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2U: Higher Education Rewired

It is my belief that the greatest educational experiences in the world are all about being part of something big.

– Chip Paucek, 2U Co-founder and CEO

The 2019 2U Partner Symposium had kicked-off in Washington DC. Queen’s Bohemian Rhapsody was playing in the background and the atmosphere was festive. Over 300 of 2U’s partners—universities’ provosts, deans, and program directors – gathered in a hotel ballroom for what was 2U’s sixth event and the largest of its kind. Christopher “Chip” Paucek, 2U’s co-founder and chief executive officer, got on stage to welcome everyone and to introduce Andrew Hermalyn, 2U’s President of University Partnerships and Services. Hermalyn, who was 2U’s first intern, oversaw 1,300 of 2U’s employees and was tasked with presenting the 2U’s newest vision: “Career. Curriculum. Continuum. A construct for lifelong learning in the 21st century.” Once on stage, he emphasized:

Today, the average life expectancy in the United States is 79, and millennials have a 50 percent chance of living to 100. In past centuries, people would study, get a job, and retire at age 65. But times have changed, and it is now estimated that the average person will have 12 to 14 careers in a lifetime.

According to Hermalyn, 2U believed that universities were best positioned to respond to the challenge and meet the new patterns of education demanded. The ‘Career Curriculum Continuum’ represented a spectrum of offerings from 2U’s university partners—from short courses, dedicated bootcamps, professional certificates to complete university accredited degrees. The expanding needs of rapidly changing student profiles would be met by lifting the limitations of universities’ physical grounds and relying on the internet to broaden outreach. Education would be offered at multiple price points in a variety of formats, and would allow learners multiple ways to engage. 2U, Hermalyn continued, “would be the agile enabler in the universities’ quest to fill these needs through online digital delivery.”

As an example of the changing landscape, Hermalyn cited the Harvard Business Analytics Program (HBAP)^a, a blended learning program that incorporated asynchronous interactive online lectures, weekly live video classes, in-person immersions and an online peer-to-peer learning community, all

^a Harvard Business Analytics Program, <https://analytics.hbs.edu/>

Professors Yael Grushka-Cockayne and Karim R. Lakhani prepared this case. It was reviewed and approved before publication by a company designate. Funding for the development of this case was provided by Harvard Business School and not by the company. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

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powered by 2U. Launched in 2018, HBAP was a nine-month executive certificate program offered and taught jointly by faculty across three Harvard University schools (Business School, Engineering and Applied Sciences, and the Graduate School of Arts and Sciences). The program had attracted learners with an average of 17.5 years of work experience, an average age of 42, a majority with advanced degrees, each paying over \$50,000 for the certificate.

As Hermalyn concluded his presentation, a Dean who was one of 2Us earliest partners, leaned over and whispered to Paucek, “You own 60% of my graduate degree revenues. Now you want to cash in on each and every course? Are you trying to fill in all the blanks?”

While the Dean was smiling, Paucek could not help but notice the murmurs in the room. Were eyebrows being raised or was he imagining it? Was 2U growing in a way that risked alienating their most important stakeholders, the brand named universities themselves? 2U had made the case that a joint program design, content creation, technology and marketing partnership was the preferred way for universities to embrace digital transformation. Paucek was familiar with the “make, buy, or partner?” question university leaders faced. Were these leaders going to change their approach and start investing in the digital transformation themselves to avoid giving 2U too much of their revenues? How was Paucek to deal with the concerns of skeptics regarding 2U’s expanding portfolio?

The Thousand-year-old Business Model

For almost 1000 years, our university partners have been in the center of learning and higher education. Oxford was founded in 1096. UNC Chapel Hill and Georgetown University were founded in 1789. To put that in perspective, Coca-Cola, which is probably the best known brand in the world, was founded a hundred years later in 1886.

– Andrew Hermalyn

The University of Bologna in Italy and the University of Oxford in the United Kingdom were both established at the end of the 11th century. The first institutions of higher education in the United States (U.S.) appeared approximately 500 years later with the arrival of the European settlers to America. Harvard College, founded in 1636 in Cambridge, Massachusetts, was the first college on the continent and soon thereafter other colleges were established in the northeast. At the start of the nineteenth century, colleges began broadening their offerings from Christian ministry education to include medicine and law. Agriculture and engineering were added following the passage of the Land-Grant College Act of 1862 (the Morrill Act) and the emergence of land-grant colleges.^b

Over the years, the role of universities was highly influenced by global social and economic needs. Until modern times, the role of academics was to be good teachers, not to generate new ideas or invest in research. The value provided by universities centered on certifying those completing the course work. During these times, institutions of higher education focused on convening students on physical grounds, with the faculty taking on the role of “transmitters of knowledge.” The classrooms and physical plant facilitated such transmission.¹ Only during the nineteenth century did the role of the academic change as governments and leaders began relying on universities for the development of research. With this change in focus came the notion of academic freedom to support the open-ended

^b The Morrill Act provided states with grants of land (30,000 acres for each congressional seat) to finance the establishment of colleges specializing in agriculture and mechanical research, known as “A&M” colleges.

long-term pursuit of intellectual knowledge. Support for, and use of, academic research output increased, with universities and academics playing a critical role in the growth of the economy.

By the 1950s, higher education entered an era of *massification*. From less than 3% of the college-aged population attending universities at the start of the nineteenth century, numbers reached a global average of 56%, and 65% in the U.S by 2007.² By 2017, there were 4,298 degree-granting postsecondary institutions in the U.S. Of those, 1626 were public, 1687 were private nonprofits, and 985 were private for-profits.³ Over 19 million students were enrolled in these institutions. The University of Central Florida in Orlando was the largest university in the U.S. with over 60,000 enrolled students.

Universities were often led by a president or a chancellor, and various academic schools or departments were headed by deans. Most schools had their own administrative and support staff, operating in functions such as admissions, information technology, career services, and student affairs. While course and degree content development were owned by the faculty, decentralized across individual schools and departments, other services such as dining and cleaning services, bookstore operations, maintenance, security, and building construction, were often centralized and outsourced. A recent academic study conducted at the Texas A&M's College of Education and Human Development on outsourcing in higher education found that most institutions contracted activities externally to reduce costs, eliminate budgetary constraints, and improve the quality of the service.⁴ According to this study, the decision to outsource depended on the size of the institution, the activity being outsourced, and the expected benefits. Larger institutions, or those with access to external capital and human resources able to deliver the service, were less inclined to outsource.

Research by HolonIQ, an education market research company, found that global education expenditures^c in 2015 stood at \$5.2 trillion and were expected to reach \$10 trillion by 2030.⁵ General operating expenses at public and private institutions increased approximately 23 percent from 2013 to 2018, reaching \$77.7 billion.⁶ As public subsidies averaged 11.2% lower than before the 2008 recession,⁷ universities were increasingly relying on tuition as a primary source of revenue (see **Exhibit 1** for details states' net tuition as percent of total educational revenue in 2017).

Universities were also facing significant headwinds and some had suggested that the higher education bubble was due to burst.⁸ Declining trends in student enrollment supported this suggestion. Tuition was rising – between 2008-09 and 2018-19, average published tuition and fees rose by \$930 (2018 dollars) at public two-year colleges, by \$2,670 at public four-year institutions, and by \$7,390 at private nonprofit four-year colleges and universities. See average tuition and fees in 2018 dollars in **Exhibit 2**. Student debt was increasing faster than any other U.S. household debt, up 157% in the last 11 years⁹ reaching \$137.5 billion in 2019, nearly six percent above the rate of inflation since 1971.¹⁰

Only 3% of educational expenditure were on education technology. Global education technology expenditures were expected to grow from \$152 billion (2.6% of total education expenditure) to \$342 billion by 2025 (4.4% of spend). Venture capital investment in global education had been increasing, from \$1.8 billion in 2014 to \$8.2 billion in 2018, with \$5.2 billion of that in China.¹¹

2U Origins

2U was founded in 2008 by John Katzman, Jeremy Johnson, and Chip Paucek. All three had experience in the education-technology (ed-tech) space. Katzman was the founder of *The Princeton Review*, a specialist in college preparation and testing services, Johnson as an entrepreneur and startup

^c Including Pre-K, K-12, post-secondary, and corporate training.

founder in the ed-tech space, and Paucek ran Hooked on Phonics, a for-profit organization that specialized in developing educational materials. Reflecting on the initial motivation for founding 2U (at the time called '2tor, Inc. '), Paucek explained:

We really did think that it was strange that online higher education was left to lower tiered schools. It did not make sense to us. We felt that the technology was there to do something great, even in 2008.

