

Ovum Decision Matrix: Selecting a Student Success Solution for Higher Education, 2016–17

Publication Date: 30 Jun 2016 | Product code: IT0008-000273

Navneet Johal



Summary

Catalyst

As the world moves toward an increasingly global economy, individuals and nations are discovering that higher levels of education are critical to their ability to compete and thrive. According to the United Nations Educational, Scientific, and Cultural Organization (UNESCO), approximately 90% of the fastest-growing jobs will require some form of higher education. It falls to higher education to ensure that there are enough suitably qualified graduates to satisfy demand. It is therefore unsurprising that increasing student success is one of the most important issues facing higher education today. High attrition and non-completion rates affect not only students but also institutions, which face growing financial pressures, and economies, which need more college-educated workers in order to remain competitive.

Institutional student success strategies are revealing promising results that could enable colleges and universities to increase graduation rates while maintaining or reducing costs. Moreover, these strategies ensure that all students receive a high-quality educational experience that is tailored to their needs, academic abilities, and career or employment goals. To support these strategies, institutions are leveraging student success solutions that gather and analyze data and initiate interventions to help them improve student outcomes and their own institutional performance.

This report examines the competitive dynamics of student success solutions in higher education and provides institutions with analysis to inform the selection process based on a vendor's technology and market strengths, as well as its ability to support multichannel, interactional capabilities. Ovum highlights the vendor solutions it sees as market leaders, challengers, and followers.

Ovum view

There has been a significant amount of change in the higher education industry over the past decade, including the shift in institutional focus from access to success and a new emphasis on student outcomes. The hard truth is that for those who start university or college, it is a coin toss whether they will get that critically important degree. There are of course regional differences in completion, though even of those students that do graduate, it is questionable whether that degree is suitable for the employment to be obtained.

Once upon a time, responsibility for outcomes and retention rested primarily with the student rather than the institution. However, as costs have risen and the link between an educated workforce and economic development has tightened, governments have started to hold institutions directly accountable by tying funding to student success. As a result, institutions are slowly but surely being forced to develop sustainable student success strategies. In support of these strategies, institutions need to leverage more data, look toward a student success solution to analyze that data, and initiate interventions to help keep students on track.

Vendors are making significant investments in the quality and capabilities of their solutions, and as institutions purchase these solutions, it is critically important for them to think about what truly makes for a robust student success solution. Undoubtedly, the solution should offer everything from data collection capabilities to being accessible via mobile. Vendors should provide a high level of strategic support and services to engage their customers and help maximize their investments. From a market

impact standpoint, a vendor must demonstrate influence and commitment to the higher education industry. However, in Ovum's view, it is offering multichannel, interactional capabilities that helps to distinguish between an analytics tool and a true student success solution. It is not just about the collection and analysis of data, but also whether that data and analysis prompts the end user to do something to help students, and whether there are a range of channels through which support can be provided. Vendors that have focused not only on a large number of data collections and analytics but also on interventions, and have market influence in addition to investing in customer service and strategic support, have emerged as leaders. In addition, in providing a high level of strategic support and services, these vendors have better understood the metrics that institutions are looking to assess.

There is no quick fix for any institution's retention and student success problems. Nor is there a single organizational model that can be implemented across all institutions, because different student cohorts require different kinds of outreach. However, a sustainable student success and retention strategy is within reach if institutions share the responsibility for student success, increase communication, and take steps toward creating an environment for student success. While there are regional differences in student success and retention, overall, increasing student success is a top priority for institutions globally. Consequently, the global market opportunity for providers of student success solutions is immense. Ovum believes that over the next few years, the entrance of new student success solutions in response to this opportunity is inevitable. Successful vendors will be those that can offer institutions the ability to tailor solutions through platforms that support a modular approach to consuming services.

Key findings

- Higher education institutions globally are under pressure to improve student success.
- Achieving this requires a student success solution that collates a range of student data to predict how current students will do in classes and sends alerts when they appear to be at risk.
- A robust solution must move beyond analytics and provide capabilities that initiate interventions.
- D2L, Oracle, SAS, and Starfish by Hobsons, the market leaders, offer broad capabilities that meet a high proportion of institutional needs.
- Ellucian provides a compelling student success solution and has a good market positioning.
- Campus Management is beginning to develop strong capabilities to support institutional student success strategies.

Vendor solution selection

Inclusion criteria

Only vendors with experience in providing student success tools were invited to participate in this study. A longlist was created using existing knowledge of the market and desk research to identify expertise in the field. The following criteria were used when selecting vendors for this Ovum Decision Matrix (ODM):

- The vendor's platform must be in commercial use by at least one higher education customer.

- The student success solution must support one or more of the following core functionalities: data collection and management; reporting; alerts and early warnings; predicting student performance; and multichannel, interactional capabilities.
- The vendor must have a significant level of brand awareness among higher education institutions. This assessment is based on market impact and recognition within the higher education industry and among peers.

Exclusion criteria

Vendors have been excluded from this ODM for the following reasons:

- The vendor lacks a specific higher education offering.
- The vendor offers a solution with a significant portion of functionality delivered through third-party vendors or solutions.
- The vendor has proof of concept but no commercial implementations.

Methodology

Technology assessment

Ovum analysts assign vendors a score from one to 10 for each of the nine assessment criteria, and the scores are averaged to determine each vendor's overall technology assessment rating. The nine technology assessment criteria used for the student success solutions in higher education ODM are as follows:

- **Data collection, sources, and management:** The extent to which the student success system draws from a wide array of solutions and data types, and as a result has robust information management capabilities.
- **Reporting:** The degree to which student data is organized into out-of-the-box student success reports or risk indices.
- **Alerts and early warnings:** The extent to which the solution has the capabilities for custom alerts and early warnings based on student performance or activity-based events.
- **Predicting student performance:** The degree to which a solution assembles a model based on historical student data to develop models for helping to predict student performance in the future.
- **Mobile capabilities:** The extent to which the vendor has a clear and executed strategy for enabling solutions to be delivered to and accessed from a mobile environment.
- **Services:** The degree to which the vendor supports the efficient implementation of the solution and eases the way for partnerships where necessary.
- **Strategic support:** The extent to which the vendor supports change management and the strategic planning elements of implementing a student success solution above and beyond the technology solution.
- **Customer engagement:** The extent to which the vendor has created, supports, and leverages a diverse array of channels for customer feedback and participation in the product development process.

- **Product development:** The extent to which the vendor invests in the development of its products and solutions and regularly delivers against published product roadmaps.

Market impact

The global market impact of a solution is assessed in this dimension. Market impact is measured across four categories, each of which has a maximum score of 10. The vendors were scored relative to one another.

- **Installed base:** The number of unique named institutions the vendor currently has under higher education contract.
- **Revenue (total):** The amount of revenue growth (as a percentage) attributable to higher education over the last fiscal year (2015).
- **Revenue (higher education):** The amount of revenue attributable to higher education over the last fiscal year (2015).
- **Revenue growth:** The amount of revenue growth (as a percentage) attributable to higher education over the last fiscal year (2015).

Multichannel, interactional capabilities

The capacity of a solution to support multichannel, interactional capabilities is assessed on a scale of one to 10 by considering whether a student success system identifies, engages, and delivers support through a single channel. Given that a true student success effort must move beyond analytics, a robust student success solution must enable the end user to take action.

Ovum ratings

- **Market leader :** This category represents the leading solutions that we believe are worthy of a place on most technology selection shortlists. The vendor has established a commanding market position with a product that is widely accepted as best of breed.
- **Market challenger :** The solutions in this category have a good market positioning and are selling and marketing the product well. The products offer competitive functionality and a good price-performance proposition, and should be considered as part of the technology selection.
- **Market follower :** Solutions in this category are typically aimed at meeting the requirements of a particular kind of customer. As a tier-1 offering, they should be explored as part of the technology selection.

Market and solution analysis

Students are not finishing what they start

Improving retention and ultimately ensuring student success are two of the most important business challenges for institutions globally. Although enrollment increases year on year, the ability to retain students is a costly and problematic issue. The dropout rate from UK higher education institutions has increased for the first time in four years. According to data from the Higher Education Statistics Agency (HESA), 6% of first-degree entrants aged under 21 who enrolled in 2013–14 did not continue their studies beyond their first year. This is an increase on the previous year's non-continuation rate of 5.7%. In the US, the issues of retention and timely degree completion are much worse. The National

Center for Education Statistics (NCES) reports that only 59% of students complete a bachelor's degree within six years.

As the barriers to entering higher education have lowered, the nature of the student body and its pathways to success have also changed. According to the NCES, 85% of students in higher education today are considered "nontraditional." The profile of today's student population looks very different to that of decades past, when the average higher education student was an 18-year-old moving directly from high school to campus. Today, students on average are older, more experienced in work, and more socioeconomically diverse. Admissions tutors accept students from increasingly diverse backgrounds and with a far greater range of qualifications. This means that more undergraduates are likely to need extra help to get them through their degree and finish what they start.

Institutions are being held accountable for student success

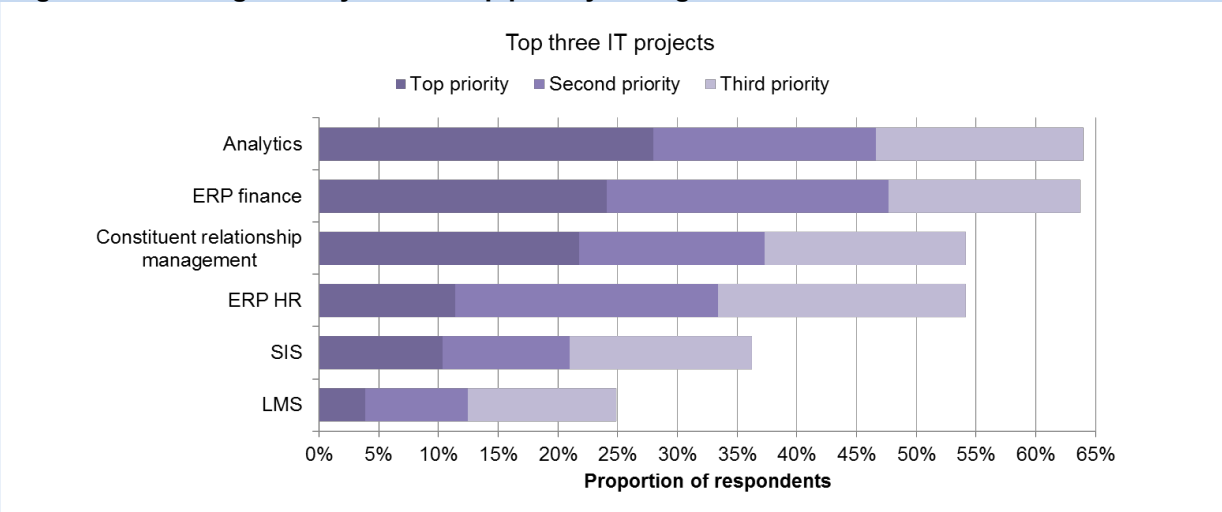
Historically, the onus for performance outcomes and retention rested primarily with the student rather than the institution. If a student left a program for academic or personal reasons, it did not reflect poorly on the college or university. However, as costs have risen and the link between an educated workforce and economic development has tightened, many stakeholder groups, including governments and associations, are holding institutions directly accountable. For example, government agencies are increasingly tying funding – both direct and indirect through financial aid – to performance outcomes and retention. Regardless of these new accountability mechanisms, most institutions are ill prepared to address them in strategic ways. In light of this, Ovum anticipates that institutions will be forced to leverage student success solutions in their efforts to improve student outcomes and success and secure funding.

