

2019 Trends to Watch: Higher Education

Modernizing institutional culture

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Summary

Catalyst

The higher education industry continues to face a variety of disruptive forces, from higher levels of competition for students to concerns over the rising costs of tuition and, with it, student debt. Changing student demographics and expectations are also contributing to changing educational delivery models, across a variety of in-person and online learning experiences.

While the expansion of higher education to target a broader and more diverse range of constituents is undoubtedly a positive development, it nonetheless represents a major challenge for institutions, which are increasingly being asked to do more with fewer resources and less funding. Advances in educational technology can allow institutions to handily meet these challenges, providing them with the data and insights needed to optimize operational efficiencies and constituent satisfaction. This report maps several significant trends for technology vendors and institutions as they seek to navigate the future of education in this changing environment.

Ovum view

In Ovum's *2018 Trends to Watch: Higher Education* report, we examined three key trends impacting higher education: how new technologies are improving teaching and learning outcomes, increasing personalization and student success, and how the move to the cloud can enhance institutional agility. Ovum's 2019 report explores the way in which these technological and ideological themes will further reshape universities in terms of their overall institutional organization and their missions.

What is most evident is that in today's modern institutions, technology is treated as an enabler of institutional transformation. In other words, technology is not just a siloed activity concerning only the IT department; instead, it is the means to connect the entire enterprise and its various missions. Enterprise-wide insights – from teaching and learning analytics to a campus-wide Internet of Things (IoT) initiative – are on the rise, but this strategy must carefully consider the myriad privacy and security concerns that arise while accruing data.

The notion of student success has shifted to a focus on student centrality: putting the individual student's expectations, needs, and goals first, whether that is creating a next-gen digital learning environment (NGDLE) out of the institution's teaching and learning tools or a greater consideration of career-related outcomes, from alternative credentials to continuing education opportunities. Finally, as institutions upgrade their enterprise systems, they should look first to the cloud and to new solutions with next-gen capabilities, such as embedded AI and robotic process automation (RPA), to drive institutional effectiveness and student success.

Key messages

- Institutions should unify the campus through enterprise-wide insights.
- A student-centric focus demands a personalized campus and learning experience.
- Institutions must increase their flexibility to enhance students' professional development and lifelong learning objectives.
- Upgrading enterprise systems drives institutional and student success.

Recommendations

Recommendations for institutions

Strategy must come first. Cultural change management is perhaps the single greatest challenge of technological change, so each university must carefully consider its own unique culture, needs, and common-interest groups. The newest and flashiest system may not be the best match for every institution, and listening to stakeholders to understand what is needed, before making a purchasing decision, is an imperative.

Institutions should be looking to leverage analytics to increase insight into student and institutional performance. Analytic capabilities are now embedded into nearly all new vendor offerings (ERP, LMS, CRM, etc.), thus increasing ease of adoption for nontechnical users and reducing the pain of integration. Today's students expect "phygital" – a mixture of physical and digital – interactions across their personal and educational experiences (which they also expect to be one and the same). For example, institutions should make sure that users are able to access course content, register for classes, pay bills, etc., from any device, and that the online learning experience is as interactive-rich as the in-person learning environment.

Recommendations for vendors

Treat institutions not merely as customers but as strategic partners. Each partnership is in turn a learning experience: universities will provide valuable insights into the problems and challenges of higher ed that can in turn impact, affect, and shape product strategy and development for the vendor. Vendors should be prepared to aid their customers in a variety of ways: from providing hands-on support for implementation to creating a training portal for customers to share best practices, recommendations, and more.

While marketing a platform-wide approach might be appealing to vendors, this may not always make sense for an institution, where generally each business domain has its own cadence of improvement initiatives. Institutions are looking for applications that integrate as easily with others' products as their stablemates, readily enabling transactions, data, and insights to be shared across the educational ecosystem.