Paucek was on his third venture with 2U. While at Hooked on Phonics, which focused on the K-12 education space, Paucek observed Hooked on Phonics' sister company Laureate's rapid growth in the higher-ed space. At the same time, Katzman had the idea to help schools get online. Specifically, Katzman was in discussions with the Dean of the Rossier School of Education at University of Southern California (USC). Katzman wanted to educate teachers in a different way.

Paucek continued:

To us it was clear. The internet was not going away. What was not clear was could we get institutional will really behind it? Could we get, not just the full degree, but also the full faculty, the real thing?

James Kenigsberg, 2U's chief technology officer and a founding team member who worked with Katzman at The Princeton Review, reflected on the early 2U days:

Sometime in 2008, we realized that online degrees don't have to be of low cost and low quality. Back then, people would not buy anything online unless it was cheaper. In 2008, that was what it was like for online education. It was full of people who offered it at half the price. In reality, graduation rates were terrible. We realized that it is important for everyone to do what they do best. We know the universities, especially the oldest brands in the world, have been doing this for hundreds of years. Universities are fantastic in teaching, but they do not know how to run their own processes and technology. You know what we are extremely good at? Technology and operations. Finding money and taking risks.

Contracts were slow in reaching signing. The support of university leaders, provosts, school deans, and ultimately the entire faculty was necessary to secure each contract. The USC contract took over a year to secure. Venture capital funds were only raised in 2009, once the contact with USC was signed. Until then, 2U was self-funded. In 2012, Katzman left 2U to pursue other ventures, and founded Noodle, his third ed-tech venture. Paucek stayed on as CEO and has led 2U since.

The first enrollment form, received by fax in 2009, was from USC for 120 students. Looking back, Paucek recounted:

Early on we decided to have live classes. That was so against the curve, against the grain. Everything in 2008 was asynchronistic. Now I think today, it is a big part of how you get the relationships between people, even in a class of 90. People can touch and feel one another through the internet in a way that would not be obvious. And you get to know your faculty, you become part of it.

2U Business Model

Following the launch of the USC School of Education's online degree, 2U began expanding. In 2010, it began working with a second USC school, The School of Social Work. In 2011, Georgetown's School

of Nursing and Health studies began offering their online graduate degree, powered by 2U. The same year, the Kenan-Flagler Business School at the University of North Carolina offered one of the first online Masters of Business Administration programs. Douglas Shackelford, a professor and the then dean of Kenan-Flagler, was overwhelmed by faculty support for the online degree. After the faculty vote, Shackelford reflected that he had rarely experienced such faculty approval, claiming not even for a vote on “the sun’s going to come up in the east!”

2U has traded publicly since 2014 (NASDAQ: \$TWOU). As of February 2019, 2U offered 67 graduate degree programs from 35 U.S. university partners reaching 44,000 enrolled students.¹² Annual revenues were growing at a 41.4% compounded rate, reaching a total of \$411.8 million in 2018.¹³ Programs powered by 2U generated \$2.7 billion revenue for its partners. Over 900 new 2Utes^d were hired in 2018. The company’s net loss for 2018 was \$38.3 million.

The company’s financial model entailed heavy upfront investments. Net negative cash flow on a typical program ranged from \$5 to \$10 million dollars in the first three to four years of a program’s life cycle. The investment was made entirely by 2U. In return, 2U took 60%-70% of tuition revenues for the duration of the contract. Most contracts had a duration of 10-15 years. Cathy Graham, 2U’s former chief financial officer (CFO), explained:

We are in 10 year contracts and it takes us three to four years to break even. We put \$5 to \$10 million (or more) of our own capital into every program. Fundamentally, the value proposition for a university is that we are helping them take their graduate programs online on a financially risk-free basis. When investors think about an online business, they think about it as a shopping cart model, and our model entirely breaks the shopping cart model. Somebody does not see it, put it in their cart, and buy it. They see it, and, on average, it takes seven months until they buy. And then we get paid over the 27 months after that. In the first semester, we only get a fraction of the revenue from each student. It isn’t until two and a half years out that you have a full complement of students in the program that we get the complete payment.

We are taking the revenue share for two reasons. Number one is that we do everything that is expensive for the schools, except for faculty. Two is we are willing to front money for three to four years.

On the profitability of the company, Paucek explained, “Who are the stakeholders that matter? In our world, students, faculty, universities and employees. Investors come along for the ride.” See **Exhibit 3** for the firm’s 2018 income statement, Q1 2019 financial guidance, consolidated revenue growth and profitability margins.

Convincing universities to hand over a percentage of their tuition revenues, and to be locked in to a contract for 10-15 years was not easy. Other online program management (OPM) firms, such as Coursera or Udacity, charged a fee for services, not a cut of revenues. Those OPMs did not make upfront investments.

Paucek described the cost of marketing the USC Rossier School of Education’s program:

During those years the cost for that program, marketing wise, went bananas. We could not figure out why. The net negative cash for that program was close to \$40 million; it was

^d 2U employees refer to themselves as 2Utes.

insane. We tried everything that worked for the for-profit schools and none of it worked for us. People do not apply to a top program on a lark; it is a long thoughtful process.

Paucek's decided to fix this and improve 2U's digital marketing by betting heavily on the use of data. In 2012, Harsha Mokkarala was recruited from Capital One to bring cutting edge analytics to 2U.

2U's Operating Model

Encoura, a higher-ed research firm, defined an OPM provider as "a company that partners with an institution to deliver and manage the end-to-end services across the student lifecycle, starting with marketing and recruitment, and extending through enrollment, course development, and retention."¹⁴ A 2019 study by HolonIQ suggested that the OPM market had doubled in size between 2015 and 2019, and was estimated at \$3 billion, with 60+ OPMs operating worldwide. The segment was expected to grow to \$7.7 billion by 2025.¹⁵ **Exhibit 4** presents a mapping of the main OPM players as of 2018 and **Exhibit 5** offers market size projections.

David Sutphen, chief strategy and engagement officer, described 2U's operating model:

"We partner with great institutions to build, deliver and support world-class digital graduate education at scale. The natural follow-up question is so how do you do it? At the highest level they are: cutting-edge technology, diverse and experienced team of people, and data that informs our decision-making. . . we call it 2UOS.

The company utilized the moniker "2UOS" to represent its digital capabilities, and employed this system (1) when selecting the programs and schools to add to its portfolio, (2) for executing effective marketing campaigns to attract the right students, (3) when identifying which candidates to focus on to convert into enrolled students, (4) for curriculum development and delivering program content, (5) for offering students placements in programs where placements are required,^e and (6) when providing guidance to students throughout their coursework, to ensure high completion rates.

Program Selection

To secure new partners, the 2U team had to identify the universities and degrees in which they would like to invest. "It is a thoughtful, eight to twelve month process of identifying the right partner, developing that relationship with that partner, having faculty seminars throughout that process, and negotiating the contract, explained Andrew Hermalyn. "Some of the programs have taken two and a half, three, or four years, to secure."

Hermalyn pointed to the *program selection algorithm*, developed by the 2U data science team, led since 2012 by 2U's chief revenue officer Harsha Mokkarala. The algorithm helped identify which combinations of program, partner, and degree would be worth the upfront investment. Hermalyn explained:

The output from the algorithm is a prediction on enrollment. Then, we do a trend analysis to identify jobs and fields, which will likely be hot and upcoming. We also

^e Many accredited professional graduate programs required hours of hands-on practicum experience. Traditional university graduate programs would have a placement office in charge of finding placements for all enrolled students. Of the 67 degree programs 2U powered in 2019, approximately half had a placement component. Data and analytics enabled 2U to master the placement offerings for students. The placement process combined the use of Google Places API, keywords, and a Geopointe that leveraged Google Maps and the applicant information.

consider which disciplines have existed for hundreds of years but have not made the leap to be innovative and change with respect to digital. Disciplines such as pharmacy, architecture, etc. that we are not in today.

“We considered how the infrastructure and the data science discipline could help pick the right programs,” Mokkarala added. “We went searching for data, to find publicly available data that might help. Fortunately, this is a data-rich environment ... data that is not always well-known or well-understood, but data that is helpful.”