An end-to-end institutional approach to managing student success is rare

Very few institutions have found solutions to address the challenges of student retention and success. Moreover, rarely are institutions set up to manage student success with a coherent approach across disciplines that begins when the student settles on a course and continues through to graduation. However, many are working hard to retain and aid students using strategies that focus on the first-year experience, which is undoubtedly an important and sometimes unsettling time for students. A key driver of this is the increasingly competitive nature of the higher education market. Furthermore, as students have to pay for services, they become consumers of higher education, and institutions must meet their expectations. Not only does turnover of enrolled students cost an institution financially, but low retention rates degrade the quality of the educational experience on campus, and consequently damage the institution's reputation. For these reasons, more institutions will be forced to do everything possible to enable them to develop the right strategies to increase student success and retention, from building a better understanding of the metrics involved to improving communication between the various constituents of an institution.

Student success efforts must move beyond analytics and toward interventions

Figure 1: Investing in analytics is a top priority for higher education in 2016



Source: Ovum 2015 ICT Enterprise Insights Survey

When asked in Ovum's 2015 *ICT Enterprise Insights* survey (Q315) what IT projects would have the highest priority over the next 18 months, as measured by total spend, the highest percentage of institutional respondents (28%) selected analytics as their number-one priority, and 64% rated it as a top-three project. Although the more transformative usage of analytics has been a topic of heated discussion for some time in higher education, few institutions have taken the next step and made investments to move these conversations from the theoretical to the concrete. These new findings suggest that the institutional willingness and appetite for more transformative efforts is growing and likely to drive investment over the short term. Furthermore, these are early indicators that higher education is becoming a more data-driven industry.

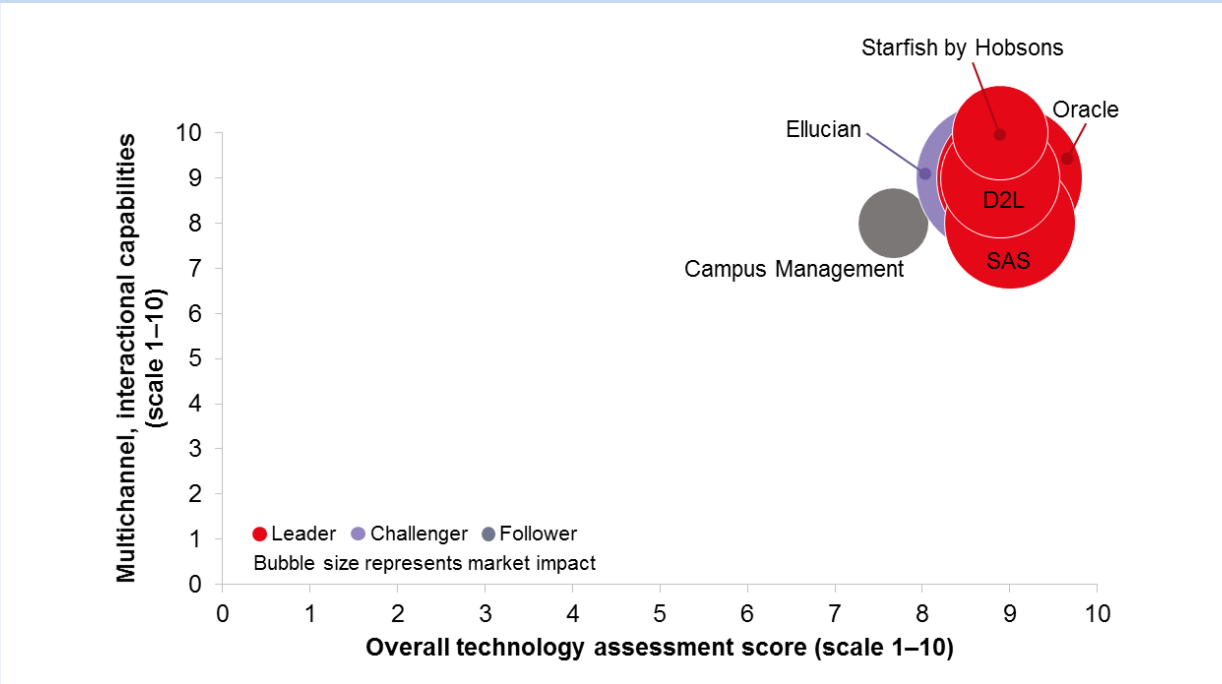
As institutions are increasingly required to report on student outcomes, such as retention, graduation, and even gainful employment rates, they are building increasingly sophisticated reporting capabilities. Reporting to state, provincial, and national agencies is no longer an administrative function, but has become an executive imperative. However, complying with regulatory statutes for reporting is only a first step with analytics, and is unlikely to yield the institutional transformation required to thrive in the coming decades. Creating innovative new programs, finding new revenue streams, and moving with more agility in the industry will require institutions to embrace a data-driven culture where data is an integral part of the decision-making process rather than simply the outcome of it.

Further, data and analytics are only valuable when they provide knowledge that can be acted on by the right people, at the right time, to deliver results. For students, this means having real-time access to their progress and expectations, and the ability to manage their workload. For faculty, it means seeing how students are performing, projecting where they are heading, designing interventions as at-risk behaviors are identified, and understanding the performance of content before students have gaps in knowledge. For advisors, it means having simple tools to help recommend courses to their students and being able to put decision-making data in the hands of students directly. Consequently, student success efforts must move beyond analytics and toward the initiation of interventions, so that students can achieve their desired outcomes.

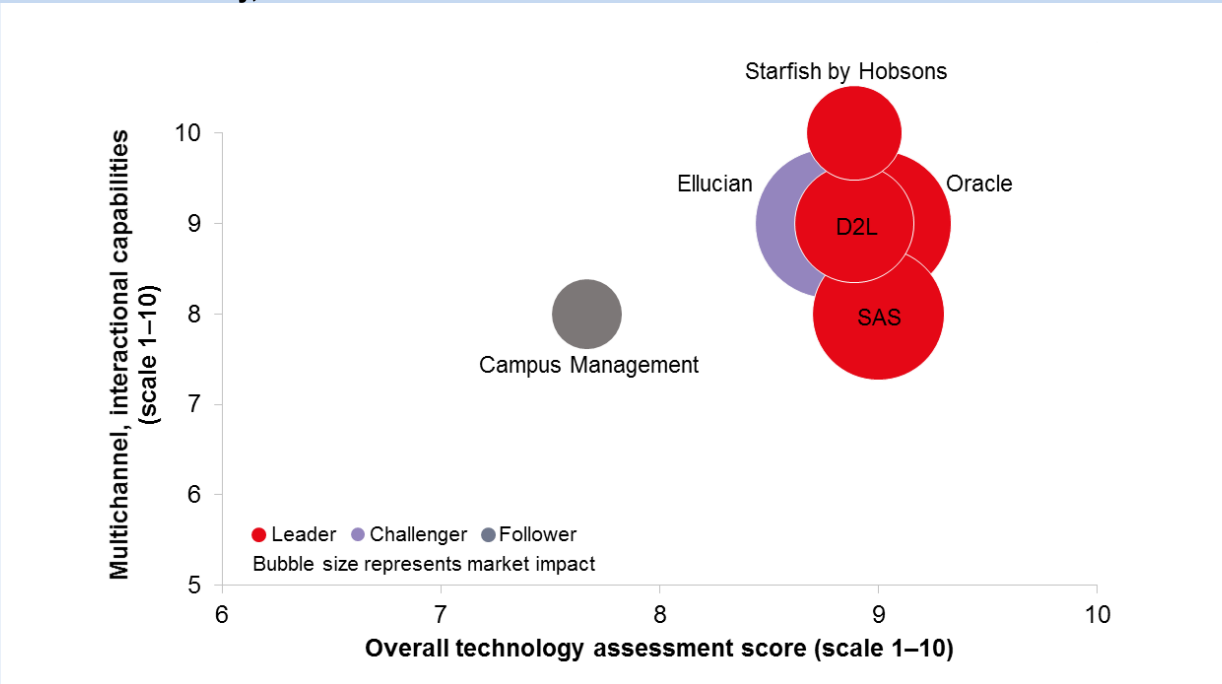
Ovum Decision Matrix: Student Success Solutions, 2016–17

Increasing student success is one of the most important issues facing higher education today. Ovum believes that now is the time for institutions to develop strong student success strategies and seek out student success solutions that move beyond analytics and toward interventions. Figure 2 provides a summary of the positioning of the vendor solutions analyzed in this ODM.

Figure 2: Ovum Decision Matrix: Student Success Solutions in the Higher Education Industry, 2016–17



Source: Ovum

Figure 3: Expanded view of Ovum Decision Matrix: Student Success Solutions in the Higher Education Industry, 2016–17

Source: Ovum

Table 1: Ovum Decision Matrix: Student Success Solutions in the Higher Education Industry, 2016–17

Market leaders	Market challengers	Market followers
D2L	Ellucian	Campus Management
Oracle		
SAS		
Starfish by Hobsons		

Source: Ovum

Market leaders: D2L, Oracle, SAS, and Starfish by Hobsons

D2L, Oracle, SAS, and Starfish by Hobsons are market leaders in providing student success solutions to higher education institutions, albeit in different ways. All four vendors have established relationships with higher education institutions and have used their strong positions in the education technology market to enhance their offerings.

D2L offers analytics-driven progress-monitoring capabilities from within its Brightspace platform, offering a full suite of analytics products. A significant number of Brightspace customers have implemented the Brightspace Student Success System or Brightspace Insights to turn data into informed interventions. Additionally, D2L offers a wide range of strategic and operational services depending on the maturity level and needs of customers. A key selling point of Brightspace is that it enables its customers to take a proactive as opposed to reactive approach to student success.

Although Oracle does not offer a pre-built, stand-alone student success solution, it does offer a robust framework of capabilities to enable institutions to build their own tools to improve student success. A significant number of Oracle higher education customers are now using Oracle Data

Discovery, Oracle Advanced Analytics, Oracle Business Intelligence, and other capabilities within the Oracle Student Cloud to enhance their student success efforts. A key selling point is the company's platform approach, which allows institutions to easily scale their student success initiatives.

