

## Group Project P05

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**Abstract.** The main purpose of this report is to identify possible solutions to the business challenges faced by Técnico+, within the scope of the Foundations of Information Systems (FSI) course and identify which information system will support them. Técnico+ is a company that offers advanced training courses as a branch of a public university in Portugal. This report will follow the Laudon Framework[1], covering the business challenges the company currently faces (mainly the course management, communication with trainers and communication of the offer to possible customers) and identifying possible solutions to the majority of them. The solutions identified will focus on the three main blocks of an information system organization (with a focus on upskilling and defining new processes), management (focusing on the management process) and technology (the software available that could accomplish the previous proposals). This analysis will allow the identification of the information system that best solves the company's challenges and the analysis of the benefits of these proposals. The report then concludes that these changes could be beneficial to the company's growth and indicates what could be a first step in the right direction.

**Keywords:** Information Systems, Laudon Framework, Growth Improvement, Course Management.

## 1 Introduction

Técnico+ approaches teaching and learning in a not-so-traditional way, more online-oriented by giving the students the steering wheel. The company provides an online platform called Moodle, where videos about the courses are published, papers and evaluations are submitted, etc. Nevertheless, a professor is always available to guide and assist the student. This organization is not even three years old yet, which means there is a lot of growth potential. And of course, because of the early stages of this project, difficulties and obstacles are present and need to be dealt with. That's exactly the purpose of this report. In the scope of Information Systems, a complete and comprehensive analysis of Técnico+ will be executed with the resort of the Laudon Framework[1] within the course of Foundations of Information Systems (FSI).

Due to the early stage of this company a lot of processes, like running a course and staff, document and project management, and communication of the offer are not optimized or even successfully running. This raises concerns and complications given that it influences the efficacy and performance of Técnico+. Consequently, in our report, we will focus on identifying these crucial and determinant aspects to propose management, organizational and technological solutions, so that an Information System model can be suggested in the interest of reaching tangible and effective benefits.

With this report, we intend to identify the business challenges of Técnico+ and find possible solutions that will focus on three main areas, such as Management, Organization and Technology. We will propose an Information System based on these three areas, proceeding to the analysis of the possible benefits brought by the implementation of our suggestions.

## 2 Business Challenges

The business challenges that Técnico+ faces can be separated into five main areas. Those areas can be seen as the main areas where problems arise. First comes the communication of the offer, then providing the best possible experience, always complying with regulations, continuously improving the products and finally, with an already existing business, comes the need to manage it internally to keep it running.

## **2.1 How to run, internally, the courses and staff, successfully?**

All the contact with staff and employees is still done manually, through direct contact via phone or e-mails, which brings inefficient time management and communication challenges.

Each time there is a need to know the number of working hours of each employee or even the details of a new course a teacher is starting, the communication needs to be through very fallible channels. If a given employee doesn't pick up the phone or respond to an email, this process has the potential to have a setback of one or two days.

## **2.2 Comply with admin. regulations/ efficiently legal**

This point comes in two different areas, project management, meaning the creation of different types of courses and the running of classes, and the area of document management, where there is a need to keep files from every year the courses have run and every trainee and trainer's information.

### **1. Project Management**

Unautomated creation of each edition of a course. Since Técnico+ has over 30 courses in execution each year, and each of them has several aspects that need to be implemented it takes a lot of time to bring a course to life. The project all have a similar workflow and the automatization of the workflow would make the process simpler and easier.

### **2. Document Management**

- a) Inefficient maintenance and update and audit of information documents and pedagogical and finances dossier with version control to comply with the legal requirements;
- b) Inefficient process of extraction of information from reports of each course, trainer and trainee.

## **2.3 Communicate the offer**

Técnico+ has undiversified social platforms to communicate with potential and current clients besides direct contact by phone and email.

Social platforms can function as a social business, giving further and more personal access to customers. Técnico+ has only implemented LinkedIn, which gives a small platform, especially if not updated daily.

## **2.4 Enable the best experience, with limited resources**

Complex and unautomated course management, when it comes to services provided outside of classes.

When a course is running there are still planning and access needs in terms of catering, access to guests WiFi, parking, rooms fully adapted and prepared for advanced training, etc. All of these steps need to be executed by a small group of people in a short amount of time.

## **2.5 Continuous improvement of the offer**

Inefficient process of extraction of information from the evaluation/performance inquiries. For there to be an improvement, the company needs access to the feedback provided by the trainees and trainers about their direct contact with the course. With better reports and information extraction from inquiries, the company can continuously adapt the offer.