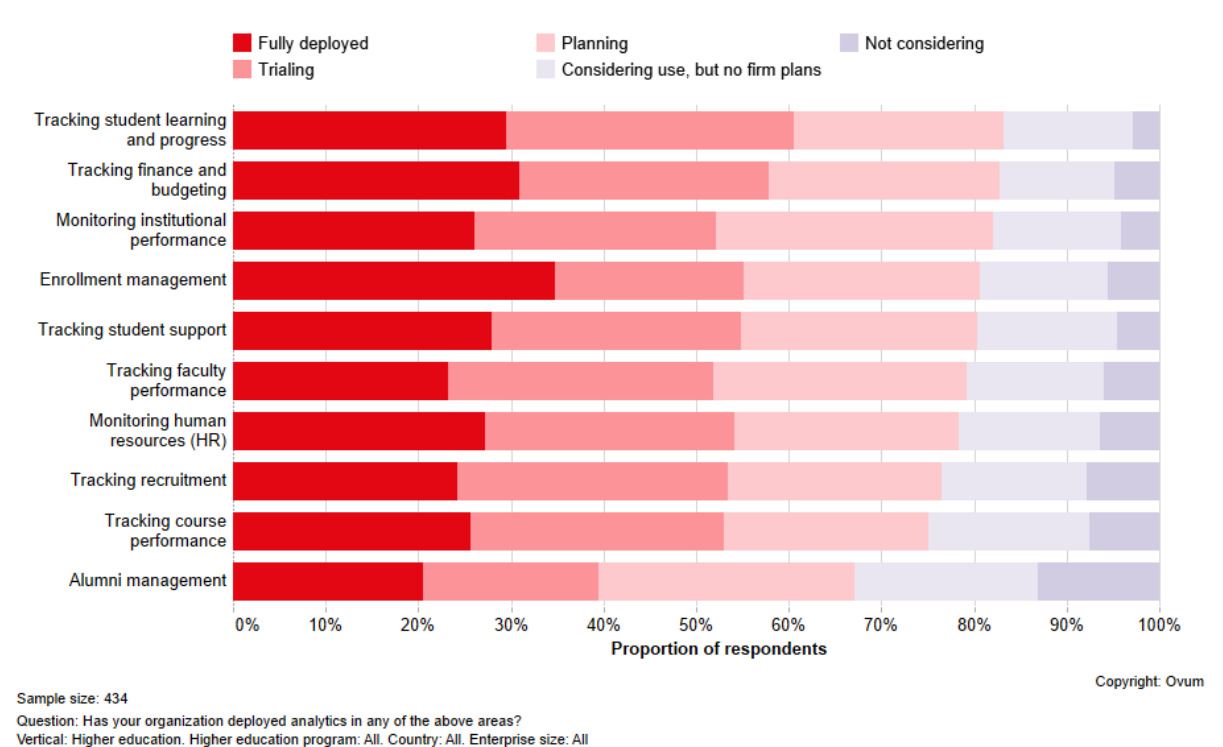
Institutions should unify the campus through enterprise-wide insights

Interest in analytics continues to rise

The value of analytics to provide insights and data into the needs and behaviors of all constituents has been successfully communicated in recent years, and almost all institutions are considering – or are already using – analytics to target different departmental and constituent groups. Sixty-one percent of all institutions in Ovum's 2018/19 ICT Enterprise Insights survey ranked analytics as one of their top three projects for the next 18 months, with 24% of the institutions surveyed ranking it as their top priority.

In higher ed, analytics has historically been perceived to fall under the jurisdiction of institutional reporting – that is, data scientists who are specifically trained in tech and numerical skills. While IR is fundamentally important for structured, transactional, institution-wide reporting and planning, this viewpoint needs to – and has – changed in recent years, as those in different departments have seen the importance of analytics to affect and improve the way in which they conduct their jobs and work with students and other staff members. As a result, analytics is no longer seen as a totally separate system but more of a tool embedded in other systems, like a learning management system (LMS) or a CRM (constituent relationship management) system. As each department increasingly recognizes the value provided by real-time data and insights, it is important that the analytics tools they use are highly readable and usable, even for nontechnical users.

Figure 1: Analytics deployments for various departmental needs



Source: Ovum, ICT Enterprise Insights Survey 2018/19 – Higher Education

Another finding from the ICTEI 2018/19 survey is that most institutions have yet to achieve full analytics deployment across their various lines of business. Ovum believes this momentum is a result of institutions only recently beginning to understand how the power of analytics can enhance all departmental operations. As seen in Figure 1, the overwhelming majority of institutions are still in the planning or trialing phases, averaging out to 67% of all institutions across all categories. Even the most mature category, enrollment management, has just over one-third of institutions at full analytics deployment. What is promising, however, is that the percentage of institutions not considering deploying analytics is minimal (e.g., only 6% of institutions are not interested in using analytics to manage enrollment, while the business function with the least amount of interest in analytics usage – alumni management – is still only at 14%). As a result, vendors should be quick to capitalize upon this opportunity and market systems with native analytic capabilities that meet relevant use cases. Such data should be readily available to nontechnical business users via visualizations or interactive dashboards.