Similar to Oracle, SAS does not offer a pre-built solution for student success. Rather, it offers a collection of solutions. For example, SAS Visual Analytics has most recently become one of the key components to help support student success initiatives. On the whole, institutions are using SAS software, in particular SAS Enterprise Analytics for Education, to analyze data from across their campuses to address regulatory responsibilities and inform decision-making, including the support of student and institutional performance success. A key differentiator of SAS is that it heavily subsidizes its software for higher education, as well as providing some solution offerings at no cost.

Starfish by Hobsons is a well-integrated end-to-end platform that can support and scale institutional student success efforts. Not only does it provide an advising and case management system that identifies students most in need, but it also leverages analytics to inform which intervention will work for the specific student's needs. Further, the platform tracks and monitors progress toward completion of those plans and ensures best practices by constantly looking at the efficacy of an institution's tools. A key selling point of the Starfish system is that it is engaging and prompts institutions to create targeted advising programs.

Market challengers: Ellucian

Although Ellucian CRM Advise is relatively new to its suite of products, and is not as established as the other vendor solutions identified as leaders in this Decision Matrix, Ellucian is rated as a market challenger because Ellucian CRM Advise is gaining positive traction in the higher education market. Ellucian offers a broad suite of products exclusively dedicated to higher education, and the full range of its products, in one way or another, contributes to driving student success for institutions. More recently, a growing number of its customers have been using Ellucian CRM Advise to identify at-risk students and provide early engagement and support to improve student outcomes. A key selling point for Ellucian is the level of higher education expertise it brings to the table and the strategic engagements it has with its customers. Consequently, Ellucian has gained trusted-partner status with the majority of its customers, and Ovum anticipates that this will enhance its capabilities and reputation in the area of student success.

Market followers: Campus Management

Ovum has identified Campus Management as a market follower for student success solutions, meaning the vendor is worthy of consideration by institutions selecting a student success solution. Although Campus Management does not yet deliver the full scope of student success capabilities assessed for this Decision Matrix or possess the strong market impact performance of the market leaders and challenger, it is becoming a specialist in its area of coverage within the student success portfolio.

The company recently released Retention360 – the company's retention-as-a-service (RaaS) offering. Retention360 monitors a student's progress toward completion of their course of study and enables institutions to monitor and guide students from enrollment through graduation. An artificial intelligence persona, identified as RENEE (Retain, Engage, Notify and Enablement Engine), collects and monitors information and launches intervention strategies. With these growing capabilities, Ovum anticipates

that more of its current customers will leverage Retention360, as well as the CampusNexus CRM for student success.

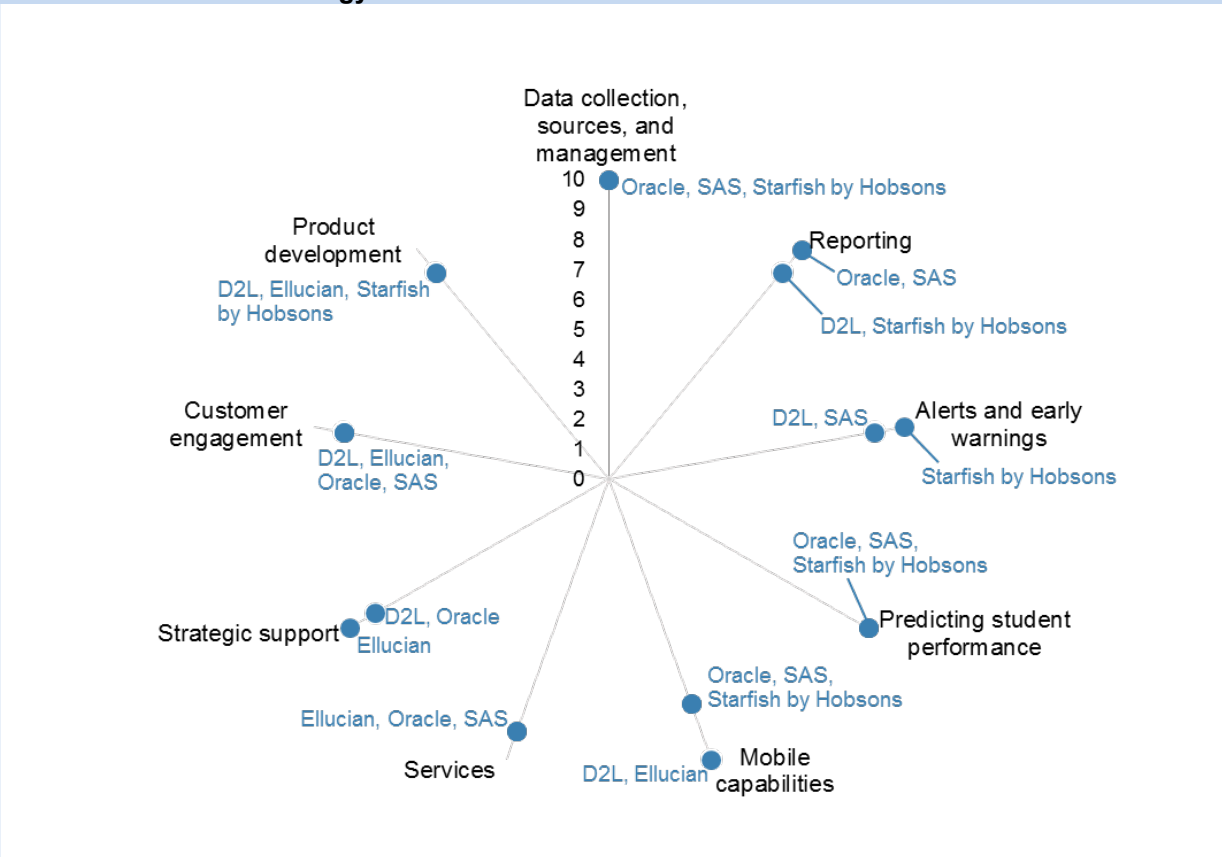
Market leaders

Market leader comparison

Vendors analyzed in this report vary in their focus and strengths. This section looks at the underlying patterns in the market by comparing the top vendors in each of the criteria that contribute to the technology, market impact, and multichannel, interactional capabilities ratings. Institutions must consider the context and comment behind the scores to determine the product that best suits their individual needs. The figures in this section show the three market leaders (including those with identical scores) for each criterion.

Market leaders: technology

Figure 4: Ovum Decision Matrix: Student Success Solutions in Higher Education, 2016–17 – Market leaders – technology



Source: Ovum

Illustrating the considerable diversity and strength of the student success solution landscape in higher education, five of the six vendor solutions profiled in this report are positioned as market leaders for at least one of the technology assessment criteria. Overall, the vendors with the highest technology assessment scores were Oracle and SAS, with D2L and Starfish by Hobsons sharing the

second-highest score. Oracle and SAS scored in the top three in seven of the nine categories, while D2L and Starfish by Hobsons had six out of the nine top-three scores. In the case of Oracle and SAS, although they do not offer a pre-built solution for student success, the capabilities offered to support student success efforts are mature. D2L and Starfish by Hobsons are newer to the market than Oracle or SAS, but considerable thought and resources have been invested to ensure that their solutions meet the specific needs of higher education institutions and their student success initiatives.

Given that a student success initiative must first be well informed by data and include a 360-degree view of students, the capacity of the solution in the areas of data collection, sources, and management; reporting; and early alerts and warnings are important. D2L, Oracle, SAS, and Starfish by Hobsons were standout performers across these criteria. Institutions need to determine what specific metrics play a role in student success. Therefore, the more data that is gathered to be analyzed, the job of producing key performance indicators (KPIs) to be measured becomes easier. Oracle and SAS fare particularly well in this category given that they have robust information management capabilities. Although it is necessary to report on each of the areas that contribute to student success, vendors must extend the boundaries of traditional reporting. Again, Oracle and SAS, with numerous years of experience and a high level of expertise in this area, scored perfect scores. SAS also fared well in the category of alerts and early warnings, along with D2L and Starfish by Hobsons, which was the highest-scoring vendor in this category.

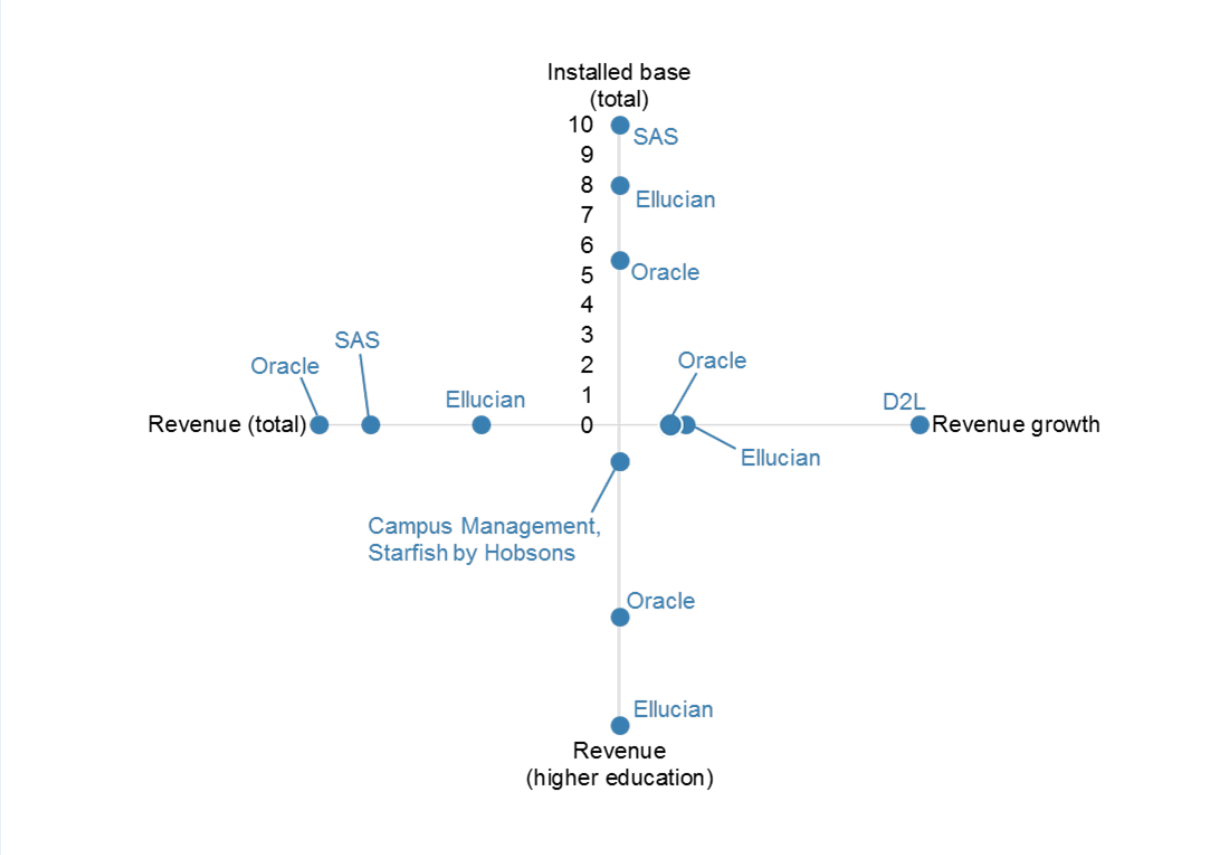
Most vendors understand the growing need for student success solutions to be able to assemble models based on historical student data to develop models for helping to predict student performance in the future. Therefore, the ability to predict student performance is an important part of the student success solution. Oracle, SAS, and Starfish by Hobsons stood out in this category, with each obtaining a perfect score.