### 3 Management

The management aspect aims to identify ways that the company Técnico+ can fix some of the challenges they face, at the decision making level. According to Porter's Competitive Forces Model, we can see that a company has 4 areas in which they face pressure at any given time: suppliers, customers, substitute products and new market entrants. From the Value Chain Model, we can also assess the areas in which the company can improve.

#### 3.1 Porter's Competitive Forces Model

Porter's Five Forces Model is a relevant tool in the understanding of the competitive forces at work in the industry. This can help to assess and analyze all the competitive advantages, and also pinpoint areas (such as competitors, the firm's environment or even its general view) where the strategy and business processes can be adjusted to achieve the company's goal, improve profitability and mitigate risk.

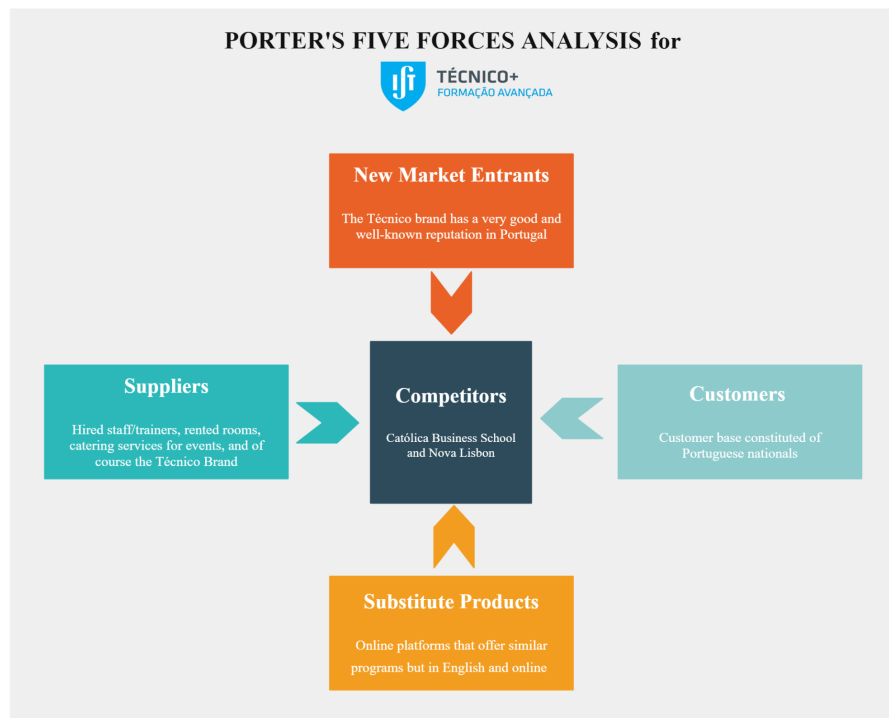


Image 1: Porter's Five Forces Model Analysis for Técnico+

#### 1. Competitors

Técnico+ has two main competitors: Católica Business School and Nova Lisbon. They have formed some partnerships with these universities but they also compete with them for the customer base.

#### 2. Suppliers

In the case of Técnico+, their suppliers are the trainers they employ, that teach the classes they offer; the rooms they rent, in which they can give the presential classes and have meetings; the catering for the events; and lastly the Técnico brand, which gives them the reputation that accompanies the brand.

#### 3. Customers

Técnico+ has a customer base constituted of Portuguese nationals, not only because the product they offer - the classes - is provided in Portuguese, but also because the brand they carry has a very good and better well-known reputation in Portugal than in other countries.

#### 4. Substitute Products

The main substitute products to what Técnico+ offers are other online platforms that offer similar programs but in English and online. This allows those companies to access a bigger customer base since with classes taught in English, they can reach more diverse customers without being limited by language.

#### 5. New Market Entrants

The Técnico brand is what distinguishes the company from other new market entrants. The new market entrants are other schools trying to enter the market bringing along cheaper, better or substitute prices, which applies pressure onto the company to improve and innovate their products.

Now, with a better understanding of the placement of Técnico+ in the industry, an analysis from a management perspective is easier and more intuitive. For this purpose, we are applying the Industry Value Chain Model.

### 3.2 Value Chain Model

From the value chain model, we can identify two types of activities: primary activities and support activities, that show the current course management strategy that Técnico+ has.

