FINAL PROJECT

Bachelor's degree in Business Administration and Management

Digital Transformation in companies: Invoice processing as a document manager

Author: Marta Espinosa Touzon

Tutor: Joaquín Turmo Garuz

Department: Economy

Academic year: 2019-2020

UNIVERSITAT DE BARCELONA

Facultat d'Economia i Empresa

SUMMARY

This thesis aims to analyze the importance of digitalization in companies, how it has forced us to change our habits and become more efficient. In particular, I would like to focus on the automation of document management, a very routine task in any organization that can be greatly improved by this digital transformation.

The amount of information generated by today's companies is growing exponentially and the old storage systems have too many shortcomings. For this reason, in recent years, document managers, software programmed to perform the most routine and expensive tasks, are becoming an increasingly important part of business.

To carry out this study, I decided to target the accounting department in order to determine the degree of effectiveness of a specific document manager: invoice processing

KEY WORDS

Digital transformation, ICT (Information and Communication Technologies), document management, software, accounting, invoice processing program, supplier, OCR (Optical Character Recognition)

RESUMEN

La digitalización es algo que nos caracteriza como sociedad hoy en día y, pese a que muchos la tenemos muy interiorizada, hay muchos casos en los que cuesta hacer este cambio de lo analógico a lo digital.

Esto mismo pasa en muchas empresas, y es por ello mi interés en estudiar cómo afecta la transformación digital en éstas. Al tratarse de un tema muy amplio que abarca diversos conocimientos, he querido centrarme en la parte más relacionada con mis estudios; la gestión documental.

Hoy en día, la cantidad de información generada por las empresas está creciendo exponencialmente al mismo tiempo que la urgencia con la que queremos disponer de dicha información y los antiguos sistemas de procesamiento y almacenamiento de toda esta documentación tienen demasiadas deficiencias. Vivimos en un mundo en el que cada segundo cuenta, por lo que la automatización nos ayuda a aprovechar al máximo nuestros recursos.

Por este motivo, en los últimos años, se han hecho muy populares en España los gestores documentales, softwares programados para realizar las tareas más rutinarias y costosas. Éstos son aplicables a cualquier sector, negocio o empresa, e incluso, dentro de las empresas, en cualquier departamento. Para llevar a cabo este análisis, me he centrado en el departamento de contabilidad, para poder precisar el grado de efectividad de un gestor documental en concreto: procesamiento de facturas.

El principal objetivo ha sido ver qué tan eficiente puede ser para una empresa tomar consciencia de esta transformación digital e implementar este software para hacer frente a la gestión de las facturas.

Para contestar a esta cuestión, he estudiado un caso práctico; el de Volkswagen Financial Services, la entidad financiera del Grupo Volkswagen en España. Con datos reales de esta empresa, he podido llevar a cabo un análisis de lo que supone realizar este proceso de la manera tradicional y compararlo con la implementación de este gestor documental, siendo posible así ver a partir de qué volumen de facturas es viable esta inversión y las ventajas que una empresa puede llegar a obtener.

Este trabajo ha sido realizado durante la pandemia mundial provocada por el virus Covid-19 y esto, aunque haya hecho que mis recursos hayan sido limitados y haya dificultado partes del análisis, también me ha hecho dar cuenta de la importancia que tiene la transformación digital en las empresas. En estos meses dónde mucha gente ha tenido que teletrabajar, se ha visto qué empresas presentaban infraestructuras

necesarias para poder llevar a cabo este teletrabajo de manera satisfactoria y qué empresas, por el contrario, han carecido de sistemas y programas informáticos, no pudiendo realizar el 100% de su trabajo al no estar en la oficina con todos los documentos físicos presentes.

Esto me hace pensar que, después de pasar por esta situación, muchos negocios se han de plantear una nueva forma de trabajar, viendo la eficiencia que puede traer la implementación de estos gestores documentales.

PALABRAS CLAVE

Transformación digital, TIC (Tecnologías de la información y la comunicación), gestor documental, software, contabilidad, programa de procesamiento de facturas, proveedor, ROC (Reconocimiento óptico de caracteres)

Contents

1. Introduction

Digitalization is a feature of today's society and, although many of us are very much aware of it, there are many cases in which it is difficult to make this change from analog to digital. This is also happening in many companies, and that is why I am interested in studying how the digital transformation affects them. As this is a very broad subject that covers a range of knowledge, I wanted to focus on the part that is most related to my studies; document management.

