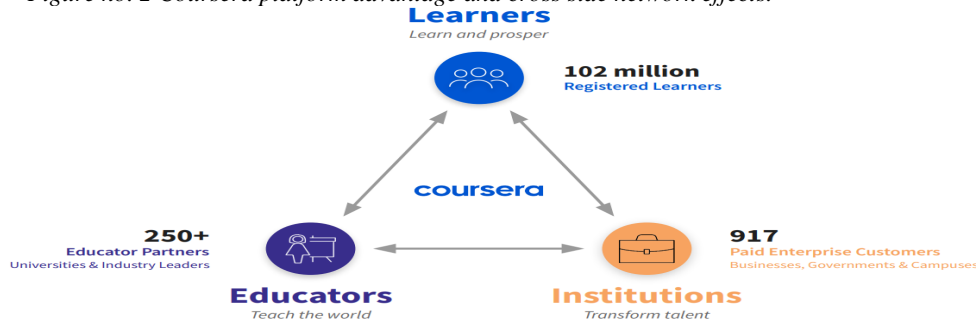
Source: Coursera data, as of March 31, 2022

4.4 The market value of the online learning platforms

Coursera is the most valuable publicly traded MOOC platform, with a market capitalization of 2.354 billion US dollars (based on the share price from 17 June 2022). This is listed on NYSE (New York Stock Exchange) under the ticker symbol COUR.

Udemy went public at the end of October 2021 at 29 US dollars per share and has been listed on NASDAQ, under ticker symbol UDMY.

EdX platform, initially a non-profit MOOC platform, has been acquired by 2U, Inc. in November 2021 for 800 million US dollars in cash. 2U, Inc. is a public company listed on NASDAQ, under ticker symbol TWOU. Currently, the market value of 2U has dropped below the acquisition cost of EdX platform, reaching less than 650 million US dollars on second week of June 2022.

Skillshare is a for profit knowledge marketplace for creative domain that has been founded in 2010 and is headquartered in New York. The company is in its pre IPO phase (initial public offering) and had so far 11 founding rounds from 26 investors. The company has raised so far over 137 million US dollars in funding. Among the company investors, there are Adobe, Spero Ventures and Union Square Ventures. (CrunchBase.com, 2022). The estimated market value of the company (post-money valuation) is in the range of $100M to $500M as of August 10, 2020 (PrivCo.com, 2022).

Udacity is a for-profit MOOC platform founded by founded by Sebastian Thrun, David Stavens, and Mike Sokolsky. According with Crunchbase.com, the platform has raised a total of 240 million US dollars in funding over 12 rounds from 18 investors. The estimated market value of the company (post-money valuation) is in the range of 1 to 10 billion US dollars as of Sep 30, 2020 (PrivCo.com, 2022).

Domestika is private, for-profit online course marketplace for creatives. The company had a series C funding for 20 million US dollars from Late Stage Venture. On January 2022, the platform has raised another 110 million US dollars in Series D round from GSV Ventures and Zeev Ventures. This brings the company valuation to over one billion US dollars.

FutureLearn is a private company owned by The Open University and SEEK Ltd. In April 2019, in a press release, the company announced that SEEK Ltd invested 50 million GBP in the company. In return, SEEK has received a 50% stake in the company.

The Table no 2 below illustrates the market values of the online learning platforms based on the public data. Coursera, Udemy and 2U valuation are based on their share price as of 17 June 2022. Skillshare, Udacity and Domestika are evaluated based on Crunchbase.com data and FutureLearn valuation is based on company's press release from 29 April 2019.

Table no. 2 The financial valuation of the online learning platforms

Online Learning Platform	Market Capitalization
Coursera (COUR)	2.35 Billion USD
Udemy (UDMY)	1.712 Billion USD
2U, Inc. /EdX (TWOU)	647.401 Million USD
Skillshare	100 - 500 Million USD*
Udacity	1 Billion USD*

| Domestika	1.3 Billion USD*
FutureLean	122-129 Million USD**

Source: Yahoo Finance, 2022, *Crunchbase.com, 2022 and **FutureLearn, 2019

4.5 Financial performance of the online learning platforms

4.5.1 Coursera Revenue and Gross Margin per market segments

The company operates on three major segments: Consumers, Enterprise and Degrees. As illustrated in the Figure 3 below, the company has the largest margin on Degrees segment (100%) and the largest revenue from Consumers segment. There is no content cost attributable to the Degrees segment as students pay tuition directly to the university, and the university pays the company a fee based on the amount of tuition.