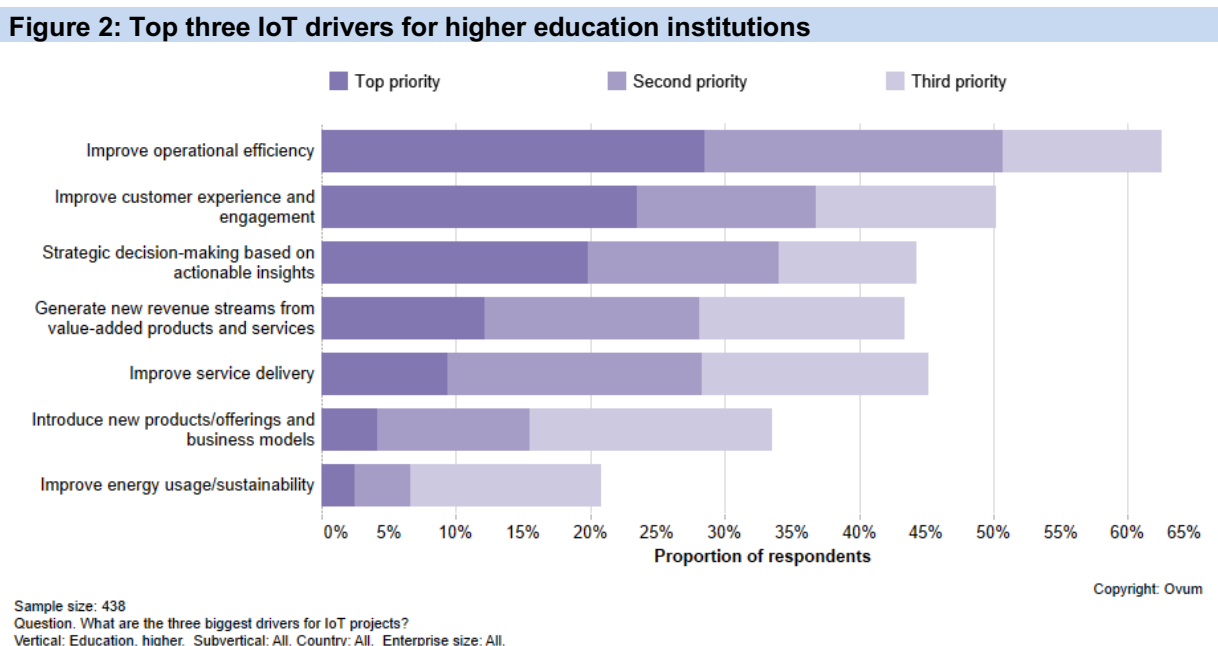
IoT is connecting the campus and heading toward mainstream adoption

The Internet of Things has been a topic of conversation in higher education for some time, and for good reason. The ability to connect data and insights from various applications, systems, sensors, and even personal devices such as wearables and cell phones can provide a 360-degree view of the campus that can improve constituent experience and drive down operational costs.

Ovum's ICTEI 2018/19 IoT, Cloud, and AI survey reveals the top drivers for institutions in considering an IoT implementation. The top motivation for 29% of institutions is IoT's ability to improve operational efficiency by streamlining the way in which systems and facilities are used. IoT-enabled technologies can help institutions reduce costs by enabling them to make the most of their existing resources or even free them up, creating the opportunity for innovation; for example, sensors can automatically monitor HVAC systems and machinery and even alert relevant parties when they are in need of servicing.

For 24% of respondents, improving the customer experience and engagement was their top concern. Capturing data and insights from typically siloed operational systems (e.g., network, HVAC, security) can enable the campus to create a more comprehensive, seamless constituent experience and improve services. Generation Z students, especially, expect continuity and convenience when it comes to their campus experience. For example, instead of having to drive to multiple parking lots to find an open space, then locate a machine or attendant to pay, they want to easily find an open spot and have their car recognized by CCTV. Instead of searching for a free study space in a library, they expect technology to show them where it is.

Twenty percent of respondents identified that they were most interested in how actionable insights from IoT can lead to strategic decision-making; for example, IoT can provide valuable insights into classroom and common-space utilization, allowing increased ROI on existing spaces and more accurately predicting the benefits of additional investment.



Source: Ovum, ICT Enterprise Insights Survey 2018/19 – IoT, Cloud, and AI

The proliferation of data afforded by IoT can be overwhelming, and the number of systems requiring integration before end-user value is delivered can be daunting. A true "smart campus" initiative will require the connecting of hundreds of departments, programs, and systems, and can result in millions of data points. Artificial intelligence can be used to automate processes and find correlations across internal and external data sets to increase the level of actionable insights derived from an IoT initiative. Institutions should ensure that the data they collect is relevant and directly related to the business processes and outcomes they hope to achieve, all while remaining sufficiently anonymized to protect individual users' identities (see next section).