Most vendors also understand the need for flexibility in how the student success solution is accessed by end users. The top vendors for mobile capabilities were D2L and Ellucian (both scored a perfect 10 thanks to their mobile-first design philosophy), followed by Oracle, SAS, and Starfish by Hobsons, all of which scored an eight out of 10.

Equally as important to the solution are services, strategic support, customer engagement, and product development. Ellucian stood out across all of these categories, obtaining the one and only perfect score for strategic support of all the vendors in the Decision Matrix. It also achieved top-three scores for services, customer engagement, and product development. An increasing number of Ellucian customers see the company as a strategic partner in higher education, as opposed to a vendor. Ellucian consultants – most of which have a long-standing background in higher education – are in close communication with their customers, and through this have been able to develop Ellucian's student success tools specifically to the needs of the majority of its customers. Furthermore, Ellucian customers state that its consultants have given them a much broader view of the capabilities of the student success tools, resulting in a higher return on investment (ROI).

Market leaders: market impact

Figure 5: Ovum Decision Matrix: Student Success Solutions in Higher Education, 2016–17 – Market leaders – market impact



Source: Ovum

All six of the vendors profiled in this report were on the leaderboard for market impact. The top three vendors, in order of their market impact scores (high to low), were Ellucian, Oracle, and SAS. What separates these vendors from the rest is their ability to cross-sell to their large client base.

The vendor with the largest installed base is SAS, followed by Ellucian and then Oracle. Because SAS is one of the most established vendors in the higher education and wider technology markets, its large client base is to be somewhat expected. For Ellucian, having a large client base suggests a growing institutional appetite for vendors dedicated to the higher education industry. Although Ellucian is placed in the challenger category in this ODM, its current influence could potentially give the company market-leader status in the area of student success very soon.

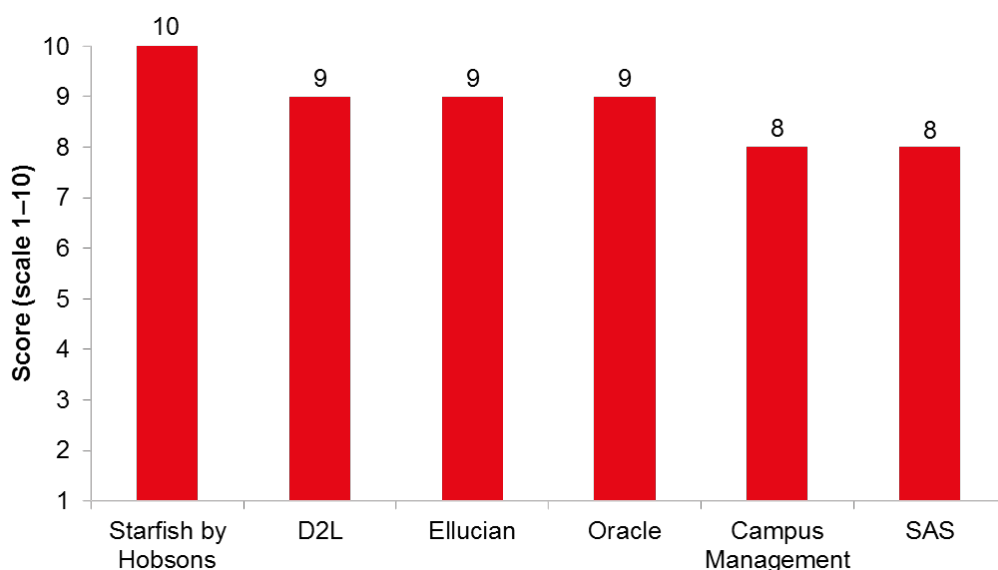
Additionally, Ellucian demonstrated its influence in higher education by holding the top position for revenue attributable to higher education. Of further interest is the group of vendors that emerged to be doing well across several market impact categories. Ellucian, Oracle, and SAS were the top three vendors for not only installed base, but also revenue. Ellucian and Oracle were also among the top three for revenue attributable to higher education. This proves that having considerable resources has been a powerful asset for developing their student success solutions, and as a result, growing their client bases. Also in the top set of vendors for revenue attributable to higher education were Campus Management and Starfish by Hobsons. The considerable resources and presence these vendors

have are powerful assets for developing their solutions over the long term and bringing best-practice insights to their higher education customers.

In terms of growth, D2L blew all other vendors out of the water in terms of revenue growth, which is impressive in such a competitive market. However, it is a lot easier to grow at such a rate when your revenue is in the millions rather than the billions.

Market leaders: multichannel, interactional capabilities

Figure 6: ODM: Student Success Solutions in Higher Education, 2016–17 – Market leaders – multichannel, interactional capabilities



Source: Ovum

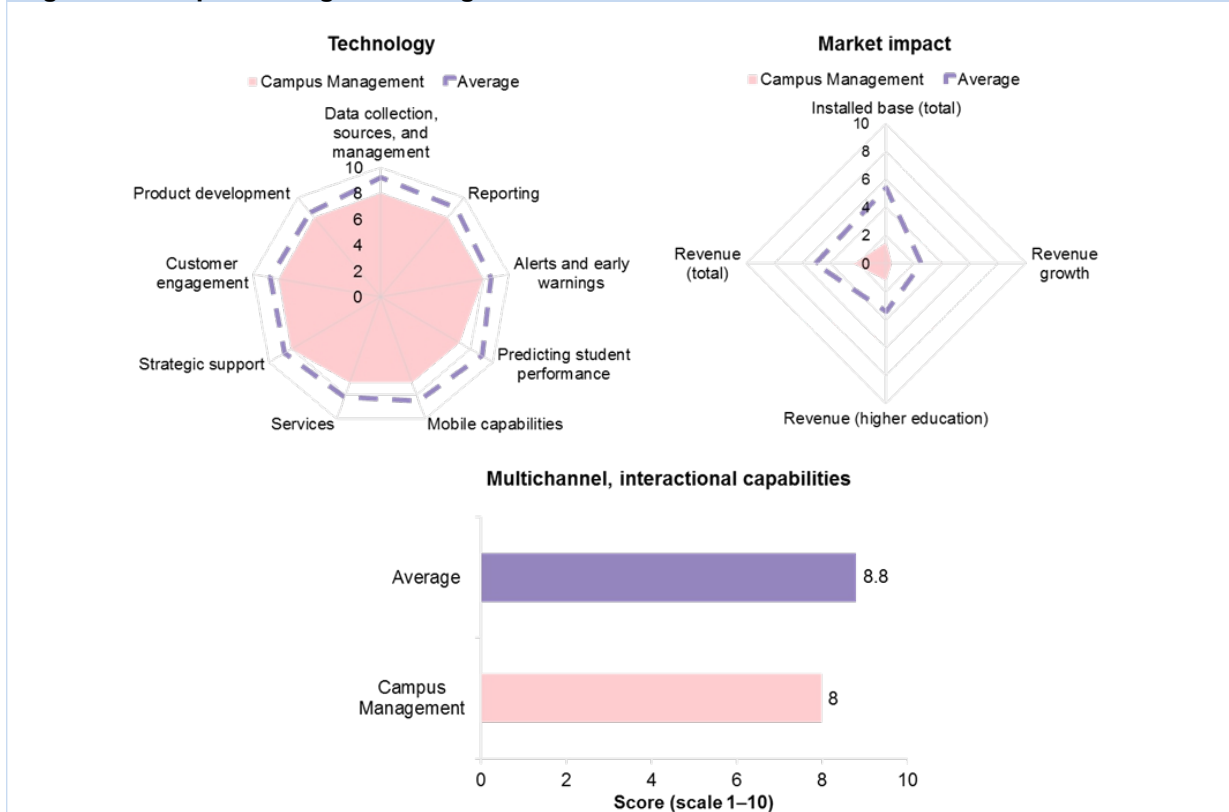
The ability to identify, engage, deliver support to, and enable the end-user to take action via a range of channels is critical to a student success solution's ability to provide long-term value to institutions. The higher education industry as a whole has not yet moved beyond analytics and toward interventions that embrace multichannel, interactional capabilities, but Ovum believes that as market forces make this approach a necessity and vendors advance their student success offerings, the transition will occur.

Among the vendors profiled in this report, Starfish by Hobsons, D2L, Ellucian, and Oracle demonstrated the best multichannel, interactional capabilities. Starfish by Hobsons in particular achieved a perfect score in this area because the solution collates a range of data to send alerts when students appear to be at risk, and provides capabilities that initiate real-time interventions. By pioneering interventions, Starfish by Hobsons has proved that it has moved beyond analytics.

Vendor analysis

Campus Management (Ovum recommendation: Market follower)

Figure 7: Campus Management diagrams



Source: Ovum

Ovum assessment

Background

Founded in 1988 and headquartered in Boca Raton, Florida, Campus Management is an established provider of enterprise applications to the higher education market. In 2008, Campus Management made a bold entry into the constituent relationship management (CRM) market by acquiring the Talisma Multi-channel CRM product line and the Talisma Higher Education business unit, and branding it Talisma CRM. In 2014, the company combined Talisma CRM with its student information system (SIS), CampusVue, and launched CampusNexus Student and CRM.

Approximately 40% of Campus Management's customers are using CampusNexus CRM for retention. With CampusNexus CRM, institutions are targeting different student populations and tracking completion rates, and as a result staff and administrators can now target at-risk students so that they can correlate outreach and engagement to monthly retention rates. Furthermore, the company recently announced the release of Retention360, powered by CampusNexus, as a retention-as-a-service (RaaS) offering.

Market impact

The CampusNexus CRM solution is well known in higher education. However, due to larger enterprise applications vendors entering the student success market and other vendors rapidly increasing their installed bases, the CampusNexus CRM solution is in the lower half of the overall market impact scores. There are exceptions to this performance, however; Campus Management achieved a top-three score for the revenue it generates from the industry.