Figure no. 3 Coursera Revenue and Gross Margin across market segments.
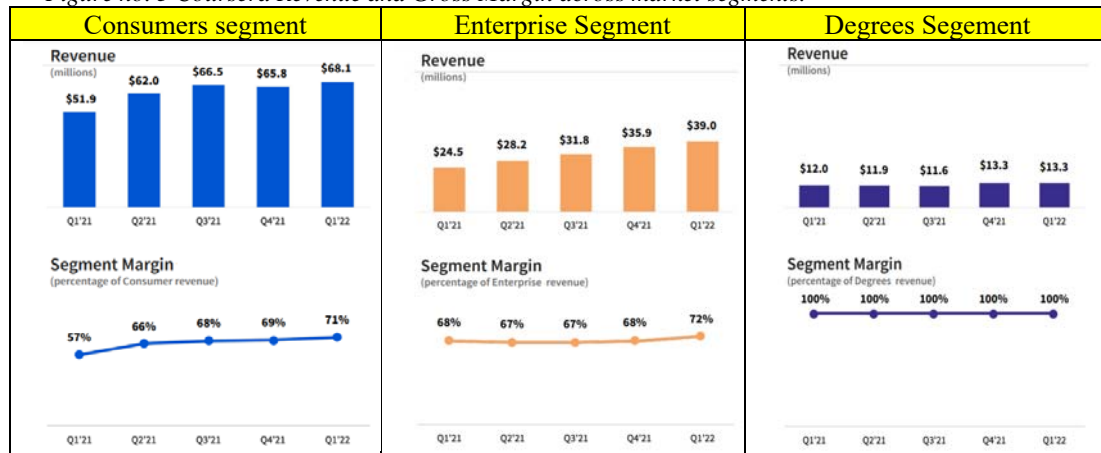
Source: Coursera, 2022

4.5.2 Udemy Revenue and Gross Margin per market segments

As illustrated in the Figure 4 below, based on the most recent data from first quarter of fiscal year 2022, the company has recorded the highest revenue from the consumers segment (87.3 million US dollars) while the Enterprise/Business segment has the highest margin (66%). The Enterprise segment has the highest growth year over year (77%).

Figure no. 4 The evolution of the revenue and gross margin per segment.
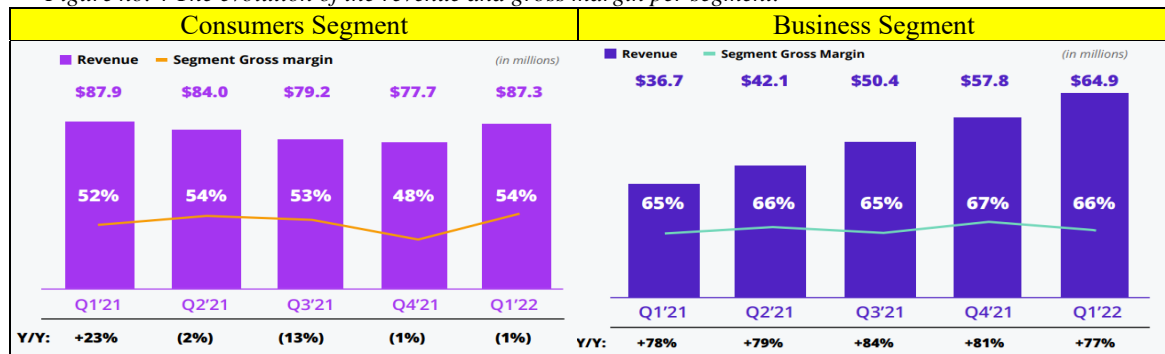
Source: Udemy Investor Presentation Q1 2022, Udemy.com

From the data illustrated in the Figure 5 below, it can be noticed an increase of overall contribution to the business segment to the total revenue, from 29% from first quarter of fiscal year 2021 to 43% in the most recent two quarters. It may be possible that the company's business segment to bring the highest contribution to revenue generation in the next years, assuming the same rate of growth (year

over year). Furthermore, the total revenue has increased with 22% comparing with the same period of the previous year, reaching 152.2 million US dollars in Q1 2022.

*Figure no. 5 Revenue contribution and overall gross margin per segment.*
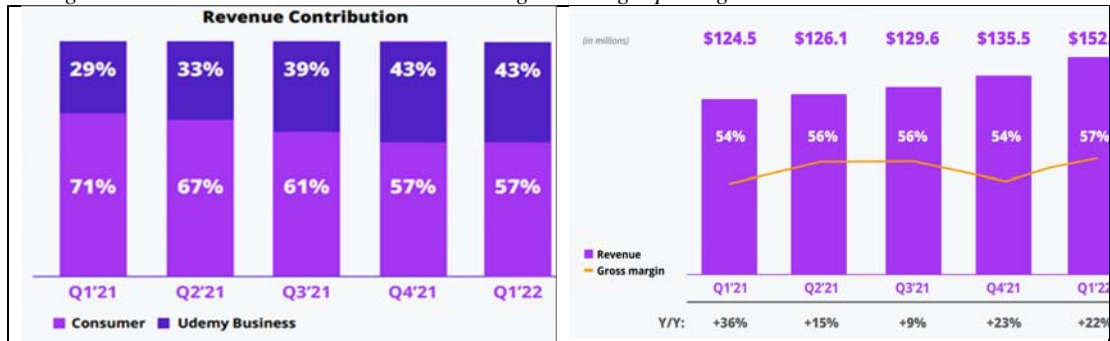
Source: Udemy Investor Presentation Q1 2022