Data governance must consider privacy and security concerns

The implementation of Europe's General Data Protection Regulation earlier this year has amplified discussions about who gets to access what kind of data, and why – questions that every institution, regardless of region, should consider. In addition, the Cambridge Analytica/Facebook data harvesting scandal reveals the extent to which accessing user data without relevant permissions, encroaching on their privacy, can cause lasting harm to a company's reputation and relationships. Schools must be sure that the information they collect is necessary, secure, and accessible only by relevant parties. Given that GDPR applies to all European citizens, no matter where they are interacting globally, every institution should make sure that it has policies in place to determine what kinds of structured and unstructured data may be collected and match practices; when added to compliance with local regulation (e.g., FERPA and HIPAA in the US), a significant burden on institutions is created.

To reduce risk exposure to cybersecurity threats, even as an institution's digital ecosystem matures and expands to encompass a greater variety of tools and applications – and a greater number of customers – schools are increasingly turning to cloud-based systems in part to manage and protect student and staff data. Modern infrastructure and platforms, economies of scale, and the potential for reputational damage have allowed most cloud systems vendors to provide security postures that are hard to achieve in locally hosted environments. High-quality cloud security, however, is pointless without a matching cybersecurity culture across the institution.

A student-centric focus demands a personalized campus and learning experience

Personalization continues to be a huge theme in the higher education industry, as constituent expectations have evolved from the traditional, instructor-centric model to a student-centric, individualized journey, in which each student's individual learning needs, career aspirations, and other interests are being fully met. A more personalized approach to the student journey offers institutions many competitive benefits, from increasing student satisfaction to the ability to proactively intervene and thereby boost retention levels. The latter opportunity is especially crucial for schools that depend on performance-based (instead of enrollment-based) funding, a trend on the rise, especially in the United States.

In creating a truly student-centric campus, institutions can extend the student journey from its traditional conception of a linear path that terminates in graduation. Instead, by creating opportunities for access, personalization, and satisfaction, the student journey can be conceptualized as a true lifecycle that includes inherent opportunities for re-enrollment or re-engagement throughout the

student's lifetime, whether that includes enrolling in a continuing education program or making a monetary contribution to an alumni fund.

Schools look to evolve from the LMS to the NGDLE

As the LMS is, by virtue of its function, one of the most prominent student-facing systems on campus, it is all the more important that it offers a modern and intuitive user interface, similar to that of any consumer application students are accustomed to using, and offers a consistent user experience across any device. A lesson that vendors like D2L and Blackboard have learned in recent years is that, while offering a lot of different features is important to institutions, it is even more critical that the institution can easily tailor its LMS environment to pick and choose the features that work best for it; essentially, ease of use has proven to be more important than breadth of portfolio – and a key reason why Canvas is now neck and neck with Blackboard for LMS market share.

The discussion of the modern LMS's capabilities has evolved into the notion of a next-generation digital learning environment. An NGDLE is not an offering from an LMS provider but rather a process undertaken by an individual institution to create and configure an ecosystem to meet its unique needs, focused on the enabling and improving of teaching and learning, rather than administrative functions (the managing of teaching and learning). A successful NGDLE initiative is dependent not only on the technology and tools involved, but the instructional design and course models used therein.

According to Educause, such an ecosystem of applications and tools "must address five dimensions: interoperability and integration; personalization; analytics, advising, and learning assessment; collaboration; and accessibility and universal design." Some envision the NGDLE as a decentralized ecosystem comprising different applications (not necessarily including an LMS), while others see it more as an ecosystem in which the LMS remains a prominent feature, but heavily tailored and customized with learner-centric and/or discipline-specific tools. At this point, Ovum foresees LMS systems as continuing to play a fundamental role in the NGDLE ecosystem for most universities, as they still possess features that other campus systems, such as CRM or student information systems, lack.

An NGDLE offers greater opportunities for engagement within the learning environment, through embedding video or web-conferencing platforms for virtual office hours for greater communication and collaboration. Even as LMS vendors are building out (or acquiring) features and tools to enhance their LMS experience, such as Canvas's Badgr and Blackboard Collaborate, many third-party companies are building out discipline-specific tools and platforms that can further individualize a learning experience. Each tool/offering should not only be able to be integrated with the LMS via API but should meet broadly adopted standards, such as Learning Tools Interoperability® (LTI®) from IMS Global Learning Consortium. Doing so will make it easier for users to integrate their own tools and ensure that each tool is securely integrated into the rest of the ecosystem.