Today, the amount of information generated by companies is growing exponentially at the same time as the urgency with which we want to have this information, and the old systems for processing and storing all this documentation have too many shortcomings. We live in a world where every second counts, so automation helps us make the most of our resources.

For this reason, in recent years, document managers, softwares programmed to perform the most routine and expensive tasks, have become very popular in Spain. These are applicable to any sector, business or company, and even, within companies, in any department. To carry out this analysis, I have centered on the accounting department, in order to be able to specify the degree of effectiveness of a specific document manager: invoice processing.

The main objective has been to see how efficient it can be for a company to become aware of this digital transformation and implement this software to deal with the management of invoices.

To answer this question, I have studied a case study; the one of Volkswagen Financial Services, the financial entity of the Volkswagen Group in Spain. With real data from this company, I have been able to carry out an analysis of what it means to perform this process in the traditional way and compare it with the implementation of this document manager, thus being able to see from what volume of invoices this investment is viable and the advantages that a company can obtain.

This work has been done during the global pandemic caused by the Covid-19 virus and this, although it has made my resources limited and has complicated parts of the analysis, has also made me realise the importance of digital transformation in companies. In these months where many people have had to telework, it has been seen which companies had the necessary infrastructure to be able to carry out this telework in a satisfactory way and which companies, on the contrary, have lacked systems and computer programs, not being able to carry out 100% of their work because they were not in the office with all the physical documents present.

This makes me think that, after going through this situation, many businesses have to consider a new way of working, considering the efficiency that the implementation of these document managers can bring.

This project is structured in four well differentiated points, as illustrated in figure 1, starting in the most general way, seeing how digitalization has evolved in companies and how it has made our habits change. Subsequently, within the digital transformation, I have focused on document management, seeing what it is about and how it is organised. Afterwards, we can see how this document management affects a specific department of the company, the accounting department, and finally, a last point where one of the main tasks of this area, the processing of invoices, is analyzed and the software that allows the digitalization of this activity is introduced.

Finally, as I mentioned earlier, to apply what I have learned, I study a real case of a company that invests in this document manager and analyse the viability of the project.

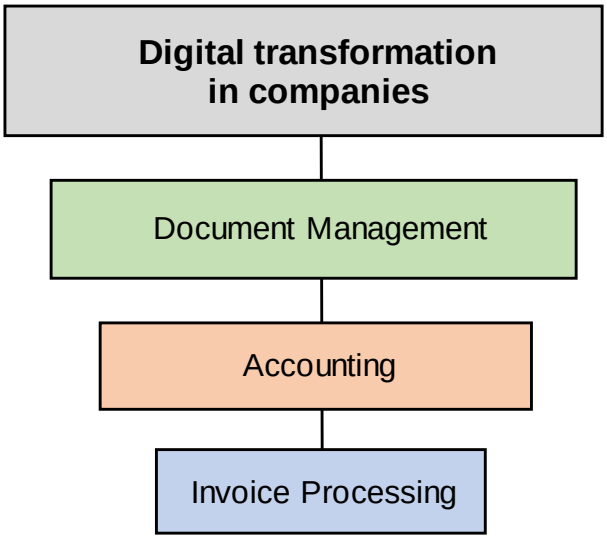

Figure 1: Project structure. Own elaboration

2. Digital transformation in companies

Nowadays, when we talk about digitalization, we think about the process by which digital technology is implanted in society. But also, we must consider how digital technology has been implanted in the economy as a whole, affecting production, consumption, and the organization itself, in the structure and in the management of the firms.

Digital Business Transformation is disrupting businesses in every industry by breaking down barriers between people, businesses and things. By breaking these barriers, they are able to create new products, services and find more efficient ways of doing business. These innovations are happening across organizations of all types, in every industry.

2.1 First technological advances in companies

In the mid-1990s, the concept of the digital economy was coined to refer to how the new Internet technologies were going to revolutionize the way of doing business, affecting aspects as diverse as production, consumption and forms of management.

But the truth is that, long before all this, we could already appreciate great technological advances that have been revolutionary in companies.

1869 → The Fax, invented by the Scottish Alexander Bain, began to be marketed. It was a machine capable of sending and receiving images from one machine to another, one sending the image while the other received it and played it back.

The name fax corresponds to the Latin abbreviation "fac simile" which means something like "made equal". This literally implies that the receiver makes a copy of the document from the transmitter. Alexander Delgado (2011).