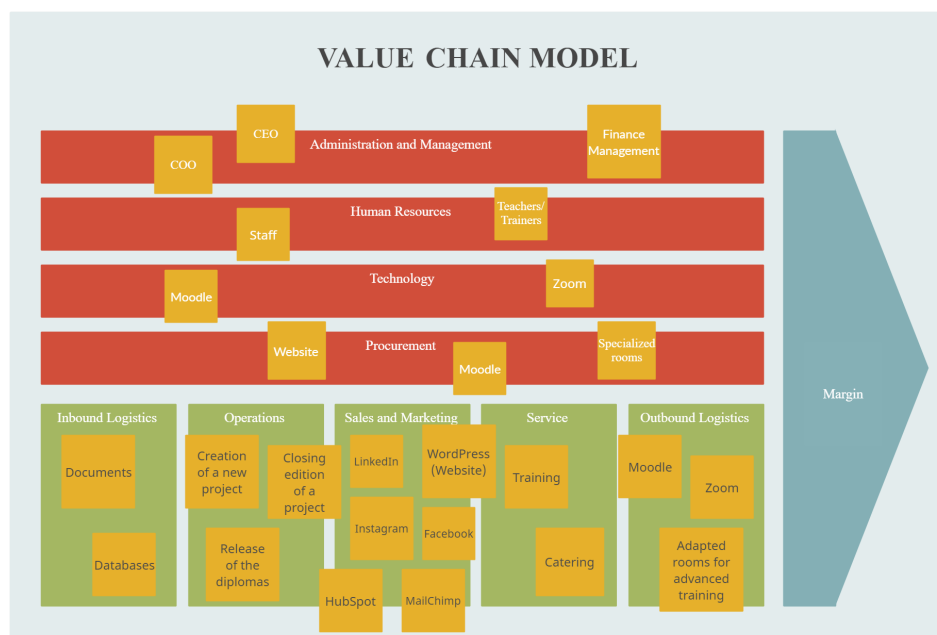


Image 2: Value Chain Model Analysis for Técnico+

As we can see on the image above, there are primary activities, those directly related to the production of the services provided by the company, in this case, the management of the courses. There are then secondary activities that facilitate the delivery of the services provided possible[1].

In the primary activities, we have:

- Inbound Logistics: Document and Databases.
- Operations: Creation of a new project, closing edition of a project and the release of the diplomas.
- Sales and Marketing: Social media and websites already implemented like LinkedIn, Hubspot, MailChimp and the company's website developed with WordPress. Or social media sites that the company intended to implement soon, such as Instagram and Facebook.

- Service: Training staff that teach the courses and catering staff.
- Outbound Logistics: All the necessary logistics to teach a class, that is, the Moodle platform, Zoom and the adapted rooms for advanced training.

As part of the secondary activities we have:

- Administration Management: The top hierarchical role of the company, which in this case, is the Chief Executive Officer (CEO), as the company has only three hierarchical levels.
- Human Resources: All the other hierarchical levels of the company as well as the course trainers.
- Technology: The Moodle and Zoom platforms.
- Procurement: The website.

### 3.3 Proposed Changes

Based on Porter's competitive forces model and the value chain model we can now identify needed changes that could benefit Técnico+. The two main changes we can identify would be the decision to invest in the expandability of the offer and the design of a new course management strategy.

In our view, the decision to invest in the expandability of the courses beyond the Portuguese speaking community and onto the rest of the world would expand the company's customer base. Given the fact that Técnico+ is prepared to teach the courses in English, the translation of the website and of the course materials would be the next step. To do that the company would have to invest time and some money to get a good translation.

The redesign of the course management would be essential to make the process easier. By changing from Google sheets to another platform that could offer better management skills and integration with the company's documents, Técnico+ could save time and prevent possible data loss.

## 4 Organization

An organization is defined as a social structure that transforms inputs into products and services to generate capital and resources[1]. In the case of the organization under study, Técnico+ has as output the courses it provides. As inputs, it has the professors it employs, the capital and labour it invests and also the rooms and catering it rents. In the graphic that follows we can see the different inputs and outputs of Técnico+, identified by us.