Video enhances constituent engagement

Video – and its ability to provide students with a more immediate, engaging experience – is key not only for teaching and learning purposes but for all elements of campus life. Watching, creating, and interacting with video is ubiquitous for the digital-native Generation Z students entering college today. According to a 2017 study conducted by AdWeek, 95% of all Gen Zers use YouTube on a regular basis, and 50% chose it as the platform they could not live without. Video should be seen as an

integral means for a university to communicate its own "brand" and to let students convey their own unique identities as well.

Ovum's 2017–22 enterprise video forecast is an examination of the education industry's growing video spend, which Ovum predicts will double from \$1.5bn to \$3.1bn between 2017 and 2022 (it should be noted that these figures also include K–12).

Figure 3: Ovum's enterprise video forecast for the education industry

Expenditure (\$m)	2017	2018	2019	2020	2021	2022
Applications						
Communications	164	202	229	251	276	308
Customer management	120	152	168	185	198	216
Human resource management	194	247	294	333	380	431
Knowledge management	224	285	338	382	435	493
Marketing	194	253	305	355	415	493
Sales management	164	197	222	239	260	277
Training	434	538	623	689	769	863
Grand total	1,495	1,874	2,179	2,434	2,733	3,082

Source: Ovum, Enterprise Video Logistics Forecast: 2017–22

The doubling of institutional investment in video in the education industry is unsurprising, given its broad range of applications and use value. More and more campuses are using video as a way to provide a more personalized, interactive experience for students – all while reducing operational costs. For example, a video tour can provide a virtual way for prospective students across the globe to gain a sense of what it would be like to attend the school, without having to send recruitment officers to every region. Uploading video of notable guest lecturers or other memorable campus events can allow alumni and parents to stay connected with their university community (and potentially give back to their alma maters, such as through donations or providing mentorship to current students).

However, given that different departments and colleges invest in video technologies at different times, many campuses lack a consolidated approach when it comes to video. Video vendor Kaltura's "State of Video in Education 2017" survey found that 53% of institutions are using two to five lecture capture or media management platforms across their campuses, thus complicating the way in which video materials can be stored and shared. Ovum recommends that institutions consider moving toward an enterprise-wide video investment strategy in which all video content is uploaded, stored, and managed in a central repository. In creating a more unified and sophisticated strategy around video usage, institutions can improve not only teaching, learning, and research, but administrative functions and business operations.

Institutions must increase their flexibility

Schools should enhance students' professional development and lifelong learning objectives

The rise of the nontraditional (or truly, in 2019, the new traditional) student – a broad definition for any person pursuing a postsecondary certification or degree while also working, supporting dependents, and/or being financially independent – has brought with it a shift in perspective on the purpose of higher education. For these learners, education is more sharply focused on the next step in their

careers, rather than the continuation of their K-12 educational journey. Gen Zers also pride themselves on their entrepreneurial, practical mind-set (and see it as a differentiating factor from the millennial generation that preceded them). 2019's students envision their education will give them the skills and knowledge they need to succeed at the institution and in their chosen career, in a timely and affordable manner.

Nonetheless, these expectations are not always realized, resulting in the skills gap: the deficit between what is delivered by the educational system and what is needed to succeed in employment. Higher education institutions have historically been slow to redirect some of their teaching/learning resources and pedagogical missions to reflect this increasingly workforce-oriented reality. Institutions must expand the kind of credentials they offer their students, from the traditional bachelor's degree to a broader, more flexible range of credentials such as certificates, badges, and competencies. The growth of the competency-based educational (CBE) model, in which the earning of a degree is based on demonstrating one's individual mastery of a skill or concept, rather than time in a seat, is one way in which institutions are providing a truly student-centric, convenient approach to learning. These alternative credentials and programs can offer students greater convenience and accessibility at lower costs, two of the traits students commonly look for when selecting an institution.

Schools must make sure that they have the proper technological infrastructure in place before implementing these new models – that is, traditional ERPs are not configured to handle non-credit-hour-based enrollments or multiple start dates, nor do they provide a long-term record of individual competencies. For CBE learners, the LMS must be able to release new modules or content based on completion of the previous module.