There are significant opportunities for Campus Management in terms of supporting its existing higher education installed base with tools for improving student success. Being a well-known CRM provider, Campus Management must continue to capitalize on this and showcase its capabilities in the student success space, in particular its new Retention360 service, to a wider audience. Moreover, the company should focus on implementing a dedicated and aggressive marketing strategy for not only Retention360, but also all of its capabilities for improving student success.

Technology assessment

Campus Management scored below average across most of the technology assessment categories, most notably for predicting student performance, mobile capabilities, and services. Campus Management should focus on advancing its predictive analytics capabilities to find hidden patterns in structured and unstructured data that can then be added to the prediction algorithms. When it comes to mobile capabilities, while the solution is responsive in design, and the company is focusing on mobile, there is currently no native app. Finally, Campus Management would benefit from advancing its services beyond implementation plans, and toward dedicated partnerships that support change management and the advancement of student success strategies.

However, with the recent release of Retention360 – the company's RaaS offering – Ovum anticipates that Campus Management's technology will quickly improve. The company preconfigured CampusNexus CRM's retention functionality to operate with an institution's existing tools.

Retention360 monitors a student's progress toward completion of his or her course of study and enables institutions to monitor and guide students from enrollment through graduation by collecting and monitoring information in one place, eliminating silos. Through an artificial intelligence persona, identified as RENEE (Retain, Engage, Notify and Enablement Engine), intervention strategies are launched that include specific calls to action supported by cross-channel messages. Configuration, hosting, and ongoing maintenance are provided by Campus Management, which lowers total cost of ownership.

Multichannel, interactional capabilities

Undoubtedly, the CampusNexus CRM solution provides a range of channels – from text messages to email – to engage with students. However, the solution is not yet a robust intervention system. As a result, Campus Management falls into the lower-scoring group of vendors profiled in this report for this category. Ovum is confident that through RENEE, Campus Management will expand its capabilities in the areas of communication and interventions at several levels, and will not only assist students that are in need, but also help institutions determine how best to help those students and measure their progress toward their goals.

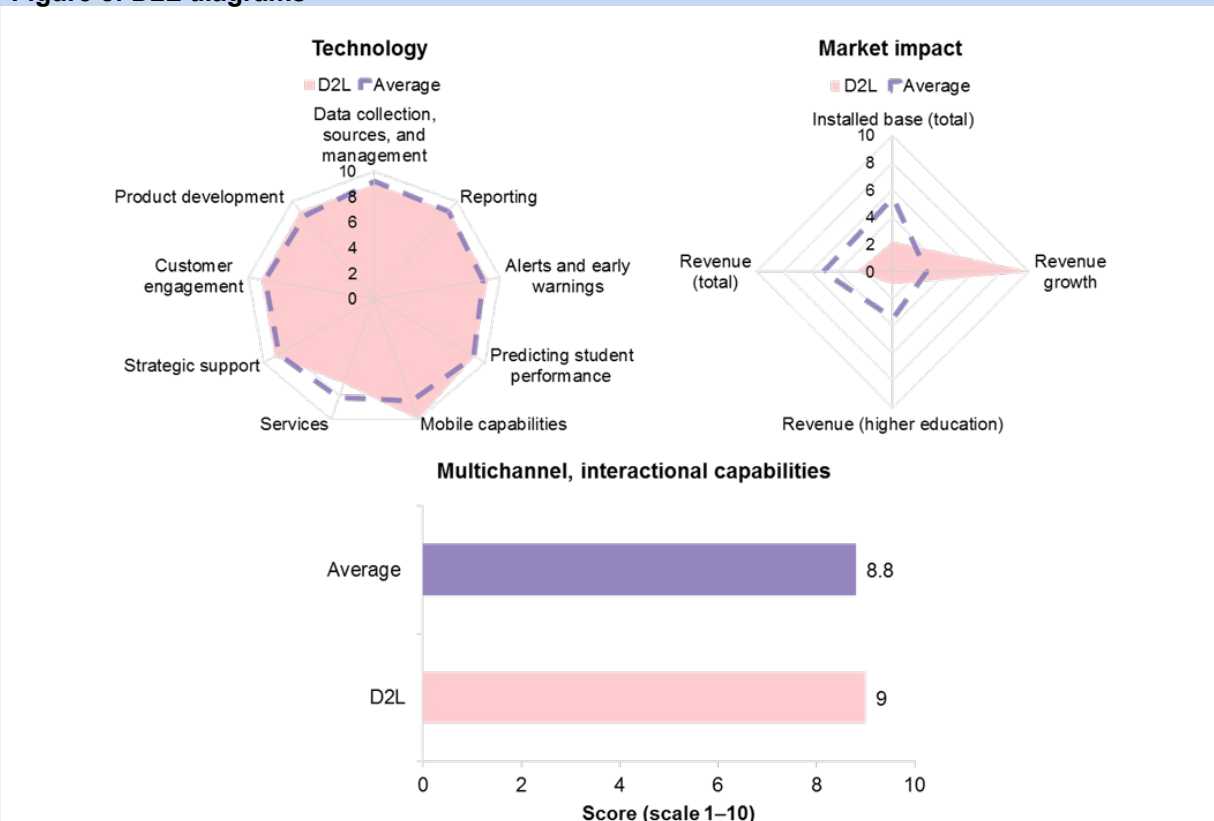
Recommendation: Market follower

While CampusNexus CRM is a complete CRM solution for the higher education industry that supports constituent engagement across institutions, Campus Management has only just launched a dedicated

student success service. Consequently, the company and its tools have limited visibility across the wider student success solution landscape. This is especially applicable for opportunities outside of North America. However, with Retention360 as an extension of Campus Management's student success offering, Ovum recommends that institutions explore Campus Management as a partner for improving student success in the future.

D2L (Ovum recommendation: Market leader)

Figure 8: D2L diagrams



Source: Ovum

Ovum assessment

Background

Leading education technology provider Desire2Learn was founded in 1999 and headquartered in Kitchener, Canada. In 2014, it rebranded its company as D2L and its learning management system (LMS) as Brightspace. D2L offers analytics-driven progress-monitoring capabilities from within Brightspace, and a full suite of analytics products including the Brightspace Student Success System, Brightspace Insights, Brightspace Degree Compass, and Brightspace LeaP.

A significant number of Brightspace customers have implemented the Brightspace Student Success System or Brightspace Insights to turn data into informed interventions. Additionally, D2L offers a wide range of strategic and operational services depending on the maturity level and needs of its customers. These range from change management and strategic planning to implementation, adoption, and helping institutions measure the success of student success and intervention efforts to create continuous improvement plans.

Market impact

Although D2L's brand awareness is strong in North America, it needs to be stronger in other regions. Consequently, in comparison to the other vendors in this report, D2L did not receive particularly high scores on most of the market impact assessment criteria. The only exception to this performance, however, was that D2L achieved the highest score for revenue growth among the profiled vendors. Although it is mathematically easier for smaller vendors to grow rapidly, the reality is that every percentage point is hard won. D2L has raised a substantial amount of funding, and Ovum anticipates that it will develop its student success capabilities further. This will convert brand awareness in North America into more business and speed up international expansion, which will lead to a dramatic increase in market impact.

Technology assessment

D2L scored well across most of the technology assessment categories. Even though D2L is at its core not a business intelligence or data management company, the Brightspace platform achieved a high score for data collection, sources, and management. Brightspace is IMS Caliper-certified for incoming and outgoing events, and the Brightspace Data Platform uses big data architecture to address the scalability and diversity of the data that is produced and managed. It can handle large volumes of both structured and unstructured data, and is multi-tenant to facilitate the sharing and benchmarking of data across institutions.

Equally as surprising and impressive was D2L's high score for reporting. Despite the need to extend the boundaries of traditional reporting, reporting itself is still necessary. Each individual involved in a system-level approach to student success has their own reports, dashboards, and notifications to ensure that they can act appropriately. Some examples of out-of-the-box tools include the following: instructors can see risk predictions for their students as soon as they enter a course; advisors can see dashboards of grades, activity, risk predictions, and degree completion recommendations; and students receive any automated notifications or interventions defined by instructors immediately when at-risk behavior is demonstrated. Additionally, Brightspace supports the creation of any number of roles with permission over access to data, reports, and tools. This flexible approach allows each institution to match its strategy and policies to its implementation, which is important given that student success initiatives will differ across institutions.

D2L's high score for predictive analytics, while still impressive, was not as surprising. The company offers analytics-driven progress-monitoring capabilities from within Brightspace, and the latest focus is putting the knowledge from predictive analytics into instructor workflows, where it can be most useful.

D2L gained one of the highest scores for mobile capabilities because all development is done using responsive web design, which gives end users more flexibility in how they access Brightspace Analytics. Moreover, instructors providing feedback and coaching to students can do so on mobile, tablet, and desktop, and content provided via interventions and remediation can be consumed offline.

Multichannel, interactional capabilities

D2L strongly advocates a system-level approach to student success, and Brightspace has the capabilities for several stakeholders to contribute to this. From advisors looking at degree paths to instructors and students having a clear view of a learner's path to success in an individual course, to the individual concepts in a course being better understood. Because there are multiple stakeholders involved in student success, and at different levels, D2L provides multiple channels of intervention

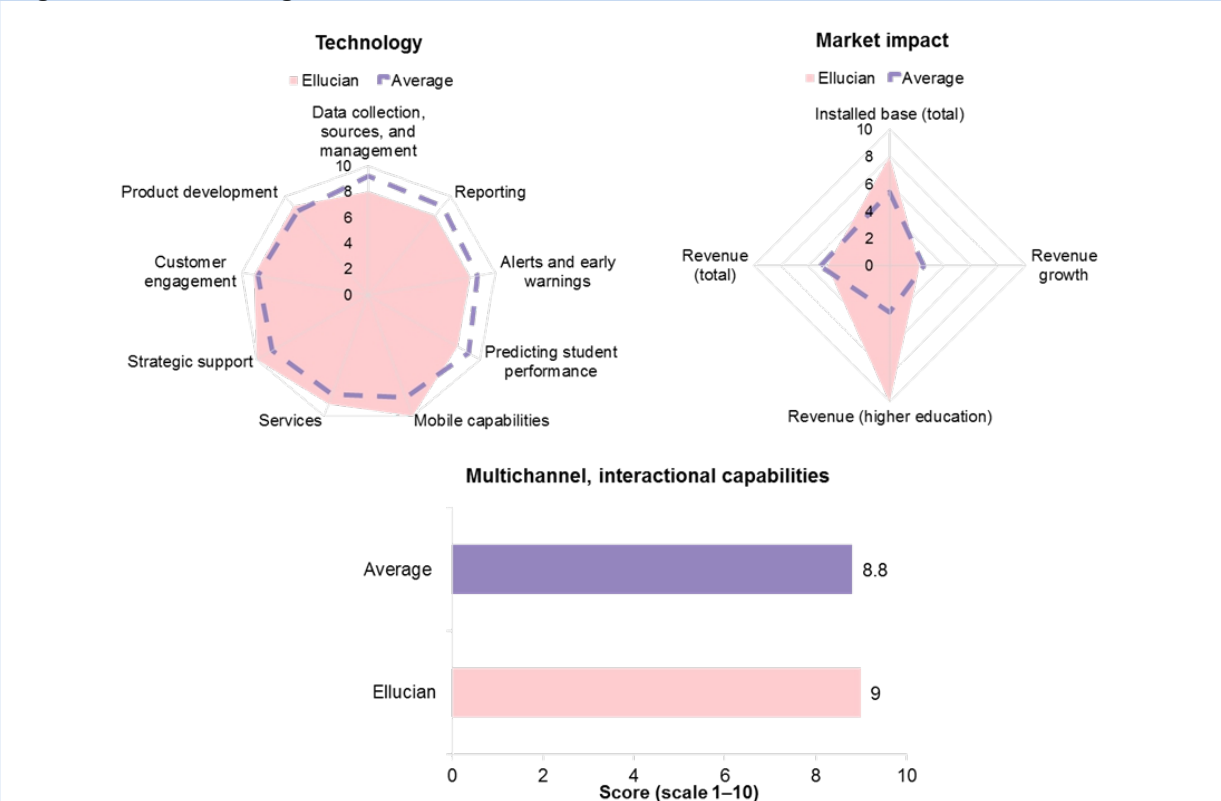
including degree program success, course success, and personal success. As a result, D2L achieved an above-average score for multichannel, interactional capabilities.