4.6 The evolution of the learners on Coursera and Udemy platforms

4.6.1 The evolution of learners for Coursera

As illustrated in the Figure 6 below, we can see that the company has added more learners in the last six quarters, with over five millions new registered learners per quarter. This is the largest number of new registered learners recorded by an online learning platform during and post pandemic period.

Figure no. 6 The evolution of the total and new learners on Coursera platform
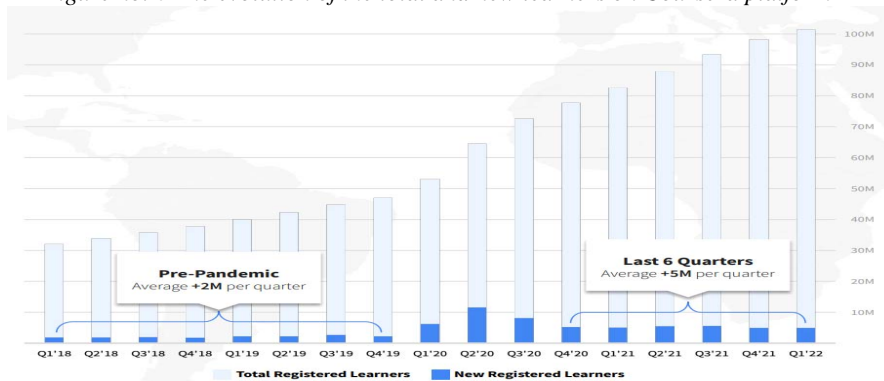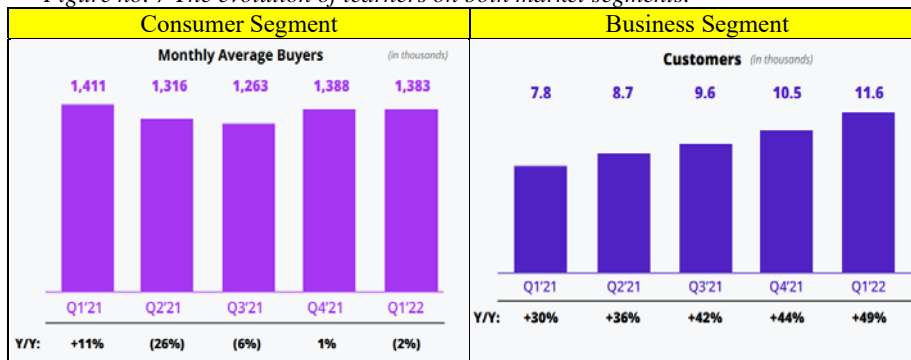

Source: Coursera.org, 2022

4.6.2 The evolution of learners for Udemy

The Figure 7 below shows a small increase in the new learners from individual consumer segment and a consistent increase of customers from Enterprise/Business segment.

Figure no. 7 The evolution of learners on both market segments.

Source: Udemy Investor Presentation Q1 2022

4.7 Learner's Switching Costs, Multi-Homing and Dropouts

After reviewing the offerings of both MOOC and KM platforms, there is a significant percentage of free classes offered by these platforms. Furthermore, the subscription and one-time payment business models used by the online learning platforms allows the learners can use and attend classes on multiple platforms. The large share of free MOOCs – in combination with relatively low switching costs between platforms – provides consumers with further incentives for multi-homing. Therefore, the online learning platforms need to leverage the available software technologies (big data/ learning analytics, machine learning, CRM, subscription management software, etc.) in order to better understand their customers and to fit their offerings to learners needs. With lower barriers to entry in the sector and with low switching costs from learners' side, the online learning platforms will likely have an increasingly higher competition either from industry incumbents or from new players. In addition to the above, there is another point to consider is the attrition of the learners / student dropouts. According with certain authors (Reich et al., 2019), most of the students that have registered to an MOOC leave soon after enrollment. A percentage of 52% of the students that register for a MOOC never enter the courseware. This results in additional challenges for online learning platforms and additional measures needs implemented in order to achieve a higher success rate for registered learners.

5. Conclusions

In the context of a global online learning market, the platforms have a major potential for development. There is a major shift toward online education and the mobile technologies have offered access to an increasingly larger number of learners.