The program selection algorithm utilized multiple datasets. Mokkarala and his team curated employment-related data and job outcome data. They combined this data with Google search volumes, search trends, and cost trends. The algorithm produced an output that ranked all programs under consideration. For each school and program combination, the algorithm estimated what steady state would look like and where the students would be coming from. Add to this information about the costs, and one could identify worthy programs. Mokkarala highlighted:

The algorithm had been very effective at proving certain hypotheses to us. For example, that starting our first data science program in 2014 out of Berkeley would be a good move, when there were no data science degrees elsewhere. Using search data as a proxy for demand and building programs against that has helped us frame the business the right way.

Using the algorithm, one of the critical insights that 2U leaders gained was that higher ed was surprisingly regional. For the Georgetown program, prospects in Oregon were costing 10x more than those from Virginia, Washington DC, and Maryland. Among the coefficients in the algorithm, one dwarfed everything else, including price. That was the regional effect. This recognition drove Paucek to attempt to renegotiate certain existing deals to remove exclusivity restrictions. If programs were attracting mostly regional audiences, there was no reason to limit the 2U portfolio to a single program in each category. Paucek elaborated on changing the exclusivity arrangements:

I sold them on what felt like a marriage and now it feels like I wanted to date other people. It was tricky. Not only were they worried about their financials, but also it just did not feel right to them. But what we learned was that every one of these programs has a natural steady state, where marketing just becomes inherently inefficient.

Marketing

One of the largest benefits for schools that used 2U as their OPM was that the company took on the marketing of the program and secured enrollment. 2U leveraged third party platforms such as Google, LinkedIn, Facebook, etc., as well as their cross-program nationwide perspective. On the importance of the marketing efforts, Mokkarala stated:

The process and the system for marketing is as critical as the marketing itself. Financially, 2U does not benefit if I bring a bunch of people into the funnel who do not get admitted to the program. We also do not really get financially to the right place if we find a bunch of students who drop off after a term or two without graduating from the program. Higher retention rates is a financial necessity for 2U as much as they are part of the mission, part of the culture, and part of a promise to the brands that we work with. The thing that was very attractive for me when joining was the fact that the business model implies that doing the right thing by 2U also meant doing the right thing by the consumer.

According to former CFO Graham, it was critical that the team had good projections of the number of students that would be attracted by the various marketing activities. “What is the next student worth to me?” she asked prior to agreeing to invest large amounts of money. Mokkarala and his team optimized the marketing spend by monitoring the ratio of lifetime revenue (LTR) to total cost of acquisition (TCA). TCA was determined based on expenditures, and LTR was a projection. A ratio of three was considered good profitable for both 2U and the school. In order to improve the ratio, programs could charge a higher tuition, improve conversion, or reduce the cost of acquisition. One way to improve the ratio was adding programs to a vertical, which improved the conversion rate and lowered cost of acquisition for all programs in that vertical. This was an additional benefit from removing the exclusivity from the contracts. “We can tie every single prospect to a marketing event,” explained Graham describing the importance of algorithm improvement and learning. “The attribution of a prospect and then a student to when they were identified is key to being able to track and verify the economics, and then have the system learn from that.”

Admissions

The admission process was lengthy. It took a student an average of seven months to complete the application process. “Before we know you are a person, you are an IP address. You give us some information, e.g. address, we add it to the [Salesforce] database,” explained Kenigsberg. “Every phone call, every email, every time you visit, it gets documented in the database.” Mokkarala described this as “the time machine,” a longitudinal picture of each student and every interaction of his or hers with 2U or the school. Kenigsberg explained:

If the deadline is coming up, I know the subset of people I need to email because they are the closest to finishing their application. The applicant who has finished 2% of the application is not going to finish in the next week and a half. So let us really concentrate on those that are closer to completion.

For us it is all in one system. From our database, we are connected to the university payment system, so when an applicant pays, it goes directly into the merchant account of the university. When an application is complete, all the transcripts, recommendation letters, etc. are pushed to the university in electronic form. The admission team gets an email that says: ‘James Kenigsberg is applying to the program’ and are given all the necessary information. From the email, they can decide to admit, conditional admit, or deny. When they admit, the system sends an email directly to student with a letter of registration. The student can sign it on their phone and they are done. In 2008, the process took four weeks, and people were sending FedEx items to each other. We compressed it to 48 hours. When first launched, on a Thursday, the associate dean in our first USC program admitted seven people on Saturday while at a university sports game. Four of them became students before Sunday night.

Content Development

Shortly after a program was approved, the 2U team guided faculty to begin developing their materials. Time in the 2U Arlington VA, Los Angeles, or Cape Town studios would be scheduled. Inside the professional production studios, a team of directors, editors, and camera experts along with instructional designers and content developers from 2U worked with each faculty to make their vision come true. The coordination and production is taken care of by 2U.

“It is important for us at 2U to have an end-to-end solution,” explained Kenigsberg about 2U’s homegrown content systems. “That gives us a lot of power, just like Apple. It allows us to do a variety

of things.” Only by offering an end-to-end solution, Kenigsberg explained, could 2U ensure that all course content worked on any device, for any learner. He offered a myriad of examples where the power of the cohesiveness of the system, was important:

We don’t buy content. We make our own content. We make our own tech. We make everything. We have studios on the West and East Coasts. We are responsible for cybersecurity. We handle accessibility. We also provide 24/7 support across all of our services.

Student Success Guidance

2U maintained a dedicated team for each of its partner schools. “We talk a lot about how high touch it is,” explained Hermalyn. “We have 2500 employees with dedicated teams for our university partners. It always blows them away when I can tell Kent Syverud, the Chancellor of Syracuse, that today 2U has over 200 full time employees dedicated to the success of Syracuse University.”

Brad Adams, chief operating officer for the graduate programs, added,

My teams are here to drive great student outcomes and experiences. Even on the marketing and admissions teams, we are not here to recruit students. We are here to recruit graduates from a standpoint of making sure that we are outcome oriented.

Mokkarala, who worked at Capital One prior to joining 2U, felt that the alignment of incentives between 2U and its customers was different from in the credit card business. “Built in is a notion that I have to find the right kinds of students who will succeed in these programs,” he explained. “Not just will they get into the program, but will they succeed through the program.”

2U Portfolio and Programs

2U’s mission was “to improve lives by eliminating the back row in higher education.” Paucek reflected on the portfolio of schools the company worked with:

Everybody in ed-tech is running around talking about fear of change and disrupt, disrupt, disrupt. It is not fear of change, it is fear of loss; it is fear of identity loss. They have done something so well for so long, and it had such good results. I couldn’t believe that more and I think the right schools are the ones that can really embrace it.

Hermalyn added:

Our ideal partner is someone who believes in the notion of a partnership and not a vendor relationship, believes that both sides in a relationship need to lean in and give, for it to be successful. Partners who challenge us and also expect that we challenge them, is an ideal state. I want to make sure that we are in good company with good people. These are long, 10-year agreements and we want to have fun together. Life’s too short to not.

At the eve of the launch of the ‘Career. Curriculum. Continuum’ vision, 2U’s portfolio included the following categories: degree programs, short courses and stacks, professional certificates, and bootcamps.

Degree Programs

At its inception, 2U focused solely on offering professional graduate degrees. Graduate degrees ranged in price from \$30,000-\$200,000 and typically required one to three years of studies. The platform powered degrees in business administration, communications, counseling, data science and analytics, education, engineering and computer science, entrepreneurship, government, healthcare, library and information science, law and social work.

George Washington University (GW)'s Milken Institute School of Public Health began offering an online Masters of Public Health (MPH@GW) in 2013. Dean Lynn Goldman got to know 2U when she was considering adding Paucek to her Dean's Council. Instead, she ended up with 2U. Prior to joining GW, Goldman served on the faculty at John Hopkins's School of Public Health. There she was part of a pioneering team in the 1990s that developed a homegrown online Masters of Public Health degree program. Goldman explained:

My department chair pressured me for two years before I was willing to put my course online. And then I did and I liked it. I found that every student would contribute and that I could hear from every student whereas in a classroom, some would never raise their hands. That was a revelation for me.