Xerox Corporation released the first fax machine that was sold to the public. While effective, this model was very expensive and not easy to operate. To improve effectiveness, years later, the company released a new model. In this case, the fax machine was visibly smaller than the previous ones and also much lighter in weight. This new device could operate from any telephone line, which made it really more attractive. Mary Bellis (2019).

1960 → IBM S/360 computer (360 system). The IBM 360 was one of the first commercial computers to use integrated circuits and could perform both numerical analysis and file management or processing. It was one of the pioneering technologies in companies, important decisions had to be made to digitize business processes and facilitate the flow of information for business decision making. The first processes digitized with this

technology were billing systems, accounts receivable, sales analysis, inventory control, accounts payable, and payroll. Applications that are obvious today, but that at the time were a challenge of process transformation and adaptation to change business processes of the time. ITMadrid. (2016).

1960 → The Cloud. Cloud storage is a model of data storage based on computer networks, devised in the 1960s, where data is hosted in virtualized storage spaces, usually provided by third parties.

In the 1960s, companies began to need to consult large amounts of information from different access points. However, the use of infrastructure was very expensive, so they began to consider how to integrate a CPU with multi-user access.

John McCarthy was the first to suggest timeshare technology as a solution to this problem. He explained that it could be sold as a public service, like water or electricity. Therefore, many companies of the time began to provide shared resources as a service office, renting out time and computer services.

But it was not until the end of the 1990s, specifically in 1999, that a major step forward was taken in cloud computing, with the opening of Salesforce. This was a new concept, aimed at offering business applications through a simple website. Tomás Cabacas. (2018).

From that moment on, large IT companies began to take an interest in cloud computing services and the innovation and development of different types of clouds began.

1970 → Email. The Massachusetts Institute of Technology (MIT) was the pioneer in demonstrating the use of the first e-mail system, known as MAILBOX. This system sent messages to different users on the same computer, because computer networks did not exist at that time.

However, e-mail was not really born until the creation of the ARPANET network, the predecessor of the Internet. It was at the beginning of 1971 when engineer Raymond Samuel Tomlinson, who, working for "Bolt Beranek and Newman Technologies" he sent himself the first email in history. Evelio Martínez. (2011).

