

Designing the higher education of the future

Students' and lecturers' learning and teaching preferences are rapidly evolving. However, a largely paper-based system still touches most aspects of campus life at every college or university, especially in Indonesia. From approving financial aid for students, validating transcripts and certifications, scholarship recommendations, to signing agreements, paperwork seems to be entangled with every course of action within the campus. The time and costs in these processes aren't always obvious, but they can be significant.

Given how adjustable and nimble learning institutions have to be, it is vital that they have a good administrative structure to ensure everything runs smoothly. However, the amount of time that academic staffs spent in doing paperwork could cause them to lose their focus in providing a high-quality education for the students. With these factors in mind, it is timely for higher education institutions to start transforming their operations into a system that would enable them to improve their efficiency and help them provide high-quality education for their students.



Cumbersome bureaucratic procedures in universities are incompatible with the rapid responses required in the dynamic industrial world

Moeliodihardjo et.al 2013

Each year, Privy could potentially assist higher education institutions in Indonesia by implementing digital signature technology on:



1 million of graduation certificates



7,3 million academic transcripts



2,288 university administrations

Challenges faced by higher education institutions in Indonesia

As one of the world's most populous countries, Indonesia also has a large number of students. By 2019, the number of active students who are listed in higher education institutions in Indonesia has reached 7.3 million people. Indonesia's Ministry of Research, Technology, and Higher Education (Kemenristekdikti) listed 1.4 million new university students every year.

The high volume of university students and graduates certainly put a strain on universities' administrative system, especially if the universities have yet to adopt the latest technology in processing the papers. Indonesia's unique characteristic as a vast archipelagic country also presents another challenge in itself. Students come from various regions where access to quality transportation or internet connection could differ significantly between one another. As most universities in Indonesia are located in populous areas, these universities must actively make efforts to develop an inclusive system that is able to provide assistance to prospective students, particularly those who come from underprivileged backgrounds and remote areas.

On the other side, Indonesian students who study abroad face a their own challenge. Kemenristekdikti reported that as many as 66,706 Indonesian students are studying overseas by 2017. This number is likely to grow each year. Most of these students need to go through an extensive paperwork process prior to continuing their study overseas, such as translating and providing authorized verification proof of their academic transcripts and certificate of graduation.

Another pressing issue surrounding the education industry in Indonesia relates to document frauds. Paper documents are easy to falsify; by using a photo editing software, course scores in academic transcripts can easily be modified and graduation certificate can easily be generated.

Fortunately, most of these challenges can be solved by digitizing their operations. Implementation of digital signature technology can be one of the solutions for educational institutions to be more efficient, more inclusive, while at the same time safeguarding their integrity from fraud attempts.

Digital Signature Implementation for Higher Education Institutions

Digital signature is a technology that allows its users to verify a document's integrity along with the validity of its signer. Digital signature is also accessible from any internet browser or smartphone that is connected to the internet, meaning that it is accessible anytime, anywhere. Moreover, digital signature is also deemed to be as legally binding as traditional ink signature in Indonesia. So how can higher education institutions benefit from digital signature?

Signing graduation certificates

Digital signature can be used by universities to sign graduation certificates. Graduation certificates that are digitally signed are embedded with electronic certificates. This electronic certificate ensures the authenticity of the content provided in the graduation certificate, along with the validity of its signer. Simply put, digitally-signed graduation certificates are safe from counterfeiting.

Moreover, the use of digital signatures on graduation certificates can also reduce the time needed to sign the certificate significantly as the signer only needs to drag and drop their signature onto the certificate. Some digital signature providers, like Indonesia's Privy, also allow its users to digitally sign multiple documents with one click.

Students' transcripts verification

Digital signature is created with asymmetric cryptography. This cryptography technology allows PDF readers to detect the slightest changes that occur after the electronic document has been digitally signed. Academic scores within transcripts that are digitally signed can be verified for its validity without having to go through a complicated and time-consuming process. University administrations, government bodies, or even employers could easily detect whether the academic transcript has been modified or not.

Class attendance

Digital signature could also be a solution to prevent students from committing dishonorable actions, such as asking one of their friends to fake signatures on class attendance forms. Every digital signing process must go through an OTP or biometric scan, making every digital signature

tied to a verified individual. Each digital signature is equipped with information that shows the date, time, and location of the signing, therefore providing the universities with reliable information of where the student is located when they sign their attendance form. Since students can digitally sign their attendance forms from anywhere, digital signature can also be used in long-distance or online classes.

Student enrolment

Using digital signature also helps to increase productivity and save time spent on tedious enrolment procedures. Incoming students' earliest and ongoing interactions with colleges and universities play a part in the admissions process. To meet and exceed students and parents' expectations, as well as handle increased administrative demands, digital signature could assist higher education institutions in modernizing and automating paper processes. Digital signature also grants security to the information contained in the documents, guaranteeing the confidentiality of their application.

Signing agreements

Indonesia's Regulation No. 11 Year 2008 (UU ITE) states that digital signature is as legally-binding as traditional wet signature. Therefore, digital signature can be used to sign various agreements between multiple parties. While the bureaucracy within university's administrations can be complex, digital signature can cut time and make the process easier as it allows the parties involved to sign agreements anywhere, anytime, as long as they are connected to the internet. With digital signature, students, lecturers, professors, or administration staffs can use digital signature to sign scholarship agreements, research proposals, financial aid approvals, anti-plagiarism statements, and many other documents without having to meet face to face.