Dean Amanda Moore McBride joined the University of Denver's (DU) Graduate School of Social Work in 2016. At that time, the school already had a successful residential program, with approximately 500 students: "The University of Denver's School of Social Work has been in existence since the 1930s," she explained. "It was one of the first schools of social work in the western part of the country. What I love about the school is its commitment to social justice and racial equity, and that has been part of the mission with the commitment of the faculty since the beginning." McBride brought 2U to the faculty as a possible partner:

I previously worked at Washington University in St. Louis, which is one of the first universities to sign with 2U, and our provost at the time is now on the board of 2U. I can remember sitting in my DU office thinking I need to contact Andrew Hermalyn, and later that week, he emailed me. I did not even reach out to him. 2U had run the numbers. They were interested in having the University of Denver in their university partner portfolio, covering this part of the country.

In addition to asynchronous video material and live sessions, some 2U powered degree programs offered weekend onsite immersions, where the students and faculty would get an opportunity to meet face-to-face. One example was the Yale School of Medicine Physician Assistant Online Program, which launched in 2018 after an extensive accreditation process. Associate Professor James Van Rhee, program director, reflected:

The students cherish the immersions. The last immersion, we taught them what we call the 'sensitive exams' – pelvic exams, breast exams, male genital exams, rectal exams. They said it was the best experience they had. What I liked about it is that they then went out on rotations where many of the students ended up performing these exams. They learned it, and then three weeks later, they were doing it, which was exactly what you want.

In addition to weekend immersions, the program had its courses integrated, by week, not by semester. "I don't like silo courses. I integrate our curriculum horizontally and vertically, and we do it

by the week instead of by the semester,” Van Rhee stated. This required 2U to think outside of creating an individual course and to create content that fed into multiple courses. Van Rhee explained:

It was about being able to apply the material quickly. They learned about the diseases on Monday, and on Friday they learned about the drugs used to treat that disease. Then we used cases to reinforce with real patients, real scenarios, but online. 2U helped me change the way we were going to educate in the medical field, and we helped change the way 2U thinks about doing online education.

To expand its degree offerings, in early 2019 2U announced a strategic partnership with Keypath.^f Keypath brought a portfolio of smaller and lower-tuition degree programs than those powered by 2U.¹⁶ The “powered by Keypath” model was to be deployed for programs outside of 2U’s currently targeted programs. These programs required less investment, and offered a shorter cycle to profitability.¹⁷

Short courses and course stacks

In 2017 2U acquired GetSmarter, a South African firm operating in Cape Town, South Africa for \$103 million.¹⁸ GetSmarter partnered with universities to deliver short, standalone online courses. Short courses ran 4-8 weeks and typically cost less than \$5,000. Short courses were offered in art and design, business and management, education, finance, health, law, marketing, project management, systems and technology, talent management, and writing. The array of courses were offered by some of the strongest branded universities in the world – Oxford, MIT, London School of Economics, Cambridge, Harvard, and the University of Chicago.

Professional Certificates

Professional Certificate programs, such as Harvard’s HBAP, lasted six to nine months and were offered at a price ranging from \$20,000 - \$50,000. Working professionals were admitted to a certificate program by the offering academic institution and were expected to follow all asynchronous material and attend live sessions and immersions. While students were not awarded a graded degree, the sequence of courses that earned a certificate offered an opportunity for working professionals to gain specialized exposure to a new discipline. Professional certificates offered flexibility to participants and could also be taken in a part time format, taking fewer online courses each quarter.

Bootcamps

Bootcamp programs were aimed at reskilling needs, and offered professionals access to new tools to help them transition into new career tracks. Bootcamps cost between \$10,000 and \$20,000 and were taught over several months. In order to hit the ground running offering world-class bootcamp experiences, 2U acquired Trilogy Education Services in the spring of 2019 for \$750 million. This move nearly doubled 2U’s partnership list. Trilogy characterized itself as a workforce accelerator that prepared adult learners for the digital economy through in-person and online training programs in coding, data analytics, UX/UI design, and cybersecurity. Trilogy-powered bootcamps were in over 50 cities around the world, including locations in the U.S. and others in Mexico, Europe, Australia, and Canada.¹⁹

^f Keypath Education, <https://keypathedu.com/>

Make, Buy, or Partner?

I do think a cataclysmic change is underway in graduate and professional education.

– Dean Amanda Moore McBride, University of Denver

Research from Encoura showed that between 2012 and 2016 schools working with an OPM experienced a 43% increase in online enrollment, compared to 15% growth achieved by schools without an OPM provider.²⁰ Yet there still were university leaders who did not support the decision to partner with 2U. Many universities choose to move online on their own. Some attempts were successful, as in the case of HBS Online, Harvard Business School's own online platform. Other attempts ended with disastrous results: ballooning expenses, low enrollment, or a complete failure to launch.

When McBride joined DU in 2016, the school had just launched a homegrown online program. Faced with a brand new internally-developed online program with few applications and no marketing plan, McBride had to decide how to progress. She explained:

Unfortunately for me as a new leader, I had to immediately learn the history and the current situation, in order to determine a way forward. The program had been built internally, without the infrastructure necessary to join the quickly evolving, larger market for online social work program. Major financial investments had been made, yet it was not enough. I was faced with the immediate need for a new business model, because the enrollments were not there to pay the salaries of the faculty and staff who had just been hired.

Working with the provost's office, the dean of the business school, and her school's faculty, McBride presented 2U as a potential partner to the school:

I knew it was going to be a hard sell, especially because everyone had worked so hard to launch the new program and also because 2U is a for-profit company. I took a community organizing approach to the exploration of the partnership. I identified the faculty leaders, and asked that they dig in to learn more, to talk to faculty at other institutions, to read proformas, to learn about the technology platform – and they did. Three months later, we took a vote on partnering, and it was unanimous. The vote was in April 2017. The board of trustees voted the following week. The next day 2U had their full team there, I had my full team, they sketched out the timeline and what it would take to do it, and course development started the next week. We launched eight months later in January 2018.

By January 2019, the online program had nearly 500 students enrolled in 47 states.

Even after a hugely successful program launch, faculty and staff continued to raise concerns regarding the partnership. They wanted to be sure they were getting what they were promised, that the quality was as high as the university's residential program, and that all operations were ethical and student-centered. McBride explained:

We have led internal evaluations, hosted cocktail conversations, and continued to debate the issues. We have all had to lean in greatly. Change management is hard work. We are still absorbing the changes.

For McBride, and the faculty, the program offered the promise of increasing access to education, which was a social justice mission. That promise was being realized.

Professor Srikant Datar, Harvard Business School (HBS) Professor and author of “Rethinking the MBA,” claimed that business schools were at a crossroads, in need of taking a close look at their value propositions. In order to remain relevant, Datar and his colleagues argued that, “Business schools will have to rethink many of their cherished assumptions. They will have to reexamine their curricula and move in new directions.”²¹ It was with this in mind that Datar got involved with the HBAP program and engaged to develop a course for the program. “One of the main advantages of working with 2U was pace,” Datar explained. “They had short timelines that were met; their ability to move quickly, get things done, at high quality, across organizational boundaries, was fantastic.”

When Dean Peter Rodriguez took the Jones Graduate School of Business at Rice University’s MBA online with 2U (MBA@Rice), the university was supportive. Some felt that the business school could take a step that felt somewhat commercial. Following the MBA move, the university’s strategic plan included a commitment for five online degrees in five years. The next department to launch an online degree was computer science. That program, however, was homegrown, without 2U. The computer science faculty felt they could do it themselves. For Professor Bert De Reyck at University College London’s (UCL) School of Management, the choice of 2U-powered program versus a homegrown solution was clear. While the UCL evaluated avenues for obtaining an online presence, De Reyck witnessed Imperial College, also in London, spending years trying to launch a successful online MBA. De Reyck knew that 2U’s experience with other MBA programs would mean that he could leap over some basic challenges. UCL’s online MBA was 2U’s first program outside the U.S.