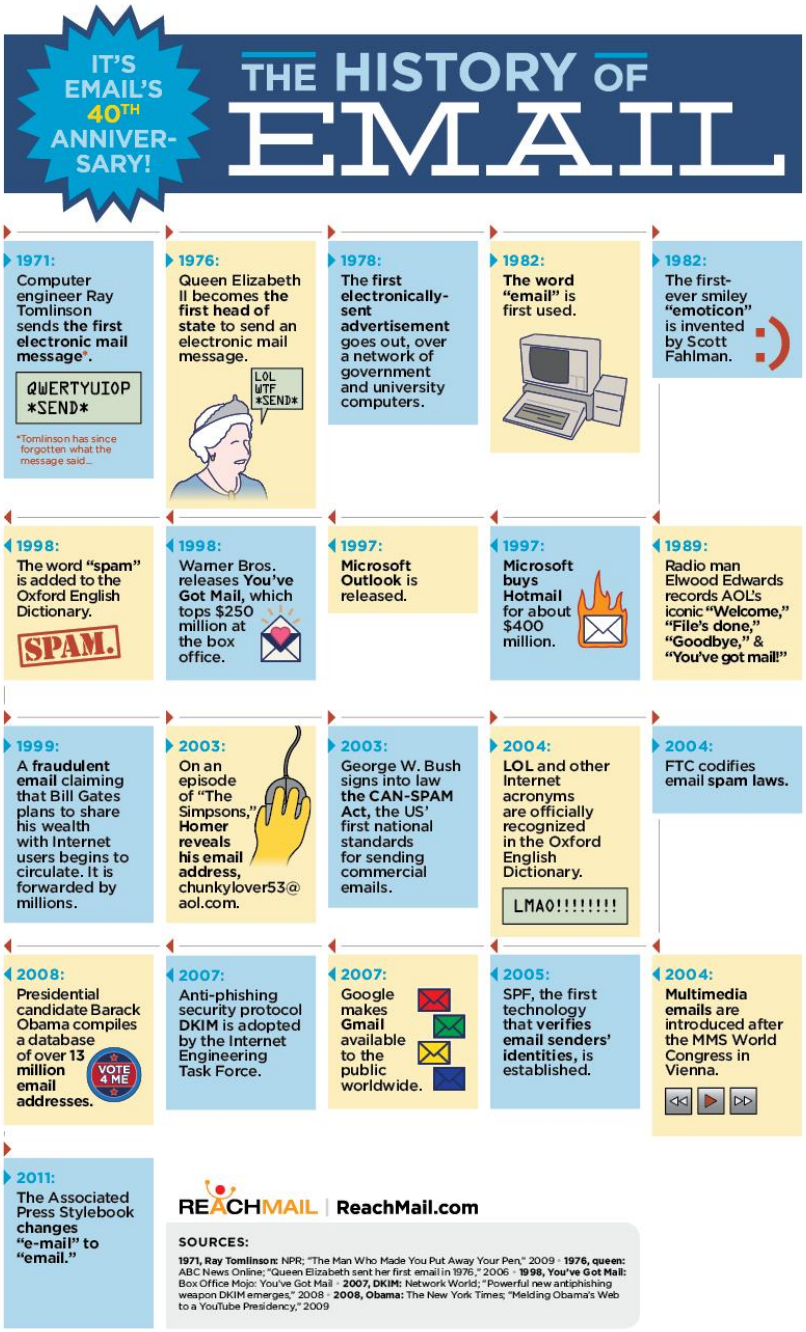

Figure 2: The history of the email. Communication Studies

1990 → Internet. In 1982, ARPANET adopted the TCP/IP protocol and at that time the Internet (International Net) was created.

In 1993 Mark Andreesen of the National Center for SuperComputing Applications (NCSA) in Illinois published Mosaic X, a browser that is easy to install and use. It was a significant improvement in the way graphics were displayed. It was very similar to a modern-day browser.

The World Wide Web (WWW) has become the tool used by billions to interact on the Internet. It is a system for distributing hypertext or hypermedia documents that are interconnected and accessible via the Internet. Any Internet user can view these files, be they text, video, photo or others and browse through them. Daniel López. (2019).

With the publication of WWW technology and browsers, the Internet began to open up to a wider audience: business activities, personal pages, etc. This growth accelerated with the appearance of new, cheaper and more powerful computers.

This was a significant breakthrough in the technological evolution of companies, facilitating communication, trade, learning, and information exchange on a global scale.

All these technological inventions and many others that have also been of great help to companies, form today what we call ICT. Information and Communication Technologies (TICs in Spanish) include the set of tools related to the transmission, processing and digitized storage of information, as well as the set of processes and products derived from the new tools (hardware and software), in their use in teaching. Nadia Luna (2018).

As we can see in the following table provided by the INE (Instituto Nacional de Estadística), despite the fact that there are elements that are totally standardized today in companies, such as the use of computers and the use of the Internet, there are others that are gradually being implemented, such as e-commerce.

Indicators on the use of ICTs in Spanish business - Year 2019	
	Companies with more than 10 employees
Computers are available	99,26%
Have internet connection	98,39%
Have an internet connection and a website	78,16%
Use social media	52,94%
E-commerce sales are made	20,36%
E-commerce purchases are made	33,90%

Data measured as a percentage of the total number of companies of each type

Table 1: Indicators on the use of ICTs in Spanish business - Year 2019. INE.

2.2 New technologies, new behaviors

As we have seen, little by little, digitalization has transformed the way in which we interact, behave and do business in the world.

From supply chain management to the way we serve our customers. Nothing escapes this phenomenon. And it is not alien to any industry or any department within the company, all activities are being affected by this process.

Below we can see several examples that show us this that we have commented:

CASE I. Human resources: recruitment

Thirty years ago:

Thirty years ago, a human resources manager, or any company that had the need to recruit staff had limited options. When it came to publishing the offer, he could do so through traditional channels such as the newspaper or on bulletin boards or, failing that, he could resort to word of mouth and ask for references.

Among the number of CVs received, recruiters had to choose several candidates only by the data they obtained from the curriculum and validate that everything provided is correct in the interview. Afterwards, with the resumes received on the table and more or less clarifying interviews, it was time to decide.