Recommendation: Market leader

D2L is enabling its customers to take a proactive as opposed to reactive approach to student success. As a result, Ovum recommends that institutions strongly consider Brightspace Analytics to support student success initiatives. D2L is unique among the majority of its competitors in that it takes a system-level approach across its suite of products and services, with the mind toward being able to take action at an individual level. Not only does Brightspace collate a range of data to predict how students will do in classes, but it also provides an early intervention system and moves beyond analytics and toward the initiation of interventions.

Ellucian (Ovum recommendation: Market challenger)

Figure 9: Ellucian diagrams



Source: Ovum

Ovum assessment

Background

Founded in 2012 and headquartered in Fairfax, Virginia, Ellucian offers a broad suite of products and a high level of professional services, all exclusively dedicated to higher education. Its flagship SIS solutions, Banner by Ellucian and Colleague by Ellucian, are well known across the market. Going forward, the Ellucian Ethos Platform will be the foundation on which Ellucian will deliver all of its solutions and services, including Ellucian CRM, its competency-based education (CBE) solution Ellucian Brainstorm, and more.

While the full range of Ellucian products contributes to driving student success for institutions, Colleague Student Planning, Ellucian Degree Works, and more recently Ellucian CRM Advise are the company's top student success solutions. Ellucian CRM Advise is supported by the Ellucian CRM platform, which is based on Microsoft Dynamics CRM and provides a student success and retention solution that is purpose-built to meet the unique needs and processes of higher education. A growing number of its customers are using Ellucian CRM Advise to detect at-risk students and provide early engagement and support to improve student outcomes. In Ovum's view, it is a promising number considering it was only made available at the end of 2015.

Market impact

Ellucian is the most established higher education–specific vendor in the industry. Its dominant position in the market is reflected in its revenues derived from activities in the sector in comparison to its peers. Consequently, it attained a top-three score in every market impact assessment category, and achieved the highest overall market impact score of all the vendors profiled in this report. In Ovum's view, Ellucian needs to expand its marketing efforts to ensure that it retains its current market impact. The company should consider setting up and showcasing more customer panels to help shape the future direction of its student success tools.

Technology assessment

Ellucian scored moderately well across most of the technology assessment categories, and attained a top-three score in five out of nine of them. Most notable are mobile capabilities, services, and strategic support, for each of which Ellucian attained a top-three score. Ellucian has designed Ellucian CRM Advise to meet the need to improve student success in the most accessible way. The company has a mobile-first design philosophy for all of its new solutions, such as Ellucian CRM Advise, which is natively responsive. End users increasingly require more flexibility in how they access their student success solutions to respond quickly, and responsive design is paramount to doing this. Ellucian CRM Advise also integrates with Ellucian Mobile, a native mobile application that is available for both iOS and Android.

In addition to its investments in its mobile capabilities, Ellucian has also invested significantly in professional services. With more than 500 consultants and project managers on staff, Ellucian provides comprehensive support for implementations across its solution portfolio. For Ellucian CRM Advise, the company has introduced a rapid deployment services package, which, given the pressing need for institutions to improve student success, ensures that customers are up and running in minimal time. Ellucian has also developed or is developing the same rapid deployment methodology for its other software-as-a-service (SaaS) solutions, such as Ellucian CRM Recruit and Ellucian Elevate, its continuing education/workforce development solution. Moreover, based on best-practice insights from its experience in working with more than 2,400 institutions globally, Ellucian also offers strategic management consulting services to partner with institutions to develop institutional retention and student success programs.

Ellucian was the only vendor to receive a perfect score for strategic support. A significant number of Ellucian consultants have a background in higher education, which gives them experience in defining data governance principles for institutions. Both data governance and change management are important areas of focus during the implementation phase. Given the amount of data and the change in culture needed to inform student success initiatives, Ellucian's work with institutions to help implement best practices around managing complex data processes is impressive. Furthermore,

customers claim that Ellucian's consultants have given them a much wider view of the capabilities of Ellucian's student success solutions, allowing them to obtain a higher return on investment (ROI).

Multichannel, interactional capabilities

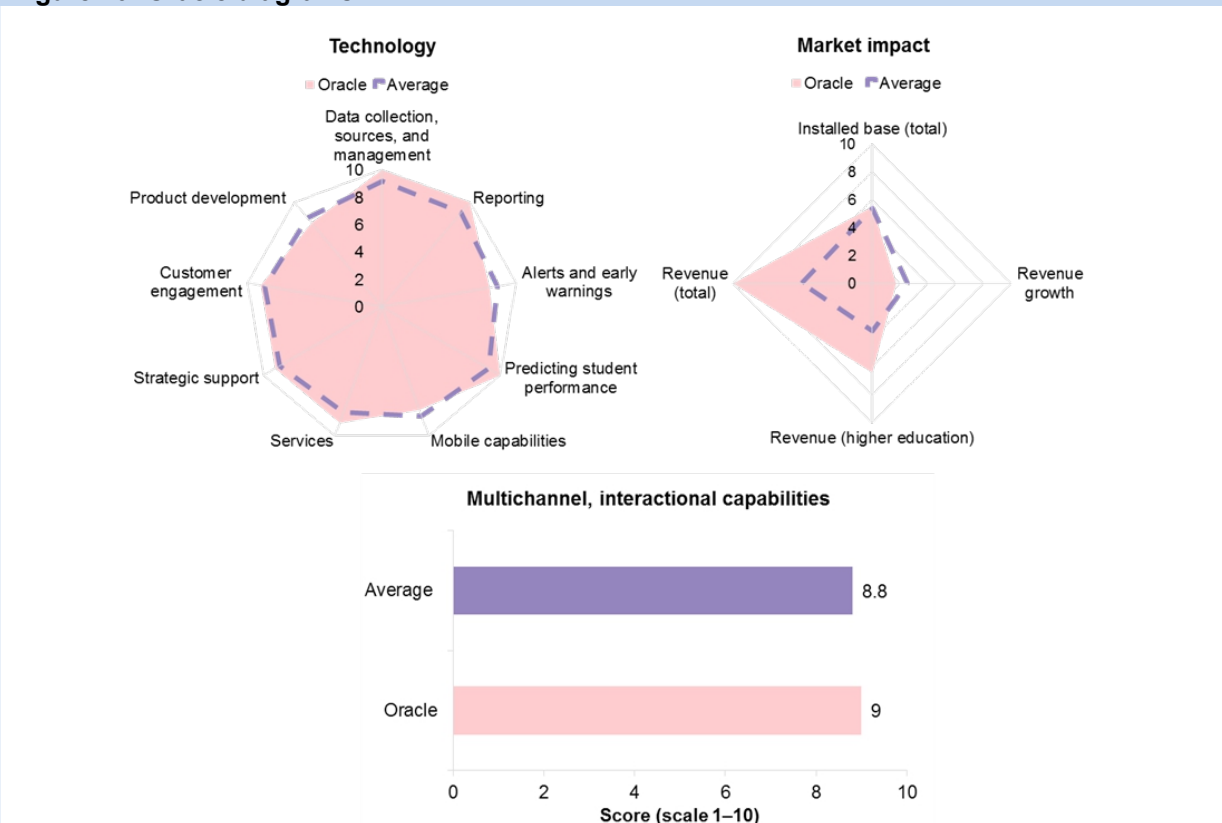
Ellucian CRM Advise has moved beyond analytics and toward interventions to help improve student success. Core to the success of Ellucian CRM Advise is the alert system. Raising an alert is the first step in engaging a student toward an intervention. As an extension of this philosophy, all communications (from email and SMS to notes and mobile push notifications), interactions, and outputs of the interactions are initiated, transmitted, tracked, and logged in a central source within Ellucian CRM Advise. This gives the institution a 360-degree view of how it is engaging students, in the hope that this engagement leads to positive actions, and ultimately to successful outcomes. Similarly, all outcome actions can also be tracked within Ellucian CRM Advise. As a result, Ellucian was in the top set of vendors for multichannel, interactional capabilities.

Recommendation: Market challenger

Undoubtedly, Ellucian has a well-established market position as a leading higher education–specific vendor. However, the percentage of its installed base using student success products, in particular Ellucian CRM Advise, is still relatively small. Ovum anticipates that further integration with other more established Ellucian products, coupled with its higher education expertise, will help Ellucian move forward with its student success products in 2016. Thus, Ovum recommends that institutions consider Ellucian CRM Advise to support student success efforts.

Oracle (Ovum recommendation: Market leader)

Figure 10: Oracle diagrams



Source: Ovum

Ovum assessment

Background

Founded in 1977 and headquartered in Redwood City, California, Oracle is one of the world's largest technology solution providers. In terms of higher education and student success, Oracle does not offer one stand-alone, branded student success solution, but rather a framework of capabilities to enable institutions to identify, engage, empower, and intervene to drive student success. This includes data discovery, predictive and prescriptive analytics, operational reporting, case management, contextual personalized outreach and marketing, enrollment planning and academic advising, integrated student services, and beyond.

As the conversation in higher education has shifted from access to success, with a focus on specific measures aligned to student outcomes, a significant number of Oracle's higher education customers are now using Oracle Data Discovery, Oracle Advanced Analytics, Oracle Business Intelligence, and other capabilities within the Oracle Student Cloud to enhance their student success efforts.