According to Professor Bharat Anand, Senior Associate Dean, Harvard Business School Online and the Vice Provost for Advances in Learning at Harvard University, the case for a university to develop its own online platform depended on the pedagogy and learning experience one was after. For HBS, the design of an online offering began with the pedagogical vision and need. HBS faculty sought a platform that was flexible enough to deliver the unique case-centered discussion-based learning, which HBS was known for. According to Anand, the decision to invest in a home grown platform was to guarantee maximum flexibility, while controlling the pedagogy, extending HBS’s reach and ensuring maximum engagement. As of 2019, over 40,000 students completed a course on the HBS Online platform.²² The HBS investment in the platform from 2014 to 2019 was approximately \$140 million. The platform generated \$20.8 million in revenues in 2018,⁸ and became cash flow positive in 2019.²³

Research showed that public universities were less likely to partner with an OPM. Declining state aid had pushed public institutions to increase their reliance on in-house online programs rather than pursue an external partner and potentially share the revenue. On the other hand, private institutions had reacted to increasing competition for the online enrollment pool by working with external partners. 2U’s growth in 2018 and 2019 resulted largely from the addition of new private nonprofit client institutions.²⁴ See **Exhibit 6** for 2U’s program portfolio.

Paucek reflected on the struggles of being a for-profit company in higher ed:

People immediately perceive a value judgment to our tax status. And that’s hard. So there is some inherent value in the way the business models intertwine with the graduation rate. I feel like that is the number the rules them all, and it’s been 82-84% every quarter since IPO.

The University of Texas (UT) at Austin’s bold “Project 2021” was launched in 2016, and promised to revamp degree programs by incorporating state-of-the-art online classes. A psychology professor at

⁸ Reported revenues include revenues generated by the HBAP program, powered by 2U.

UT with previous experience taking a course online was appointed director of the project, but quickly realized that he did not know much about how universities functioned and that change was slow if even possible.²⁵ Project 2021 was cancelled in 2018 after millions of dollars spent.^h

Some schools knew at the outset that they didn't want their online programs to be homegrown. "My first year at GW, we did strategic planning and everybody agreed, we must do this," said Dean Lynn Goldman of GW. "We must move into this space, but I knew I didn't want it to be homegrown." She knew that the school did not have the necessary capabilities:

I knew that we had no capacity at GW to even do what Hopkins was doing. I had no recording studio, only a sparse number of people who did course development. One of the things that I really like about what 2U were offering was the creativity of the people that work with the faculty, taking all of the pieces, the production, out of the hands of the faculty. The other thing that made sense to me was that bringing in their capacity to do marketing, a capacity that our university did not have.

The University has very low tolerance for risk. It wants to see from any investment that we make an ROI practically overnight ... The University looked at the revenue split with 2U and they felt like they were getting too much of the revenue. The provost office issued the decree that no one else could set up a program with 2U, because they thought that they were getting too much money.ⁱ

Van Rhee reflected on the Yale-2U collaboration, and the production values and creativity that it offered:

Our first cohort was in 11 states. The next cohort that we just took is in 25 states. I wanted 2U to do the marketing ... I wanted to do anatomy from a procedural standpoint. When you are going to have your appendix removed and you are going to go in on that surgery as a clinician, as a PA student, here's what you need to know about the anatomy. I had them do it on video. I sat them with the anatomist, and two students, fake students, to go through the anatomy of that part of your abdomen, so that the students could review that. It is 15 minutes long and students can get a refresher on the anatomy using a cadaver at any time. We did it with gallbladder. We did it with vasectomy. We did it with heart. We filmed them at Yale. 2U took the entire production team up to Yale, in the anatomy suite and they filmed them from multiple angles. It's so good.

Another way in which the Yale program innovated was by organizing live inter-professional experiences among the different 2U partners. Over two hundred students from various programs, such as physician assistants, nursing, physical therapy, occupational therapy, speech pathology, and others, came together live to analyze the case of a stroke patient, covering all specialty areas.

At the same time, other schools were choosing different models for gaining an online presence. In 2019, NYU's Stern School of Business chose to venture online with their new masters in management degree.²⁶ For Stern, the motivation for offering an online program was to attract students from outside the U.S. Around the same time, the University of Michigan announced that its Ross Business School would also launch an online degree.²⁷ Most notable about Ross's move was that the MBA degree was

^h The project was budgeted \$16 million, which were never released by provost's office (Ellis, 2019). Exact spending information on Project 2021 is hard to find.

ⁱ Since 2013, GW's Provost has changed its position with respect to working with 2U. As of 2019, GW signed 10 short courses at a larger split and is considering other schools for degrees

priced \$15,000 less than the traditional on campus program. Noodle was selected at the OPM for this program. Noodle charged a flat fee (fee-for-service), and did not charge a percentage of student tuition.²⁸ The University of Virginia's online master of sciences in data science degree also selected Noodle as their partner.²⁹ Some OPMs offered a blended model, in which the university made the investment, and the platform shared a fraction of the revenue. Examples included Coursera (e.g., iMBA with the University of Illinois) as well as Udacity.³⁰

'Career. Curriculum. Continuum.' Revisited.

Reflecting on the 'Career. Curriculum. Continuum.' vision, Paucek stated:

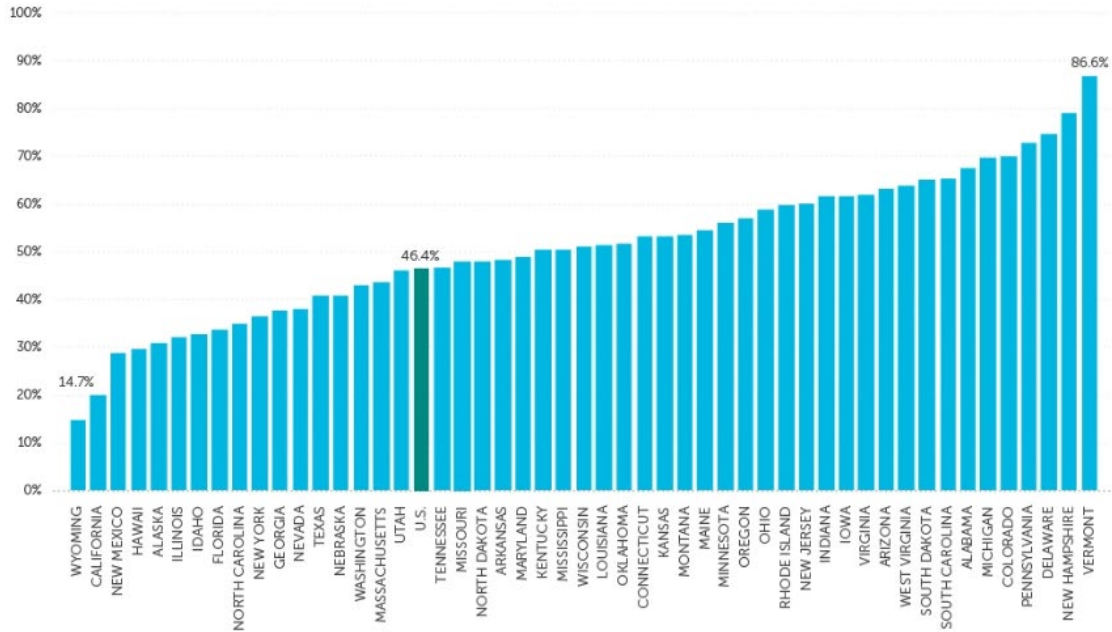
I think it may be the most important thing we have ever put in front of our partners. We do think we are the company to ensure that the university stays central in the life of the student, from an academic perspective. There are other companies that think about full disruption, getting rid of the universities. We think that the universities are, still today, the single most important institution in the students' lives.

Universities were already experimenting with other models of lifelong learning. See the **Appendix** for details on some of these models.

"We need to walk the line between doing what they want exactly as they want it, and innovating, and improving the quality of education that we're all delivering together," explained Mark Chernis, 2U's chief operating officer, on the need to respect balance as a for-profit service partner. "Because that will create the competitive edge that gets students to choose 2U programs." **Exhibit 7** describes the 2U guiding principles.

"I'd like to do a Doctorate of Public Health, online," explained Dean Lynn Goldman on her online vision. "I have been trying to talk my faculty into it. They will do it eventually if I hang in there long enough, I will get them to do it. I will."

Exhibit 1 Net tuition as a Percent of Total Educational Revenue, FY 2017 (by state)



- NOTES:**
1. Net tuition revenue is calculated by taking the gross amount of tuition and fees, less state and institutional financial aid, tuition waivers or discounts, and medical student tuition and fees. Net tuition revenue used for capital debt service is included in the net tuition revenue figures above.
 2. Adjustment factors to arrive at constant dollar figures include Cost of Living Index (COLI), Enrollment Mix Index (EMI), and Higher Education Cost Adjustment (HECA). The Cost of Living Index (COLI) is not a measure of inflation over time.