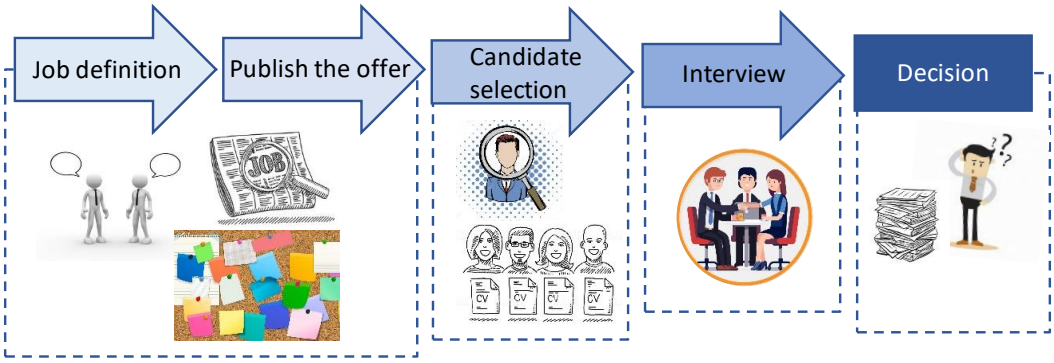

Figure 3: Recruitment 30 years ago. Own elaboration.

Now:

Now, the recruitment process is much more complete, due to the tools available to companies.

In figure 4 it can be seen how wide is the ecosystem in which a human resources manager, or any company or professional that is in a process of selection of personnel is currently working.

The tools we have available facilitate the task of selection, especially in two key aspects that go together: saving time and greater precision or segmentation of candidates.

We save time and resources, since selection processes can be automated enough to segment the candidates and the interviews are attended by fewer but more qualified candidates for the position.

Since more tools are available, to obtain information from the candidates: questionnaires can be used, segmenting them through databases according to the criteria we want to consider, etc. The qualitative leap (in terms of saving time and resources) also occurs at the interview stage, since it is no longer necessary to physically move to the company's headquarters. Interviews can be conducted instantly through video conference programs.

And ultimately, new tools are used at the time of the decision. Previously, recruiters had to be satisfied with the results obtained from the interview and, if possible, recommendations from third parties. Today, it is common to use social networks to obtain references, such as LinkedIn, where it is common for colleagues from projects or jobs to comment on other users' profiles.

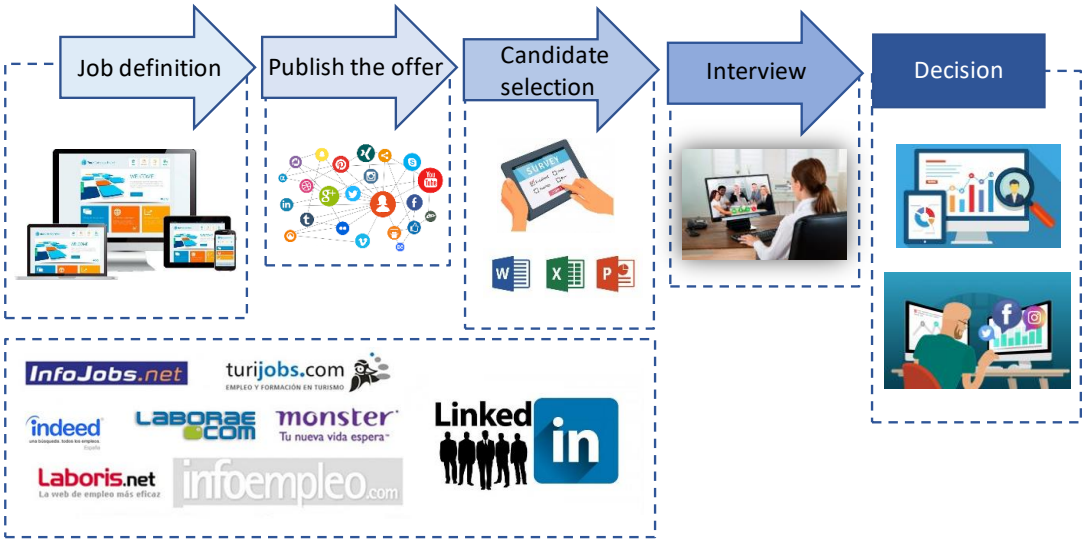

Figure 4: Recruitment nowadays. Own elaboration.

CASE II. Sales process in B2C. Retail product sales

What tools does a company have to make a B2C sale?

Although it is true that the B2C sector is very broad, we are going to give a very specific example: a B2C company that sells products (not services) to individuals, normally in the mass consumption or retail sector. For example, the pattern we develop below could be applied to the sale of shoes, mobiles, supermarkets, etc.

Thirty years ago:

Thirty years ago, the sales process was reduced to generating brand image and attracting customers to the point of sale through traditional communication tools and advertising on a massive scale, so that the user would go to the store and the employee helped him or here with the sale. In any case, the company could encourage the purchase and promote customer loyalty through point cards, discount vouchers, offers...