Market impact

Oracle has a long-standing history with and commitment to the higher education industry. It is, therefore, not surprising that it scored well against the majority of the market impact assessment criteria. The considerable investment Oracle has made in not only its North America higher education practice but also internationally is paying off, with an increasingly large client base, and as a result it received a top-three score for installed base. More importantly – though again unsurprisingly – the company achieved the top score for total revenue. While many perceive Oracle as a horizontal provider, Ovum estimated that its higher education revenue was the second largest among the profiled vendors. Unfortunately, Oracle did not grow its revenue at the same pace as the other vendors profiled in the report. However, Ovum anticipates that as Oracle continues to grow its commitment to industries as a whole – the company has more than 22,000 employees dedicated specifically to industries, has invested more than \$700m in research and development, and has made 30 industry-specific acquisitions over the past five years – its revenue will increase dramatically.

Technology assessment

Oracle's framework of capabilities for student success scored exceptionally well on the technology assessment. It attained a top-three score in seven of the nine categories, and tied for first place in the overall technology assessment category. Oracle Data Discovery analyzes hundreds of variables that are indicative of several factors that enable student success, and is well suited to institutions that desperately need to cut through the noise and establish which data is most important. Once key variables are discovered, institutions then need to incorporate these into predictive analytics and operational reports. Oracle first brings structured and unstructured data from multiple sources to discover the key indicators through Oracle Data Discovery. The acquisition of the Endeca Information Discovery platform has allowed Oracle to expand its traditional focus on structured data and evidences its commitment to incorporate more unstructured data into the analytics mix. Secondly, the key variables are modeled into predictive algorithms through Oracle Advanced Analytics, and finally, the information can be modeled and analyzed for operational performance through Oracle Business Intelligence. Thus, Oracle received a perfect score for data collection, sources, and management.

Ovum was also impressed with Oracle's flexible approach to reporting and predicting student performance. Oracle Business Intelligence solutions, specifically Student Information Analytics, delivers a substantial amount of out-of-the-box key performance indicators, and the Oracle Business

Intelligence Cloud Service enables the creation of new reports to meet evolving analytical needs. Oracle Advanced Analytics is embedded in the Oracle database and provides capabilities for the development of several kinds of algorithms, pulling from historical data to make predictions about future outcomes. Added to this capability is Oracle Big Data Discovery, which allows institutions to find hidden patterns in structured and unstructured data that can then be added to the algorithms. These solutions are extensible to meet the unique needs of institutions, and consequently, Oracle achieved perfect scores for both reporting and predicting student performance.

Oracle also attained top-three scores for services, strategic support, and customer engagement. Oracle Consulting offers programs to support institutional student success projects, and has a strong partner network whose core missions are business advising and the implementation of Oracle technologies. In addition, the company utilizes its extensive customer network, including the Higher Education User Group (HEUG), which represents hundreds of institutions globally, to understand higher education business issues and emerging best practices, including those for student success. The HEUG provides feedback and guidance to its members and Oracle through Product Advisory Groups and Special Interest Groups.

Multichannel, interactional capabilities

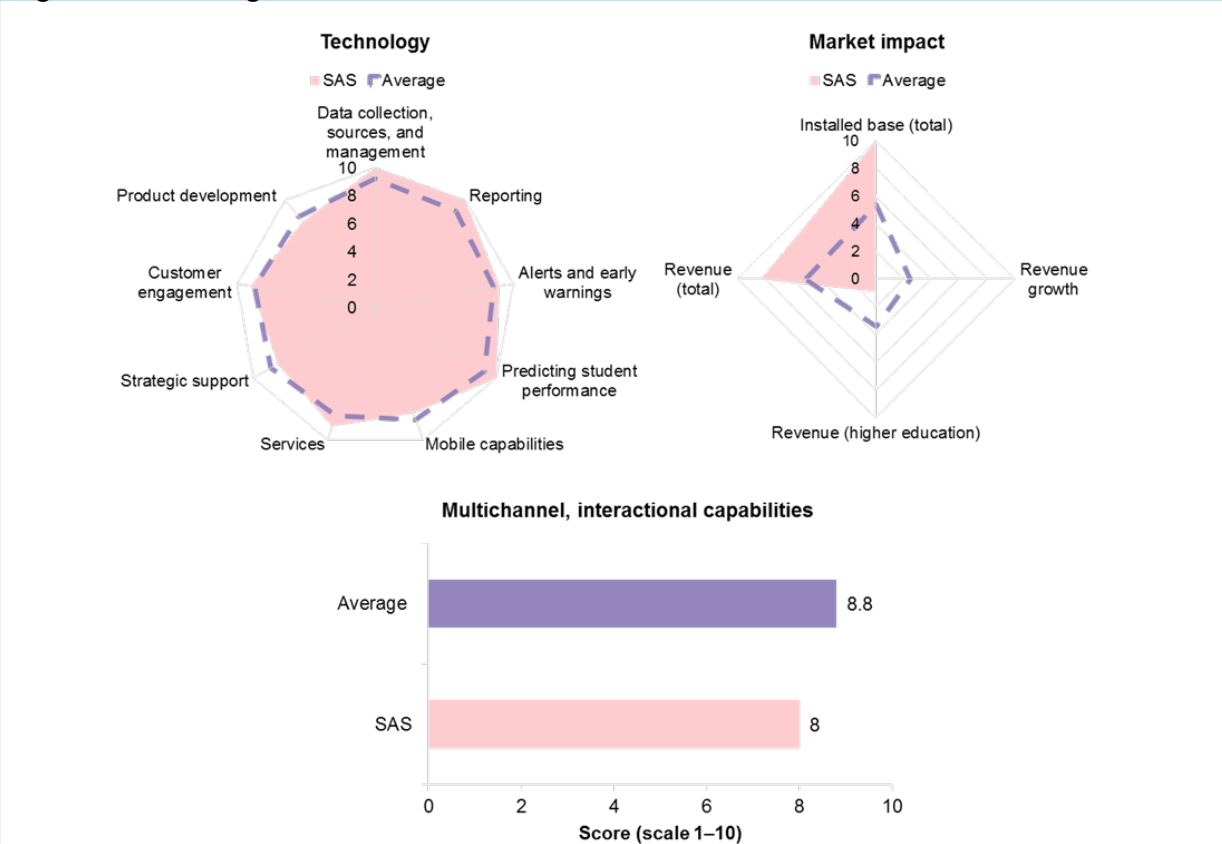
In terms of Oracle's ability to provide multichannel, interactional capabilities to its end users, it scored slightly above average. While there are channels to deliver support to students, and Oracle advocates a four-step process (identify, engage, empower, intervene), it has not yet demonstrated that its solutions are as robust with interventions as they are with analytics. However, given the individual student success capabilities that Oracle already offers and numerous institutions are using, Ovum anticipates that it is only a matter of time before Oracle's intervention capabilities are at pace with its data collection, reporting, and analytics capabilities.

Recommendation: Market leader

Higher education is one of Oracle's key strategic industries, with a large number of higher education customers and investments in standards organizations such as IMS Global. The company is an increasingly powerful and influential force within the higher education industry, aided at least in part by a synergistic relationship with the HEUG. Although Oracle does not offer a pre-built student success solution, and some may initially perceive its capabilities to be complex, in the long-term most institutions will need this flexibility because student success is a continually moving target. Consequently, Ovum recommends that given Oracle's position as a market leader, institutions strongly consider its framework and architecture to support student success initiatives.

SAS (Ovum recommendation: Market leader)

Figure 11: SAS diagrams



Source: Ovum

Ovum assessment

Background

Founded in 1976 and headquartered in Cary, North Carolina, SAS is a leading provider of analytics, business intelligence (BI), and data management across several industries. Given that its software originated at North Carolina State University many years ago, SAS has always had strong connections to higher education. At that time, SAS was developed to analyze agricultural data, but it has since grown to become SAS Institute, offering software with functionality that is considered a differentiator in the BI market.

Institutions are using SAS software, in particular SAS Enterprise Analytics for Education, to analyze data from across their campuses to address regulatory responsibilities and inform decision-making, including the support of student and institutional performance success. SAS does not offer a pre-built student success solution. Rather, it offers a collection of solutions to support student success. For example, SAS Visual Analytics has most recently become one of the key components to help support student success initiatives. Separately, SAS heavily subsidizes its software for higher education, and provides some solution offerings at no cost.

Market impact

SAS is an established vendor in both higher education and the wider technology market, and scored well in two market impact assessment categories. SAS had the largest installed base and the

second-highest score for total revenue among the vendors profiled in this report. Although the company was not in the top three vendors for revenue attributable to higher education, most likely because of the discounted pricing it offers, SAS most certainly has a clear presence among colleges and universities.

Technology assessment

SAS Enterprise Analytics for Education tied for the top score in the overall technology assessment category, attaining a top-three rating in seven of the nine categories. Unsurprisingly, SAS's software received a perfect score for data collection, sources, and management. Data management, which includes data integration, data quality, and other areas such as data governance and master data management, represents approximately 40% of the company's annual revenue. SAS has the ability to access any electronic data type and allow for automated extraction, transformation, and loading into a data warehouse, an analytical application, or reporting. SAS's strong analytical approach enables institutions to identify and resolve data quality challenges using multiple techniques.

SAS's software also received a top score for reporting, as well as for predicting student performance. SAS has extended the boundaries of traditional reporting by allowing end users to create the reports they want without relying on others. However, Ovum warns institutions that SAS products have traditionally required a significant amount of training and knowledge to be able to leverage them at a sophisticated level. That said, during the past couple of years SAS has made an effort to reach more nontechnical business users.

The SAS approach to identifying at-risk students incorporates advanced analytics to leverage all available data elements. Whether the focus is on identifying at-risk students, assessing the impact of merit aid on the likelihood that a student will enroll/persist/graduate, or any other scenario, one single approach to predicting student performance will not always work the same from institution to institution. By leveraging multiple models, institutions can determine which model fits best for the students being analyzed at the time.

SAS pairs all of these solution capabilities with an impressive set of services and customer engagement channels. Institutions have multiple deployment support options based on their expertise, staffing availability, and urgency, and are not forced to pay for more support than they want. In terms of customer engagement, SAS places a significant emphasis on customer input, and has several active user group communities, including the SAS Users Group for Institutional Research (SUGIR), as well as other regional and industry-specific groups.