SOURCE: State Higher Education Executive Officers

Source: State Higher Education Executive Officers Association (SHEEO), "State Higher Education Finance (SHEF) FY 2017," March 29, 2018, <https://sheeo.org/sheeo-releases-state-higher-education-finance-fy-2017/>, displayed in *Inside Higher Ed*, "Tuition Grows in Importance," March 29, 2018, <https://www.insidehighered.com/news/2018/03/29/state-support-higher-ed-increased-2017-so-did-tuition-revenue>

Exhibit 2 Tuition fees, Room and Board, 2008-2009 up to 2018-2019

Academic Year	Tuition and Fees in 2018 Dollars					
	Private Nonprofit Four-Year	One-Year % Change	Public Four-Year	One-Year % Change	Public Two-Year	One-Year % Change
08-09	\$28,440	0.40%	\$7,560	0.90%	\$2,730	-1.40%
09-10	\$30,120	5.90%	\$8,270	9.40%	\$3,010	10.30%
10-11	\$30,940	2.70%	\$8,820	6.70%	\$3,170	5.30%
11-12	\$31,100	0.50%	\$9,240	4.80%	\$3,310	4.40%
12-13	\$31,890	2.50%	\$9,510	2.90%	\$3,460	4.50%
13-14	\$32,500	1.90%	\$9,590	0.80%	\$3,500	1.20%
14-15	\$33,090	1.80%	\$9,680	0.90%	\$3,530	0.90%
15-16	\$34,150	3.20%	\$9,960	2.90%	\$3,590	1.70%
16-17	\$35,080	2.70%	\$10,130	1.70%	\$3,620	0.80%
17-18	\$35,720	1.80%	\$10,270	1.40%	\$3,670	1.40%
18-19	\$35,830	0.30%	\$10,230	-0.40%	\$3,660	-0.30%

Source: Adapted from College Board, Annual Survey of Colleges; NCES, IPEDS Fall Enrollment data. <https://trends.collegeboard.org/college-pricing/figures-tables/tuition-fees-room-and-board-over-time> accessed August 26, 2019.

Exhibit 3 2U 2018 Income Statement, Q1 FY19 Guidance, Consolidated Revenue Growth, and Profitability Margins

2U, Inc.					
10-K					
02/26/2019					
Income Statement					
	Year Ended December 31,				
	2018	2017	2016	2015	2014
	(in thousands, except share and per share amounts)				
Consolidated Statements of Operations Data:					
Revenue	\$411,769	\$286,752	\$205,864	\$150,194	\$110,239
Costs and expenses					
Curriculum and teaching	23,290	6,609	-	-	-
Servicing and support	67,203	50,767	40,982	32,047	26,858
Technology and content development	63,812	45,926	33,283	27,211	22,621
Marketing and sales	221,015	150,923	106,610	82,911	65,218
General and administrative	82,989	62,665	46,021	34,123	23,420
Total costs and expenses	458,309	316,890	226,896	176,292	138,117
Loss from operations	(46,540)	(30,138)	(21,032)	(26,098)	(27,878)
Interest income	5,173	371	383	167	92
Interest expense	(108)	(87)	(35)	(552)	(1,213)
Other expense, net	(1,722)	(866)	-	(250)	-
Loss before income taxes	(43,197)	(30,720)	(20,684)	(26,733)	(28,999)
Income tax benefit	4,867	1,297	-	-	-
Net loss	(38,330)	(29,423)	(20,684)	(26,733)	(28,999)
Preferred stock accretion	-	-	-	-	(89)
Net loss attributable to common stockholders	(\$38,330)	(\$29,423)	(\$20,684)	(\$26,733)	(\$29,088)
Net loss per share attributable to common stockholders, basic and diluted	(\$0.69)	(\$0.60)	(\$0.44)	(\$0.63)	(\$0.91)
Weighted-average common shares outstanding used in computing net loss per share attributable to common stockholders, basic and diluted	55,833,492	49,062,611	46,609,751	42,420,356	32,075,107
Other Financial Data:					
Adjusted EBITDA (loss) *	\$17,655	\$11,416	\$4,541	(\$6,629)	(\$14,779)

1Q and FY'19 guidance.

(in millions, except per share amounts)	1Q'19	FY'19
Revenue	\$121.5 - \$122.1	\$546.6 - \$550.8
Net Loss	\$(22.0) - \$(21.6)	\$(80.2) - \$(77.8)
Net Loss Per Share, Basic	\$(0.38) - \$(0.37)	\$(1.37) - \$(1.33)
Adjusted Net Loss	\$(10.8) - \$(10.4)	\$(21.8) - \$(19.4)
Adjusted Net Loss Per Share	\$(0.19) - \$(0.18)	\$(0.37) - \$(0.33)
Weighted-Average Shares of Common Stock Outstanding, Basic	58.2	58.7
Adjusted EBITDA (Loss)	\$(4.6) - \$(4.2)	\$11.8 - \$14.2
Stock-Based Compensation Expense	\$10.0 - \$10.2	\$53.7 - \$54.1

This guidance assumes foreign exchange rates as of December 31, 2018 for the U.S. dollar/South African rand and the U.S. dollar/British pound.

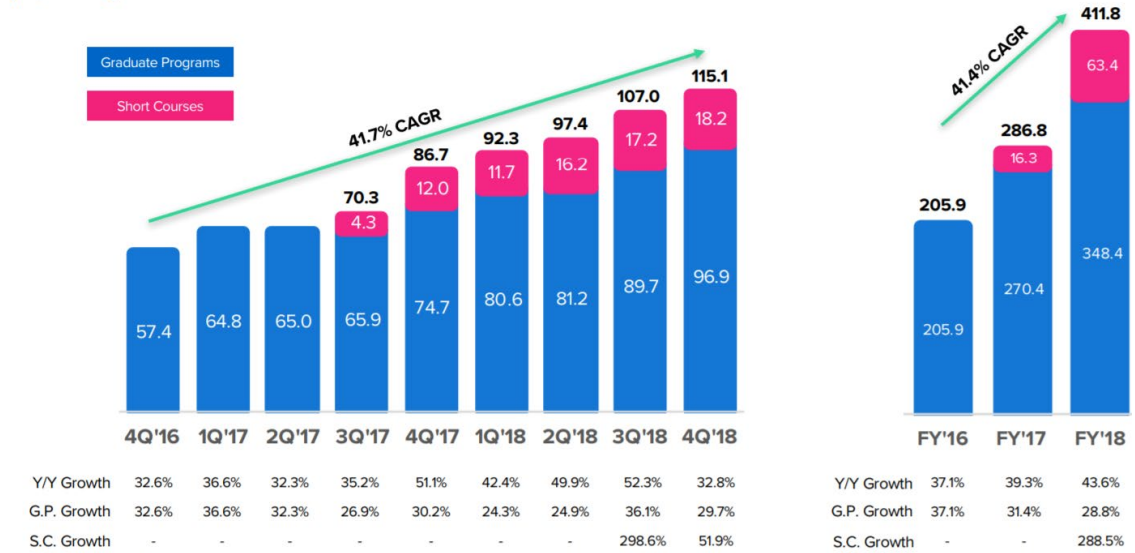
2U expects that of 2019 revenue, 45% to 46% should be recognized in the first half of the year. Of second half 2019 revenue, 2U now expects to see a similar distribution of revenue between quarters as it saw in 2018. Further, it expects to experience meaningful margin variability between periods driven by revenue growth combined with cost seasonality. For full-year 2019, 2U expects its earnings and loss measures to be distributed according to the following parameters:

- net loss margin of between (23.4)% and (22.9)% for the first half of the year,
- adjusted net loss margin of between (12.6)% and (12.1)% for the first half of the year; third quarter adjusted net loss and fourth quarter adjusted net income somewhat more skewed than in the comparable 2018 periods, and
- adjusted EBITDA (loss) margin of between (6.9)% and (6.5)% for the first half of the year; similar distribution of adjusted EBITDA in the third and fourth quarter as in the comparable 2018 periods.