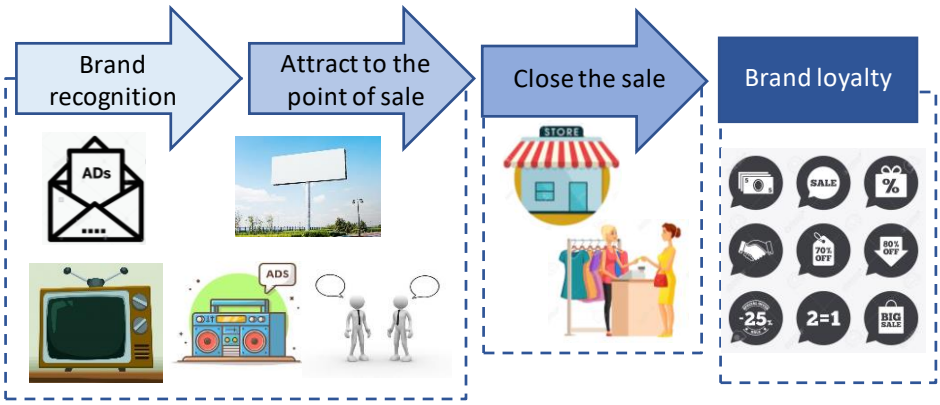

Figure 5: B2C sales 30 years ago. Own elaboration.

Now

Nowadays, the sales process is the same, but the number of tools available is greater. While it is true that conventional media are still used effectively and usefully, big brands tend to make the most of the digital ecosystem through the possibilities presented by digital analytics, big data, social network communication and search engine positioning, online directories, maps...

This is all very different from how it was done 30 years ago; now the task of attracting the customer not only leads to the physical point of sale, but also to the online store as another alternative to make the purchase.

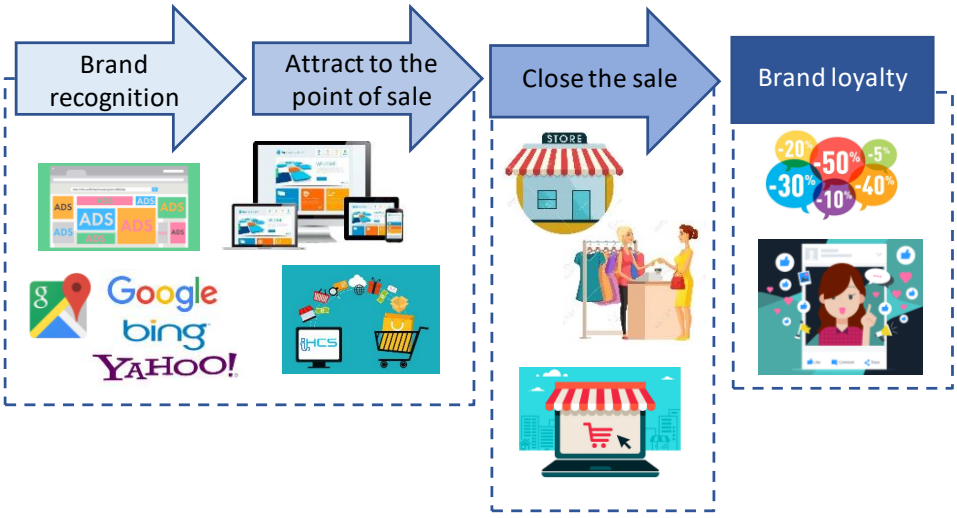

Figure 6: B2C sales nowadays. Own elaboration.

CASE III. Sales process of a B2B service

Now, we move to the perspective of the company that provides services to businesses, to see what tools it has available. This specific example would be valid, for example, for a communications agency or a software provider.

Thirty years ago:

Thirty years ago, a company that offered services to firms could reach its potential clients with massive advertising, or through phone calls or visits. The figure of the salesman was present during the whole sales process, since he was the one who provided the service and knew the client.

The best way to present the service was to visit the potential client's facilities or through fairs and events. Finally, the transaction had to be done physically through a contract signature.