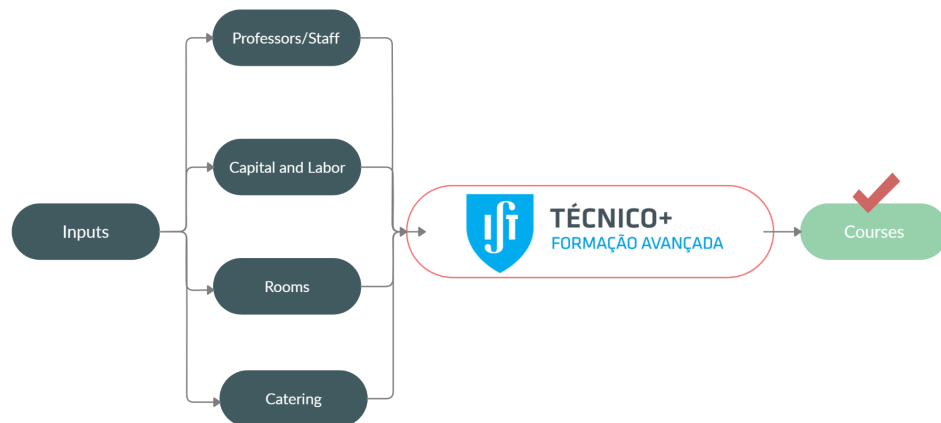


Image 3: Input and Output Analysis for Técnico+

In this case, the organization itself is comprised of the Chief Operations Officer (COO) and three employees. The hierarchy formed inside the organization has two of the employees responding directly to the COO, one in charge of the marketing and sales department and the other in charge of running the courses. The employee in charge of the marketing and sales department has the fourth element of the company responding directly to her.

## 4.1 Organization Features

It is also important to evaluate each feature of an organization to better understand the way it functions and mediates between the organization and the information technology of the environment that surrounds it. There are five organizational features[1]:

### Routines and Business Processes

The routines and processes are the core of an organization. They should be clear and well organized. The quality and effectiveness of the processes and routines of an organization are the keys to an increase in productivity.

In the case of Técnico+, we saw that the processes that needed to be implemented for the creation of an edition of a course are well defined and clear. Yet they are implemented in a Google spread sheet, which does not allow a successful and automated outcome for the organization. Thus, the need to optimize and re-evaluate these processes is critical so that the performance of the company isn't affected in the long term, when growth is expected soon.

### Organizational Politics

Organizational politics differ from organization to organization, since they originate in the divergent points of view of the people in the organization. The differences of opinion in regards to how resources, rewards, and punishments should be distributed may result in political struggles for resources, competition, and conflict within the organization[1].

Having said that, it is also clear that the smaller the number of people working in an organization, the smaller the number of disagreements and differences of opinion will be. The fact that Técnico+ has only 4 people in total provides simple organizational politics.

### Organizational Structure

The organizational structure described in the Laudon book that best applies to the company Técnico+ is Entrepreneurial Structure (Laudon table 3.2). It is a young, small firm with a simple structure, managed by an entrepreneur serving as its single chief executive officer.

Even though the company is integrated into the brand Técnico, it is an independent organizational structure, providing a different service than the one provided by the parent brand, utilizing different resources and employees.

### Organizational Culture

The culture of an organization consists of the unquestioned assumptions that define the goals and products of the organization, as mentioned in the Laudon book. These assumptions however take time to appear. Given that Técnico+ presents an Entrepreneurial Structure, it is a young company, and as such hasn't had much time to develop unquestioned assumptions about the way the organization functions.

This presents an advantage when compared to bigger and more established companies because with little to no assumptions made about the inner workings of the company there is also little resistance to innovation when it comes to technology or other fields.

### Organizational Environments

Organizations and the environment that surrounds them influence one another forming a dependence between the two. The changes that occur in the environment will influence the organization and apply pressure for it to change.

In the case of Técnico+, the environmental changes that affect the organization are the changes in technology, the new teaching strategies, the global market, especially organizations that offer similar products and also the possible students of the courses.

## 4.2 Proposed Changes

Having analysed the organization of Técnico+ and its organizational features we can now identify changes to the organization that could improve Técnico+.

The introduction of new databases to hold all the company's information would make daily tasks more efficient by reducing the amount of time spent searching for files and documents that are needed daily or even ones that are needed sporadically and are thus harder to find.

The definition of new procedures for the management of the courses would make the creation and management of each edition easier and more efficient in the sense that it could assign tasks to each employee and alert for which tasks needed to be outsourced and thus need to be started earlier as being outside of the company's control may delay the process.

The upskilling of the company's employees' talent in various areas, namely Information Technology (IT) may grant the company added talent. This would open possibilities for Técnico+ such as being able to take on better management techniques or software and equipment that could improve the quality of the courses, or make the management of the company easier.