Note that 2U's previously announced intention to increase marketing spend in the first half of 2019 is reflected in this guidance and has the effect of driving larger expected loss measure in the first and second quarters than would be expected based on typical performance patterns. Further note that cost seasonality in the second and fourth quarters typically reduces margins in the first half of each year and improves margins in the second half of each year, so second-half margins should not be viewed as being a run rate for the first half of the following year.

Note: Refer to the Appendix for an explanation of non-GAAP financial measures, and why we believe these measures can be useful, as well as a reconciliation of non-GAAP financial measures to the most comparable GAAP measures, when applicable.

Consolidated revenue growth.
(in \$ millions)



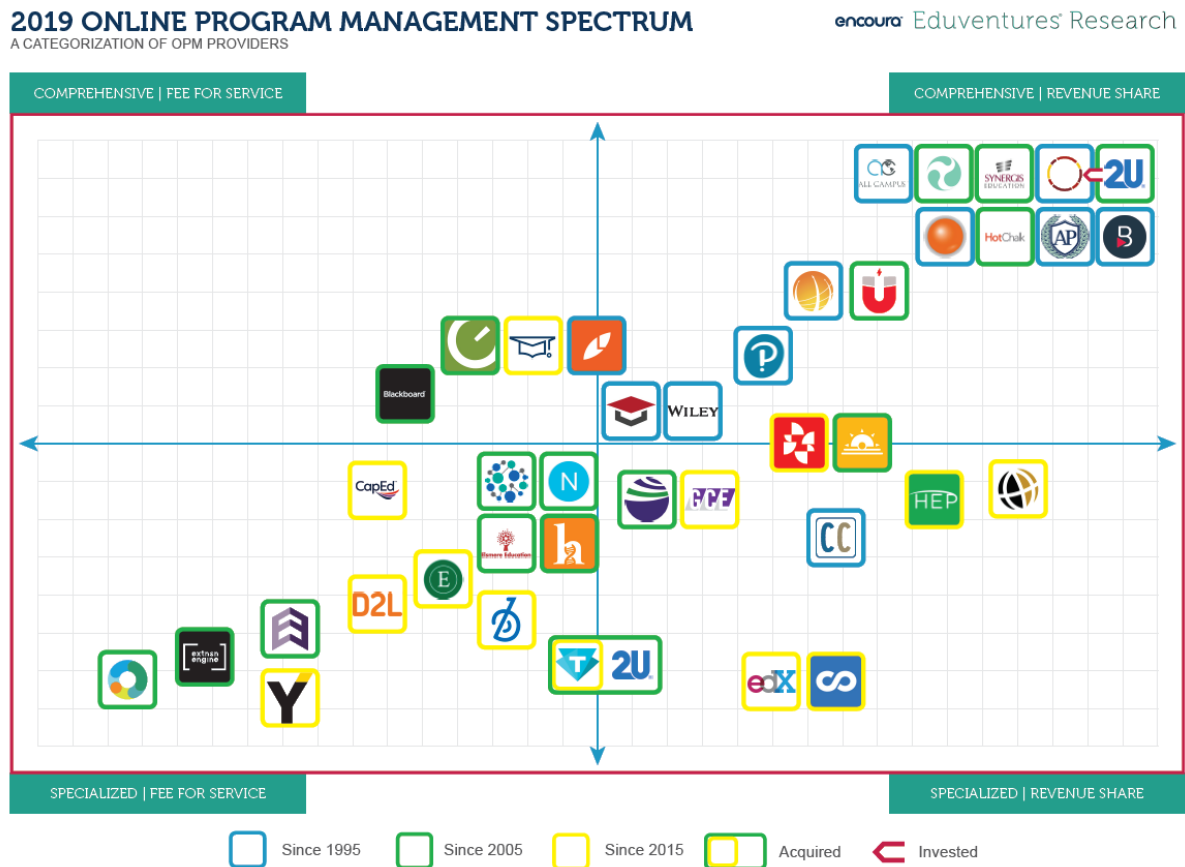
Profitability margin by launch cohort.
(Graduate Program Segment)

	Less than 2 Years	2 – 3 Years	3 – 4 Years	Greater than 4 Years	Total
Calendar Year 2015	(158)%	4%	-	27%	(4)%
Calendar Year 2016	(130)%	(6)%	18%	36%	2%
Calendar Year 2017	(400)%	14%	25%	39%	5%
Calendar Year 2018	(199)%	(8)%	25%	42%	5%

For calendar year 2018, “greater than 4 years” includes programs launched prior to 2015, “3 to 4 years” includes programs launched in 2015, “2 to 3 years” includes programs launched in 2016, and “less than 2 years” includes programs launched in 2017 or later.

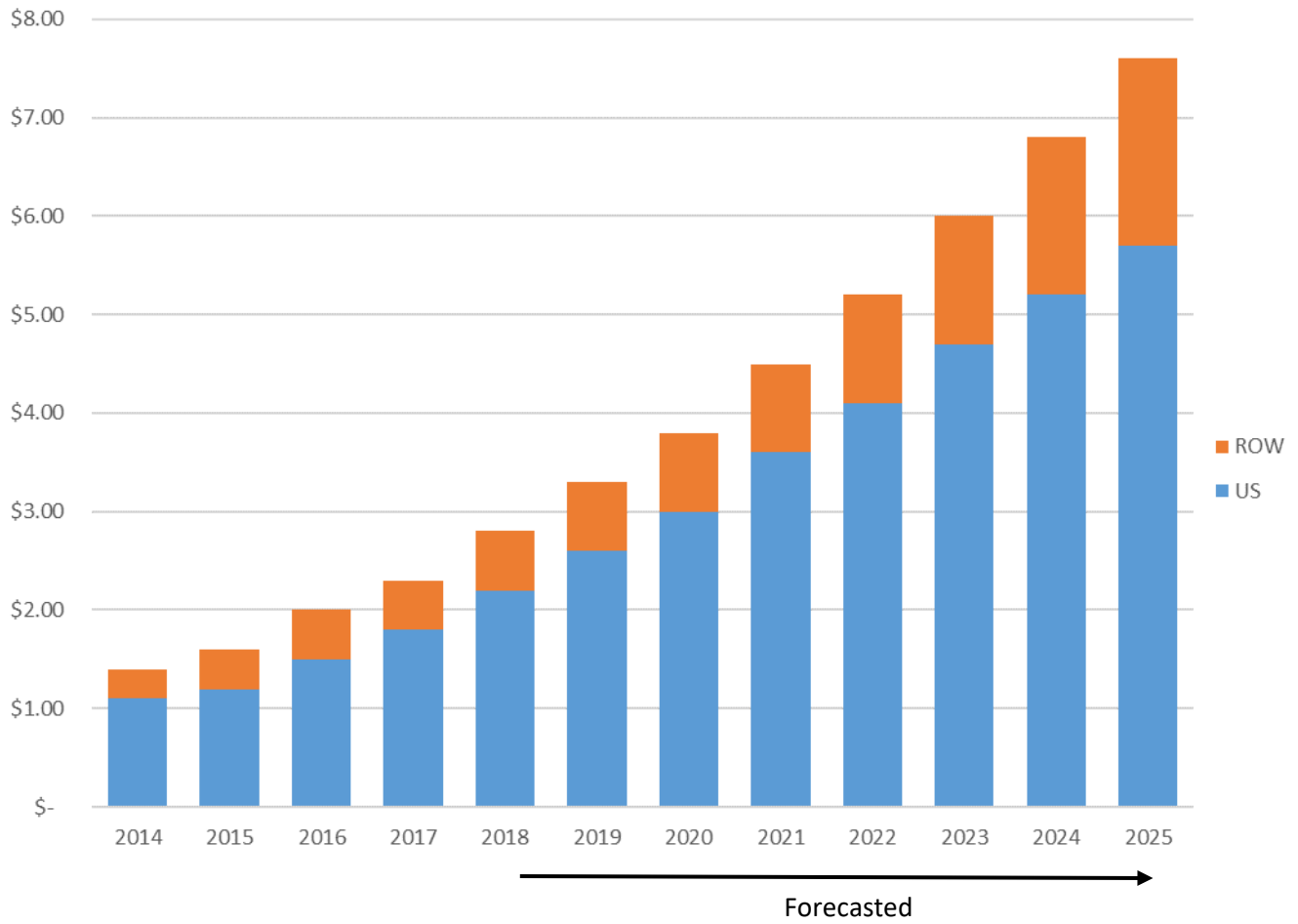
Source: “2U 4Q'18 Earnings Results,” February 25, 2019, <https://investor.2u.com/static-files/ad1c5bb8-77ed-4b10-81a4-2df791ad68d8>.