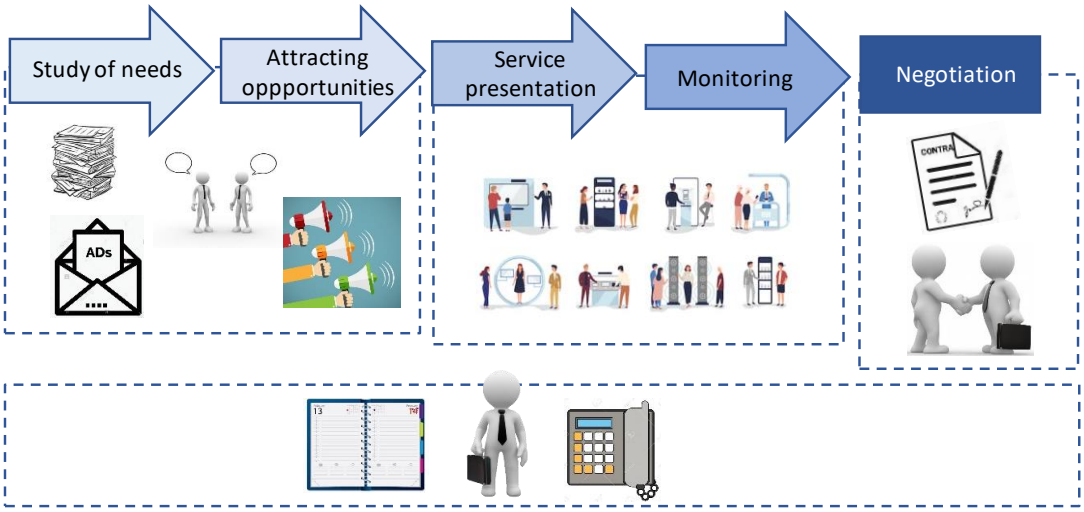

Figure 7: B2B sales 30 years ago. Own elaboration.

Now:

At the present time, the panorama is infinitely wide. Figure 8 does not even include all the tools available to a company in the B2B service sector, but it does summarize the different alternatives and tools available in the sales process.

This particular case also has its peculiarities, since the decision-making process of a company is more complex.

For this reason, the sales process of a service is somewhat longer and has more phases than in mass consumption. Phases, such as qualifying the lead, that is, measuring whether or not the sales opportunity is ready to make a contract, could only be measured through the work of the salesperson.

On the other hand, companies currently have an infinite number of tools and techniques that allow them to qualify the lead: CRM, mailing, automation techniques, lead nurturing, lead scoring...

Digital measurement and analytical tools also play a very important role in measuring the qualification of the lead and the level of involvement of a potential client, for example, by measuring how many times he accesses your website, which pages are the most visited, email opening rate, etc.

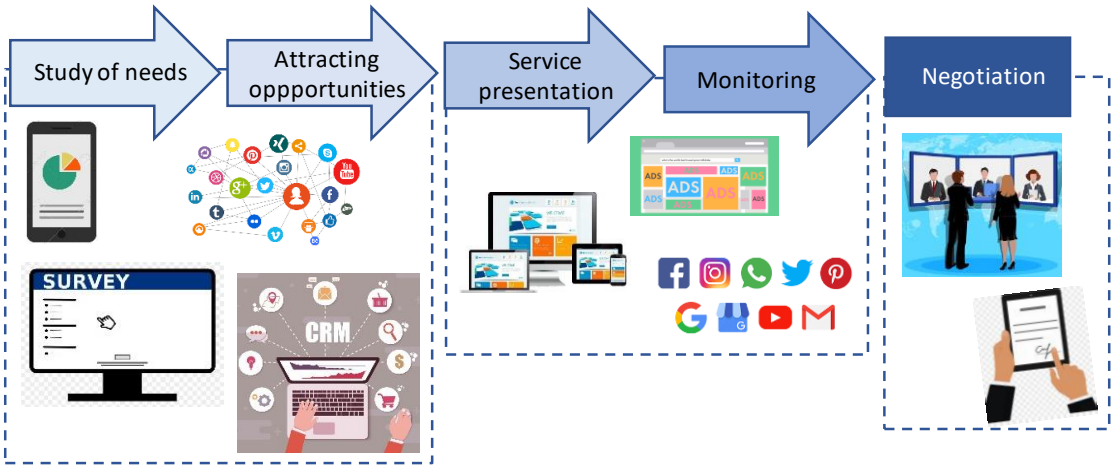

Figure 8: B2B sales nowadays. Own elaboration.

2.3 Degree of digitalization in Spanish companies

As a result of all the technological improvements we have seen, firms have been able to be more efficient and achieve higher yields. However, most companies are not born with digitalization, and it is precisely these companies that are most affected by the digital transformation. In many cases it is a matter of adapting or giving up.