Given that Técnico+ is a company under the brand Técnico, there will always be a relationship with Técnico and maybe even other outsourcing companies, which brings the need for improved communication with outside people or companies. By improving the communication channels, the company could have an easier trade of information that will reduce the time spent in back and forth communication and the information loss in transmission.

## 5 Technology

Técnico+ already uses some platforms and technologies that aid in the management and marketing of the courses. The image that follows gives a brief introduction to what each platform provides and in what way its use would be beneficial to Técnico+. Some of the platforms mentioned have already been implemented by Técnico+ and others are suggestions that we think would bring added value to the company.

### 5.1 Zoom Platform



We propose that Técnico+ continue to use the Zoom platform for online conferences, but also expand the use of the platform to allow the possibility of expanding the availability of their courses to other Portuguese speaking countries or any country so long as the student speaks English since it allows for online classes that can be made available to people in different points of the globe and in different time zones.

### 5.2 WordPress



The Técnico+ website was built using WordPress. The site displays all the available courses along with the goals, pre-requisites, the structure of the program and the price of each of them. The site also has incorporated the platform for possible students to apply. As it is, the website already has all the information a candidate needs to enrol in a course.

As the site already has all the information needed for any student to enrol, the only added step Técnico+ needs to be able to offer their courses in English is the translation of the content in their website to English, since they already have the means to teach the courses in English.

The translation of the website can be done using the WordPress tool, by installing the WordPress MultiLingual (WPML) plugin and following the necessary steps to translate the content[2]. This process can be done manually section by section, using the WPML's automatic machine translation or for assured translation quality, by sending the text to be translated to Translators.

### 5.3 Jira



Jira is a commercial software developed by the Australian company Atlassian. It's a tool that allows monitoring of tasks and the follow-up on projects, guaranteeing the management of all company-related activities in a single place. A JIRA project is a grouping of tasks (called Issues), and it is defined according to the company's needs.

The Jira software that we propose, allows for the management of the company to be done in one single space, not only integrating with other tools but also allowing for the creation of a personalized workflow and the creation of scrum boards that provide a clear view of each task's state of completeness and to whom it was assigned, possibly solving the project management challenge.

### 5.4 Confluence



Confluence is a web-based corporate wiki (collaboration software) developed by Australian software company Atlassian. Confluence includes setting up CSS templates for styles and formatting for all pages, including those imported from Word documents. The tool has add-ons for integration with standard formats. The software is relevant as an outlining tool for requirements that can be linked to tasks in the Jira issue tracker by the same company.

Another of our proposals is the use of Confluence software. The platform Confluence provides, in our opinion, a good solution to the document challenge, since it allows for the storage of documents. The integration of this platform with the Jira software, by the same company, allows for better management of the courses, since it can link the necessary documents of each course to each edition created, linking for example the documents of the trainers to the "contacting trainers" task.

## 6 Information Systems

Following careful examination and analysis of the three previous topics that compose an Information System (Management, Organization and Technology), we can now detail each feature of the Information Systems we are proposing and how they are interrelated with each other[1].

### 6.1 Enterprise Content Management System (ECM)

This is a system that helps organizations manage two types of information, structured and unstructured. They are able to have capabilities for knowledge capture, storage, retrieval, distribution, and preservation to assist firms to improve their business processes and decisions. Such systems include corporate repositories of documents, reports, presentations, best practices and capabilities for collecting and organizing semistructured knowledge such as email. Major enterprise content management systems also enable users to access external sources of information, such as communication via email, chat/instant messaging, discussion groups, and videoconferencing.[1]

By incorporating software like Jira or Confluence, Técnico+ gains a platform in which to keep all the company's documents and distribute the company's everyday tasks by the employees. This information system allows Técnico+ to integrate documents, tasks and information of the company, which can then be accessed all in one place. The Jira software also allows for the creation of different levels of privacy in the workspaces. Using this feature Técnico+ can separate their internal management, creating a private workspace that only allows access to their team and the course trainers.

These softwares have features that allow the team members to coordinate between them who will be in charge of a task, what that task entails, the necessary information or people contacts needed to perform the task, place the beginning and end dates for the task and separate with the creation of different workspaces the different departments of the team, that will continue to evolve.

Finally, it facilitates, all around, the automation of the flow of information across organizational boundaries and links a company to its staff, managers and students.



## **7 Business Solutions**

After having analysed each layer of the information system and proposed solutions to improve each layer, we can now do a balance of the situation and analyse what improved, how and the level of importance they will have in the future.