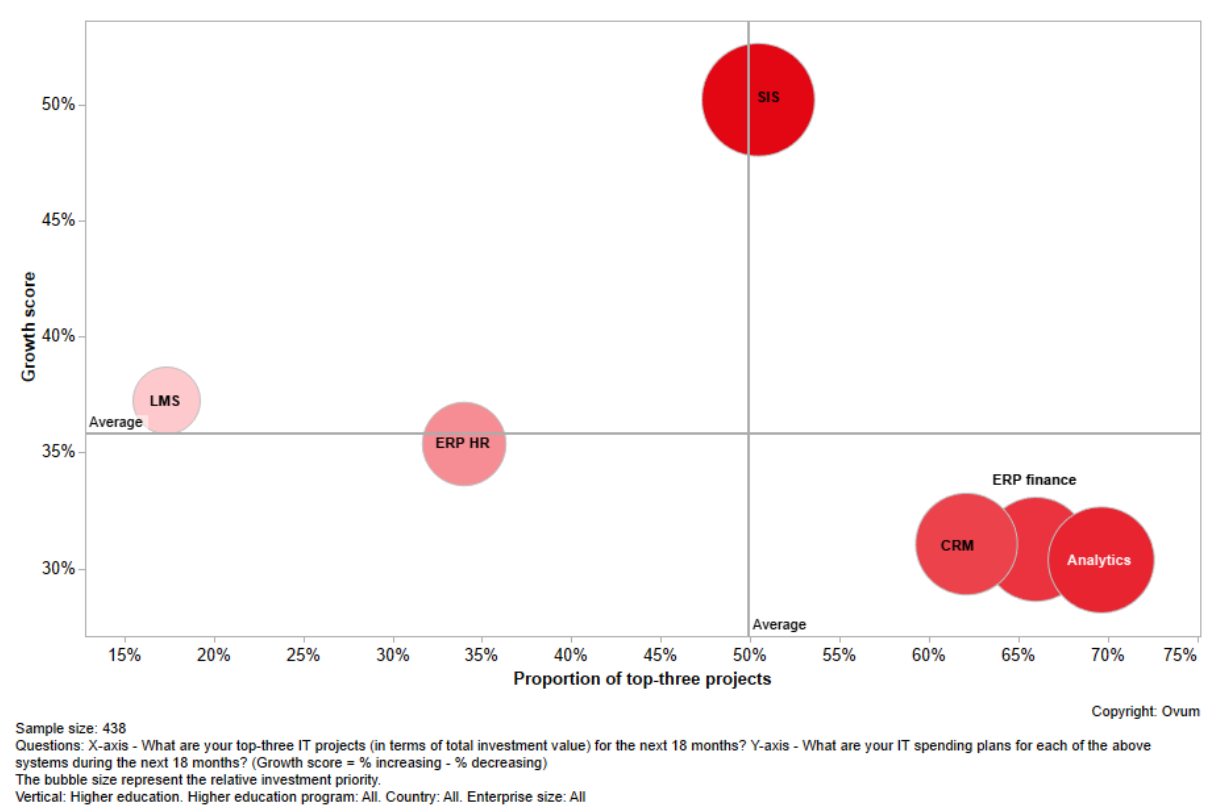
New technology solutions attempt to extend the professionalization capabilities of the typical university (in which career services is often a siloed department). A career planning tool such as Campus Management's Occupation Insight or EduNav can show students the careers that align with their intended majors, the 10-year growth trajectory, predicted salary, and the practical skills hiring managers are looking for. By helping students understand the courses and skills necessary to navigate a career path in a timely fashion, institutions can demonstrate that they have a practical understanding of their constituents' needs and desires.

Upgrading enterprise systems drives institutional and student success

When assessing institutions' top-three overall investment plans and spending growth for these systems, Ovum's ICTEI data reveals that the SIS category has the highest overall investment growth score. This finding is unsurprising, given the sluggish level of SIS investment before 2017. However, with the release of cloud-native SIS offerings by vendors such as Unit4, Oracle, Workday, and Campus Management, institutions see increasing value in upgrading or replacing their SIS to take advantage of next-gen features. With a 53% growth score from the previous year, this category should be of keen interest to vendors looking to gain SIS clients. Analytics is the top project priority for institutions, surpassing ERP finance (the leading category for institutional investments in 2017–18) and CRM. Ovum credits the continued interest in the latter two categories to the practical applicability of AI to CRM and ERP finance, from using machine learning to target best-fit prospective students to using RPA for automating routine transactions and reducing error. LMS investment trails far behind all

other categories as the lowest priority for most institutions, most likely due to no major new advances in terms of vendor offerings in recent years.