Multichannel, interactional capabilities

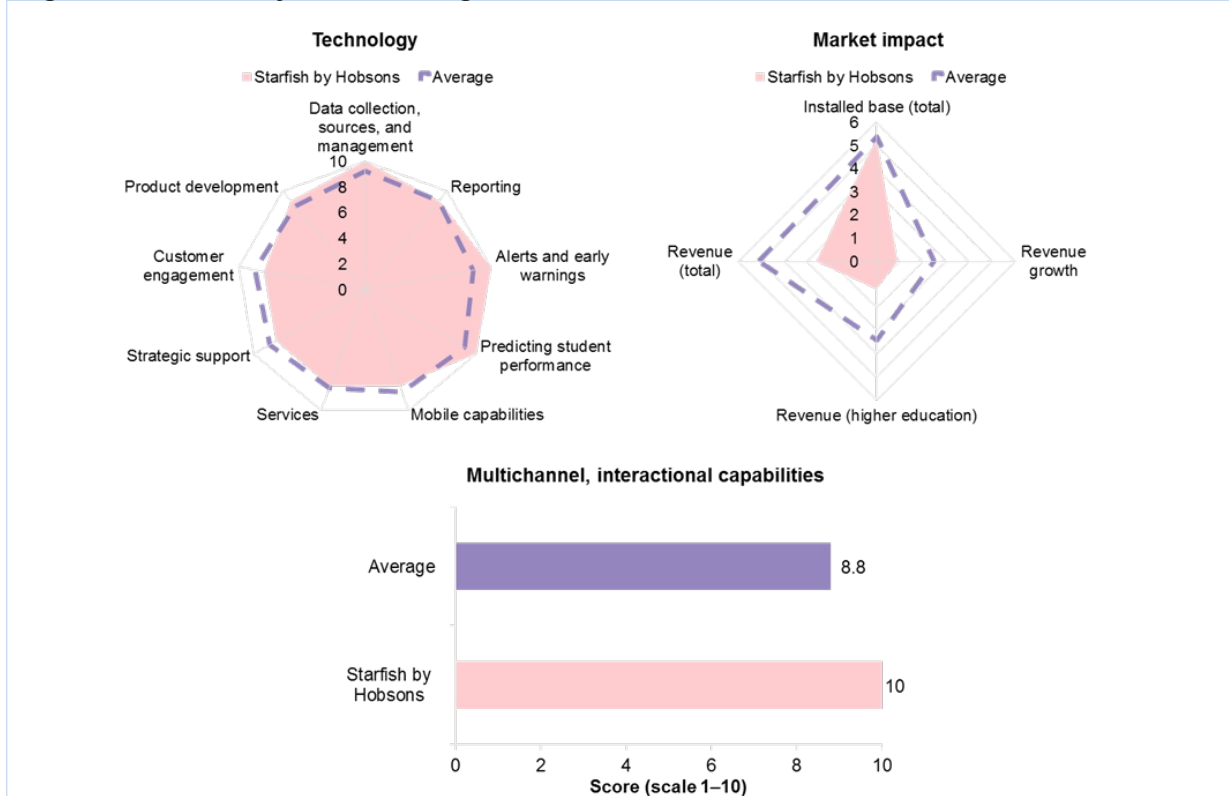
Undoubtedly, SAS provides its customers with robust analytics tools to analyze their data and ask the right questions when it comes to student success. Furthermore, it offers capabilities to identify at-risk students, send alerts when students are determined to be at risk, and make recommendations for how to engage students. However, SAS does not provide the capabilities to track what interventions have been made. In most cases, SAS customers need to deploy another solution that can initiate and track interventions on top of SAS Enterprise Analytics for Education. As a result of relatively limited capabilities for interventions, SAS falls in the lower-scoring group of vendors profiled in this report for this category.

Recommendation: Market leader

While SAS does not provide a pre-built student success solution, nor does it have plans to, SAS would help its customers greatly by adding a dedicated interventions layer within its current analytics suite. This would reduce the complexity of institutions having to look elsewhere. A significant number of colleges and universities globally are already using SAS technology to analyze and improve many aspects of student success. Therefore, better capabilities for interventions would enhance their efforts. The measurement of student success will differ across institutions; therefore, this flexibility in implementing only the tools that are needed, as opposed to a pre-packaged solution, will become increasingly appealing. Consequently, Ovum recommends that as a market leader, institutions consider SAS Enterprise Analytics for Education, and its additional capabilities, to support student success initiatives.

Starfish by Hobsons (Ovum recommendation: Market leader)

Figure 12: Starfish by Hobsons diagrams



Source: Ovum

Ovum assessment

Background

Founded in 1974 and headquartered in Cincinnati, Ohio, Hobsons is an education-specific, leading provider of career planning, admissions and enrollment management, student success, and advising solutions. Most commonly known for its CRM solution, Radius by Hobsons, the company also offers Naviance for college and career readiness, and Starfish and the PAR Framework for student success and advising.

In 2015, Hobsons acquired Starfish Retention Solutions, which was founded in 2007, to enhance the company's advising and admissions tools, creating a strong portfolio of student support from K-12 through to graduate school. Now known as Starfish by Hobsons, the company's solutions include the Starfish Enterprise Success Platform, Starfish Early Alert, Starfish Connect, and Starfish Degree Planner, as well as client success services. Furthermore, Hobsons acquired the Predictive Analytics Reporting (PAR) Framework in early 2016 to help institutions leverage more data to improve student success.

Market impact

Hobsons is an established vendor in the higher education industry. However, in terms of overall market impact in comparison to the other vendors profiled in this report, it falls in the lower half. There are two exceptions to this performance. Although quite far behind the vendors in first and second place, Starfish by Hobsons achieved a top-three score for revenue attributable to higher education. Hobsons is a well-known subsidiary of DMG Information, a global portfolio of business-to-business companies, and of the Daily Mail and General Trust, which is listed on the London Stock Exchange. Thus, Ovum has no doubts about its ability to expand, and is confident that with the acquisition of Starfish and the PAR Framework, Hobsons will increase its influence in the industry.

Technology assessment

At its core, Starfish by Hobsons is a student success company. It understands very well both the challenges of improving student success and the technology required to support institutional initiatives. As a result, the Starfish Enterprise Success Platform and its additional tools for student success scored well against the technology assessment criteria. It achieved a top-three score for six of the nine categories, with perfect scores for data collection, sources, and management; alerts and early warnings; and predicting student performance.

Institutional data is gathered from both the SIS and LMS systems, as well as other data types. The aggregate data is consumed and processed using an algorithmic methodology that matches student data against industry-suggested attributes that affect student success. The platform also includes benchmarking capabilities that utilize common data definitions, allowing for an apples-to-apples comparison of student data across various institution types. This is useful because while institutional characteristics may differ, students and certain measures of success remain constant across a range of institutions. What differentiates the Starfish approach to data collection and management is that the Starfish Universal Adapter processes incremental differences in the data created each day. The current set of data is compared with the previous day's set, and only the changes are sent to the Hobsons system.

When it comes to alerts and early warnings, the Starfish platform allows institutions to elect to raise flags and identify students with issues using a manual approach, such as when a faculty member indicates that a student is not participating in class discussion or is exhibiting a behavior that is cause for concern. Flags and alerts can also be raised automatically using information that is imported to Starfish from other institutional systems, such as the SIS. Examples could include student absences, low average GPA, or low grades on assignments.

Starfish by Hobsons provides a continuous and nuanced picture of every enrolled student, resulting in a truly holistic view of each student, and not just those at-risk. Academics and student readiness are fairly common metrics for student success. The Starfish platform goes beyond the standard measures of student success probability metrics by including administrative, wellness, social, and financial

pressures that can affect a student's chances of success. Thus, in addition to system-generated alerts based on academic criteria such as a low GPA, faculty and staff can create an alert based on student behavior as well as observations or interactions with students.

Starfish Success Scores and the PAR Framework give Hobsons the ability to aggregate information and make prognostications based on a series of weighted measures. In addition, Starfish by Hobsons is able to capture and factor day-to-day faculty and advising interactions with students. This holistic view of students provides an ability to prioritize interventions and enables staff to reach out quickly and effectively to students according to risk level.

Multichannel, interactional capabilities

Starfish by Hobsons is a pioneer in initiating interventions. The system collates a range of data to send alerts when students appear to be at risk, and provides capabilities that initiate real-time interventions. As a result, Starfish by Hobsons received the highest score for multichannel, interactional capabilities. Starfish by Hobsons provides a robust communication platform, leveraging the myriad of people on campus that are responsible for student success. The company is focused on holistically aligning a student's needs with the interactions that take place, and within the Starfish platform, students can receive success plans tailored to their needs, interact and schedule appointments with their advisors, and receive referrals and communicate with staff across the campus. Furthermore, the people on campus with whom a student interacts become a part of their success network: a team of people the student can call on at any point to ensure progress toward their goals.

Recommendation: Market leader

Starfish by Hobsons is a well-integrated end-to-end platform that can support and scale institutional student success efforts. It not only provides an advising and case management system that identifies students that are most in need, but also leverages analytics to inform which intervention will work for the specific student's needs. Further, the platform tracks and monitors progress toward completion of those plans, and ensures best practices by constantly looking at the efficacy of an institution's tools. Its customers claim that their progress with the Starfish system has also created targeted and proactive advising programs. Consequently, Ovum recommends that as a market leader, institutions consider Starfish by Hobsons to support their efforts to improve student success.

Appendix

Methodology

- Vendor briefings
- Quantitative and qualitative comparison of products

Further reading

"Enterprise Case Study: Improving Financial Decision-Making with Data and Analytics,"
IT0014-003108 (March 2016)

"Enterprise Case Study: Transforming Academic Advising to Increase Student Success and Retention," IT0008-000266 (March 2016)

"2016 ICT Enterprise Insights in the Higher Education Industry," IT0008-000258 (January 2016)

Author

Navneet Johal, Research Analyst, Education Technology

navneet.johal@ovum.com

Ovum Consulting

We hope that this analysis will help you make informed and imaginative business decisions. If you have further requirements, Ovum's consulting team may be able to help you. For more information about Ovum's consulting capabilities, please contact us directly at consulting@ovum.com.

Copyright notice and disclaimer

The contents of this product are protected by international copyright laws, database rights and other intellectual property rights. The owner of these rights is Informa Telecoms and Media Limited, our affiliates or other third party licensors. All product and company names and logos contained within or appearing on this product are the trademarks, service marks or trading names of their respective owners, including Informa Telecoms and Media Limited. This product may not be copied, reproduced, distributed or transmitted in any form or by any means without the prior permission of Informa Telecoms and Media Limited.

Whilst reasonable efforts have been made to ensure that the information and content of this product was correct as at the date of first publication, neither Informa Telecoms and Media Limited nor any person engaged or employed by Informa Telecoms and Media Limited accepts any liability for any errors, omissions or other inaccuracies. Readers should independently verify any facts and figures as no liability can be accepted in this regard – readers assume full responsibility and risk accordingly for their use of such information and content.

Any views and/or opinions expressed in this product by individual authors or contributors are their personal views and/or opinions and do not necessarily reflect the views and/or opinions of Informa Telecoms and Media Limited.

CONTACT US

www.ovum.com

analystsupport@ovum.com

INTERNATIONAL OFFICES

Beijing

Dubai

Hong Kong

Hyderabad

Johannesburg

London

Melbourne

New York

San Francisco

Sao Paulo

Tokyo