The main benefits for Técnico+ would stem from the implementation of the technologies suggested. These technologies will have a possible implementation curve of approximately two months, wherein this time the employees would make the transition from the old systems to the new ones. After the transition period, some processes theoretically improve inside Técnico+, namely the course management and the communication with employees and trainers.

Nowadays, we live in a world where “online” is the new norm and Técnico+ is focusing its attention on online education. Our proposals aid the management of an online business by facilitating course management. In five years we expect that online courses will remain relevant, putting Técnico+ in a prime position to keep up with the technologically connected world. Through the presented tools (Jira and Confluence, for example), Técnico+ can guarantee that personnel and document storage can be managed automatically (tasks tracking, shared documents), enforcing the need and trend to do everything online. Thus, our suggestions aim to make sure Técnico+ will not be outdated in the near future.

### **7.1 Integration & Automation of Business Processes, Project and Document Management**

By implementing the two new tools suggested by us, Jira and Confluence, the company has better integration between the course management information and the daily tasks that the staff and trainers perform. Through Jira, they can create a workspace for the courses management for the teachers, where tasks can be followed and updated. Through Confluence, they can store all the documentation and information about staff in a singular space, enabling better automation of business processes, such as document access.

### **7.2 Improve contact with trainers/staff**

The conjoint use of the Jira and the Confluence software allows the team to create individual workspaces for each edition of each course. This will allow the addition of the trainers to their own space, where they will then be able to share information about management necessities for the course, with Técnico+, as well as the student's grades at the end of the course. This reserved space will make the contact between the team and the trainers faster and hassle-free.

### **7.3 Improved Information Management**

Técnico+ performs evaluation/performance inquiries to better assess in which areas improvement can occur. By having a centralized and unique repository of documents (Confluence), that information would have easier access that would enable a better extraction and therefore a better understanding of those same inquiries. The centralization of the information will also mitigate the possible information losses and the time spent communicating and assigning tasks.

### **7.4 Better Availability of the Courses**

Given that Técnico+ already has all the necessary tools to teach the courses in English, the translation of their website will extend the availability of their courses to other English speaking countries and students.

## 7.5 Improved Efficiency

As a result of the other improvements, such as the fact that they spend less time looking for necessary documents, contacting trainers and other tasks will leave more time that can then be spent improving other areas of the company and/or bringing in more students and enlarging their customer base.

## 8 Conclusion

When developing our proposal, the main changes that we propose to solve the challenges Técnico+ faces are the use of software that can improve the quality of the management of the courses. This software allows the effective storage of the company's documents and the definition of tasks and workspaces within the platform that will aid the management process within the organization. The proposed definition of new procedures will take advantage of the new software, namely changing the communication process with outside sources such as trainers, to make the process easier and more effective. When faced with the challenge of communicating Técnico+'s offer, we focused on the translation of the company's website to afford the company an increased extendability.

In the development of our proposal, we focused on a subset of Técnico+'s challenges, that in our view were the ones the company should solve first given they do not involve people or organizations that are outside of Técnico+'s control. We focused on improving course management, improving the communication channels with trainers, finding a solution to document management and storage and lastly communicating the offer. Other challenges, that our proposal does not focus as much on, are situations that involve entities outside of the company's control. Some examples are the problem with the delay in the delivery of the physical diplomas, the lengthy process of paying trainers, catering and staff, as well as invoices, which all involve Técnico, were not addressed.

Técnico+ expects to double their number of courses in the coming year, thus increasing their workload. In our opinion, the challenges Técnico+ will face in the future with the expansion of the company will be of the same nature as the challenges they face now but will multiply proportionately to the company's growth. We believe the implementation of our proposal will mitigate the challenges Técnico+ faces now and consequently in the future.

To solve the challenges Técnico+ faces now, we believe the first step should be to research the technologies proposed to slowly transition the management of the courses onto the mentioned platforms. The transition should improve the management and thus grant more time to the translation of the website which has the possibility of expanding the company's customer base.

## References

1. Laudon, Kenneth C., and Jane P. Laudon. 2016. *Management Information Systems: Managing the Digital Firm*, 15th Edition, Pearson;
2. Carney, L. (2021, April 23). *How to Make a Multilingual Website on WordPress*. WebsiteBuilderExpert. <https://www.websitebuilderexpert.com/wordpress/how-to-make-a-multilingual-wordpress-website/>