Figure 4: 2018–19 institutional plans for upgrading systems

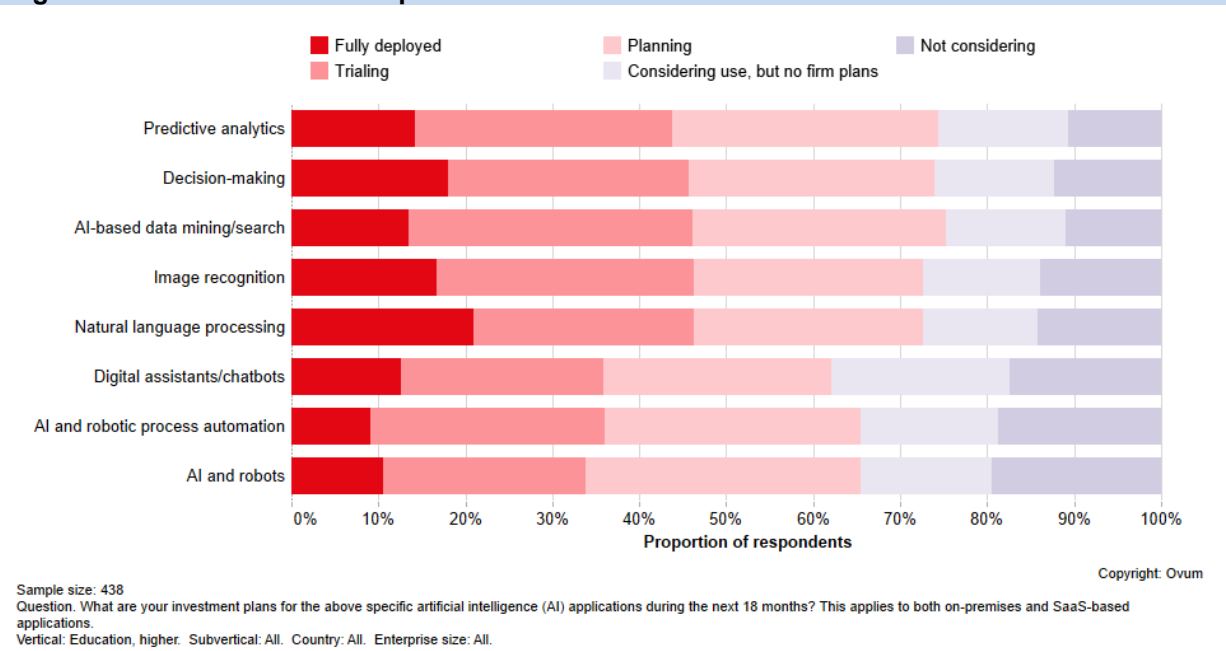


Source: Ovum, ICT Enterprise Insights Survey 2018/19 – Higher Ed

Embedded AI and other emerging technologies add value to institutional systems

Emerging technologies like artificial or adaptive intelligence embedded in these systems can further improve the constituent experience and increase operational efficiency. Based on the data from the ICTEI survey, higher educational investment in artificial intelligence is on the lower side for all industries (e.g., 14% of the higher ed industry has deployed predictive analytics versus 20% across all sectors). Nonetheless, what should be of interest to vendors is the number of institutions planning or even trialing artificial intelligence applications – around 50% across all categories.

Figure 5: 2018–19 institutional plans for AI investments



Source: Ovum, ICT Enterprise Insights Survey 2018/19 – Higher Education

Forward-thinking institutions should be considering how best to leverage AI technologies to improve their operational efficiency, reduce costs, and provide a better student experience. While the number of institutions deploying chatbots or digital assistants is on the low end (13%), it should be noted that many vendors, including Campus Management and Oracle, are building out these technologies to offer responsive – and even proactive – engagement with end users, helping them register for courses or answer frequently asked questions. Institutions are also increasingly interested in using image recognition technology to reduce manual processes and expedite workflows (a capability found in systems like Hyland's content services platform OnBase, which extracts, verifies, and exports data).

It is common for students today to transfer from one institution to another or to pick up credits from other programs (continuing education programs, community colleges). Blockchain is likely to have significant utility for permanently recording transcripts and individual competencies. It can also be useful for hiring purposes; a hiring manager can easily verify that an applicant's qualifications and academic history have not been tampered with or falsified. This can also cut down on the institutional need to hire additional staff in the registrar's office to field these kinds of queries. Perhaps most importantly, it will result in a further decentralization of the educational process by granting students ownership of immutable, verifiable records of their educational journey.