The Enterprise segment is a new source of growth for the analyzed platforms and the margins seems to be more attractive comparing with individual consumers segment.

The analyzed online learning platforms have recorded very attractive margins on all the analyzed segments. This will allow the platforms to have access to capital, to thrive and to continue growing. In the same time, the lower barriers to entry and attractive margins may determine the players from different industries to consider entering on the online learning market via an acquisition, a joint venture or even a direct investment.

The online learning platforms collect a large volume of data from learners therefore, they can leverage the big data / learning analytics and can build more accurate machine learning algorithms in order to better adapt to the learners needs.

As they continue the growth process, the online learning platforms benefit from cross-side network effects.

6. References

- Ansah, R.H., Ezeh, O.V., Teck, T.S. and Sorooshian, S., 2020. The disruptive power of massive open online course (MOOC). *International Journal of Information and Education Technology*, 10(1), pp.42-47. DOI: https://10.18178/ijiet.2020.10.1.1337.
- ClassCentral.com, 2021. *A Decade of MOOCs: A Review of MOOC Stats and Trends in 2021*, [Online], Available: https://www.classcentral.com/report/moocs-stats-and-trends-2021/, Accessed: 17-June-2022
- Coursera.org, 2022. *Investor Presentation Q1,* [Online], Available: https://investor.coursera.com/overview/default.aspx, Accessed: 17-June-2022
- Cisel, M. & Pontalier, D., 2021. Knowledge Marketplaces: An Analysis of the Influence of Business Models on Instructors' Motivations and Strategies. *International Review of Research in Open and Distributed Learning,* 22(3), 142–158. https://doi.org/10.19173/irrodl.v22i3.5459
- Crunchbase.com, 2022, [Online], Available: https://www.crunchbase.com/organization/skillshare, Accessed: 17-June-2022
- Crunchbase.com, 2022, [Online], Available: https://www.crunchbase.com/organization/udacity, Accessed: 17-June-2022
- Crunchbase.com, 2022, [Online], Available: https://www.crunchbase.com/organization/domestika, Accessed: 17-June-2022

- FutureLearn, 2019. *£50M investment in social learning platform FutureLearn,* [Online], Available: https://www.futurelearn.com/info/press-releases/the-open-university-secures-50m-investment-in-social-learning-platform-futurelearn , Accessed: 17-June-2022
- Haber, Jonathan., "MOOCS" , (p.167) The MIT Press Essential Knowledge Series, 2014, ISBN 978-0-262-52691-3
- Jie Li, 2021. Design, Implementation, and Evaluation of Online English Learning Platforms, *Wireless Communications and Mobile Computing,* vol. 2021, Article ID 5549782, 11 pages, 2021. https://doi.org/10.1155/2021/5549782
- Krause, Steven D., 2020. *More than a Moment*, 1st Edition. Utah State University Press. Kindle Edition, 2020
- Pomerol, Jean-Charles, Epelboin Yves, Thoury Claire, 2015. *MOOCs: Design, Use and Business Models*, 1st edition. John Wiley & Sons, Ltd.
- Privco.com, 2022, [Online], Available: https://system.privco.com/company/skillshare, Accessed: 17-June-2022
- Privco.com, 2022, [Online], Available: https://system.privco.com/company/udacity, Accessed: 17-June-2022
- Privco.com, 2022, [Online], Available: https://system.privco.com/company/domestika, Accessed: 17-June-2022
- Reich, Justin and Ruipérez-Valiente, José A., 2019. *The MOOC pivot*, [Online], Available: https://www.science.org/doi/abs/10.1126/science.aav7958, Accessed: 17-June-2022
- Rothe, H., Täuscher, K. and Basole, R.C., 2018. Competition between platform ecosystems: A longitudinal study of MOOC platforms. *Research Papers* 134, [Online], Available: https://aisel.aisnet.org/ecis2018_rp/134, Accessed: 17-June-2022
- Statista.com, 2022 [Online] Available: https://www.statista.com/outlook/dmo/eservices/online-education/online-learning-platforms/worldwide#revenue, Accessed: 17-June-2022
- Techcrunch.com, 2019, [Online] Available: https://techcrunch.com/2019/04/29/futurelearn-takes-65m-from-seek-group-for-50-stake-in-uk-online-degree-platform/#:~:text=In%20a%20press%20release%20announcing,rapidly%20expanded%20by%20U.S.%20edtech Accessed: 17-June-2022
- Van Alstyne, Marshall. W., Parker, Geoffrey G, Choudary, Sangeet Paul, 2016. Pipelines, Platforms, and the New Rules of Strategy. *Harvard Business Review*, April 2016 issue (pp.54–60, 62), [Online], Available: https://hbr.org/2016/04/pipelines-platforms-and-the-new-rules-of-strategy, Accessed: 17-June-2022