Exhibit 4 Online Program Management Providers Classification



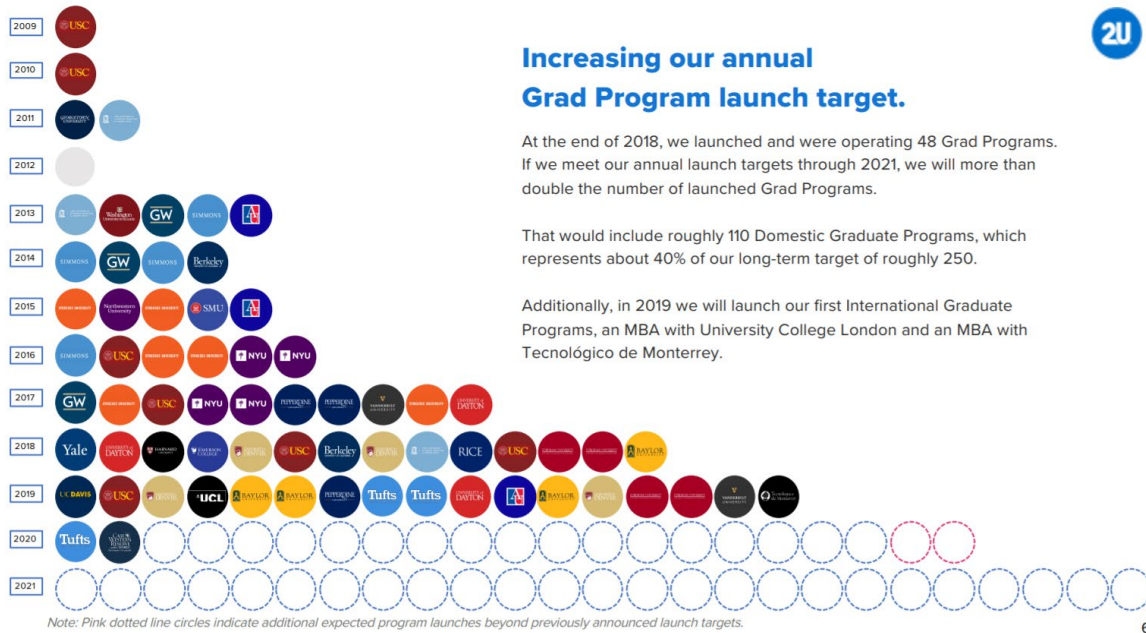
Source: Encoura, Eduventures Research, 2019.

Exhibit 5 Total Global OPM Revenues, in Billions of USD



Source: Compiled by case writers from HolonIQ reports.

Exhibit 6 2U's Partners and Program Grid and Timeline of Program launches



Source: "2U 4Q'18 Earnings Results," February 25, 2019, <https://investor.2u.com/static-files/ad1c5bb8-77ed-4b10-81a4-2df791ad68d8>.

Top 20 Grad Programs by New Student Enrollments for 2018.

	University	2U-Enabled Program	Launch
1	The University of Southern California	MSW@USC	October 2010
2	Simmons College*	Nursing@Simmons	October 2013
3	The University of Southern California	USC Rossier Online	April 2009
4	Syracuse University	MBA@Syracuse	January 2015
5	The University of North Carolina at Chapel Hill	MBA@UNC	July 2011
6	Simmons College	MSW@Simmons	July 2014
7	The George Washington University	MPH@GW	June 2013
8	Fordham University	OnlineMSW@Fordham	September 2018
9	Georgetown University	Nursing@Georgetown	March 2011
10	University of California, Berkeley	datascience@Berkeley	January 2014
11	Pepperdine University	Psychology@Pepperdine	October 2017
12	University of Dayton	MBA@Dayton	October 2017
13	University of Denver	MSW@Denver	January 2018
14	American University	Business@American	October 2015
15	Syracuse University	iSchool@Syracuse	October 2016
16	Vanderbilt University	Peabody Online	September 2017
17	Harvard University	Harvard Business Analytics Program	March 2018
18	Northwestern University	Counseling@Northwestern	March 2015
19	Washington University in St. Louis	@WashULaw	January 2013
20	Syracuse University	Information Science	October 2016

*Includes both Nursing@Simmons DGPs.

Source: "2U 4Q'18 Earnings Results," February 25, 2019, <https://investor.2u.com/static-files/ad1c5bb8-77ed-4b10-81a4-2df791ad68d8>.

Exhibit 7 2U Guiding Principles

- Cherish each opportunity. Life is short, so treasure every moment.
- Give a damn. Care about what you do each day.
- Strive for excellence. Don't settle for second best.
- Be bold and fearless. Question the status quo and embrace change.
- Be candid, honest and open. Listen to others and offer respectful feedback.
- Have fun. Fun is important. Fun is simply better.
- Make service your mission. Give the highest level of support to our partners and to one another.
- Don't let the skeptic win. "No" is easy. "Yes" is hard. Fight for "yes."
- Relationships matter. Invest the time, build trust, and value difference

Source: 2U 10-K Form 2018.

Appendix: Models of Lifelong Learning

The Open University: The Open University was established in 1969 in the United Kingdom (UK) by a Royal Charter from Queen Elizabeth II. The Open University's objective was the advancement and dissemination of learning "by a diversity of means such as broadcasting and technological devices."³¹ The Open University aimed to reduce barriers and increase university access to adult learners, by operating through a distinct method of distance learning called "supported open learning", providing students flexibility to complete coursework at their own pace and in whatever location they choose³². There were fewer admissions criteria or entry requirements as they were geared to be accessible to everyone, everywhere. By 2018, open universities could be found in many countries around the world, such as the UK, Australia, the Netherlands, India, and Greece.

Schools of Continuing Ed and Executive Education: Continuing education originated in the late nineteenth and early twentieth centuries, following the industrial revolution and driven by the need for a more skilled workforce³³. Inspired by organizations such as the Chautauqua Movement, universities began offering courses outside of their traditional models to benefit working professionals throughout their life³⁴. Executive education programs began to emerge at leading business schools such as Sloan MIT and Harvard Business School (HBS) as a way to further develop business managers without requiring them to leave the workforce, and tailored to their organizations' specific needs. Executive education courses were typically shorter than gaining a degree. Post World War II with the induction of the G.I. Bill in 1944 (or the Servicemen's Readjustment), which provided educational assistance and funding to veterans and their families, executive education programs began to emerge and gain traction across the U.S..

Massive Open Online Courses (MOOCs): Online instruction offered a modern delivery of lifelong learning. While online courses began to appear with the introduction of the internet in the 1980s, it was not until 2011 that online courses gained traction. Specifically, the emergence of the Massive Open Online Courses (MOOCs) offered learners at all ages, from all over the world, access to high quality courses at no or minimum fee. The *New York Times* labelled 2012 "The Year of the MOOC", with the introduction of players such as Coursera, Udacity, and edX³⁵. According to Class Central, an online MOOC search engine, 20 million new MOOC learners signed up for a course in 2018, pushing the total number of MOOC learners worldwide to over 100 million, across 900 universities, taking over 11 thousand courses³⁶. As of 2019, traditional MOOC players were expanding to offer graduate degrees, e.g. edX's collaboration with Boston University to offer a new online MBA, and Coursera's partnership with the University of Illinois's Gies School of Business³⁷.

Endnotes

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⁷ Data excerpted from State Higher Education Executive Officers Association. 2018. Table 4: Educational Appropriations Per FTE (Constant Adjusted 2018 Dollars). <https://sheeo.org/wp-content/uploads/2019/04/Table4.jpg>, accessed August 26, 2019.

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¹² 2U, Inc. "4Q'18 Earnings Results." <https://investor.2u.com/static-files/ad1c5bb8-77ed-4b10-81a4-2df791ad68d8>, accessed April 25, 2019.

¹³ 2U, Inc. "4Q'18 Earnings Results." <https://investor.2u.com/static-files/ad1c5bb8-77ed-4b10-81a4-2df791ad68d8>, accessed April 25, 2019.

¹⁴ Eduventures Insights, EXPANDING THE OPM DEFINITION, 2018, page 4.

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