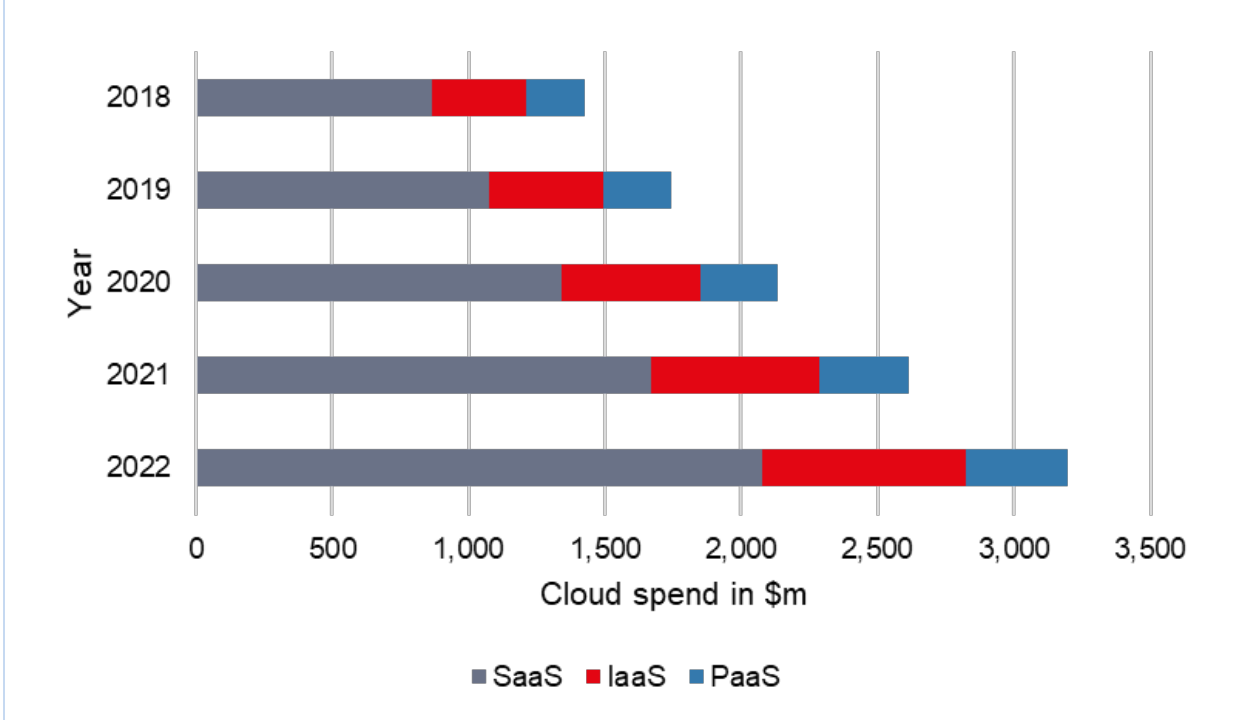
Movement to the cloud continues to escalate

Institutions are somewhat slowly but surely moving to the cloud, with overall spend doubling from an estimated \$1.4bn in 2018 to \$3.2bn in 2022. Ovum predicts that spend in SaaS applications will see the highest amount of growth, from \$860m to \$2.1bn in the next five years, while IaaS spend will grow from \$340m to \$740m and PaaS spend from \$220m to \$380m spend between 2018 and 2022.

Nonetheless, the practical path forward for many institutions is a hybrid approach, as it can be very difficult to rip and replace a school's legacy systems (such as ERP or SIS). Instead, extending on-

prem systems with cloud services and combining them with other cloud-based systems will decrease the burden of maintenance on the institutional IT staff and enable more opportunities for innovation.

Figure 6: 2018–22 institutional cloud spend



Source: Ovum, Global Higher Education Tech Spending through 2022

The main takeaway in considering these trends and themes is that there is no one-size-fits-all model when it comes to what an ideal institution should look like. Instead, each institution must carefully consider all the tools and systems available and craft a technology strategy that fully addresses its own business needs, constituent expectations, and institutional goals. In doing so, it can fully establish itself as a modern, student-centric site with the flexibility and adaptability to meet the future of education in all its variations.

Appendix

Methodology

This report was produced through a combination of primary and secondary research. Primary research included discussions with colleges and universities, as well as ongoing briefings from software, hardware, networking, and services vendors serving the higher education industry. The author also drew on Ovum's annual primary research conducted with IT decision-makers.

Secondary sources of information included company reports and websites, international organization statistics, national and international industry associations, SEC filings, broker and analyst reports, and business information libraries and databases.

Further reading

2018 Trends to Watch: Higher Education, IT0008-000321 (October 2017)

ICT Enterprise Insights 2017/18 – Global: IoT, Cloud, and AI, PT0099-000003 (September 2017)

Personalization, Innovation, and Efficiency on the Smart Campus, ENV006-000006 (December 2017)

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