We often take it for granted that because a company is relatively new, it has to have the latest technology at its disposal, but in most cases, this is not true. Even these companies are dealing with transitional issues and, the reality is that, nowadays, these two worlds have to coexist.

Analyzing the degree of digitalization in Spanish companies, we could classify them as follows:

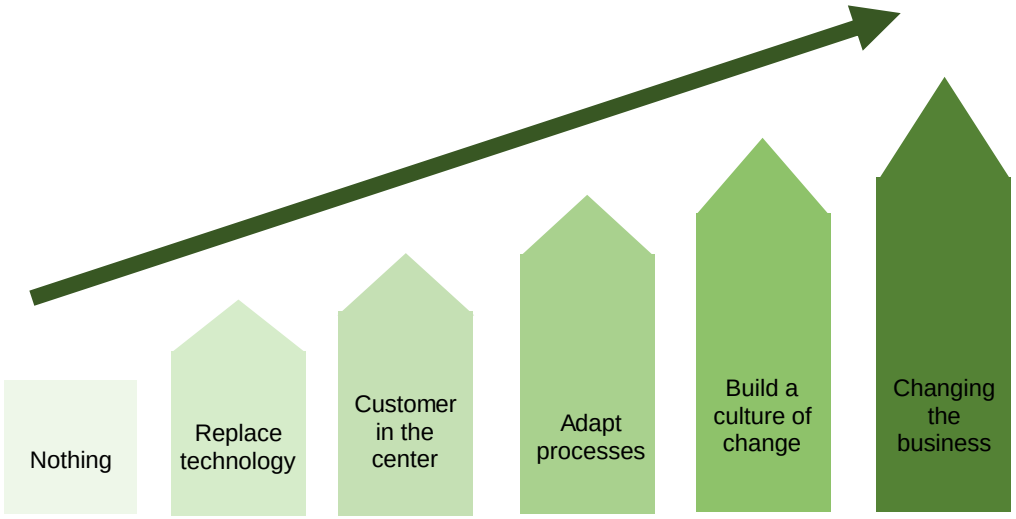

Figure 9: Degree of digitalization. Own elaboration.

It doesn't do anything.

Companies that continue to operate by inertia than they were, are usually in very mature sectors and have little margin, also in sectors with a lot of regulation and with large entry barriers. Many of them are, without knowing it, in serious danger if competition comes from disruptive models that break the rules of the game.

Replace old technology with new technology.

Upgrading computer equipment, software and buying new mobile phones can improve our productivity if we keep the focus on technology as a medium, setting clear productivity goals. Don't forget training and gradual adoption, if people don't have the right training, the productivity and generate rejection of change.

Putting the customer in the center of our strategy

Companies that study, observe and listen to customer needs, how they like to be served, what unmet needs they have, what communication channels they use. The company must create layers of service and products that meet direct customer needs. This is not simply implementing CRM software, we are talking about turning the company into a machine that serves the customer, anticipates their needs, listens to their problems, solves them and is not afraid to get direct and sincere feedback from its customers and to make moves to improve their satisfaction.

Adapt processes and improve performance.

Performance is improved by businesses that have understood that technology allows them to improve their processes, lower costs and improve performance and quality of work. These are the companies that have stopped to talk to customers, employees and

technical advisors and have adapted their processes to the needs of users by making fair use of technology. Shortening delivery times, improving customer satisfaction and customer, lowering costs, etc.

Create a culture of change.

Companies that normally listen to the market and have procedures and tools to adapt their processes in a natural way, achieve this change. These companies transform themselves, as the market does. Change is not perceived as a threat and there are internal procedures and policies to encourage technological innovation and the adoption of new approaches in processes.

Transforming the business model.

These are companies that have a competitive advantage that can even displace a large part of their competitors. These are companies that are growing very quickly because they have been able to listen to the needs of the users and have been able to respond in a faster, more adapted and flexible way. They have created a new business model that has no direct competition and leaves the main players in diapers.

3. Document management

Records management, or document management, is the set of technical standards and practices used to manage documents of all types, received and created in an organization, to facilitate the retrieval of information from them, to determine how long documents should be kept, to eliminate those that are no longer useful and to ensure the long-term preservation of the most valuable documents, applying principles of rationalization and economy.

Document management systems are becoming an increasingly important part of business. The amount of information generated by today's companies is growing exponentially and the old storage systems have too many shortcomings. A document management system ensures organized and efficient information, which favors business productivity.

To go deeper into the subject and learn a little more about document management and the way in which companies carry it out, we will divide the topic as follows:

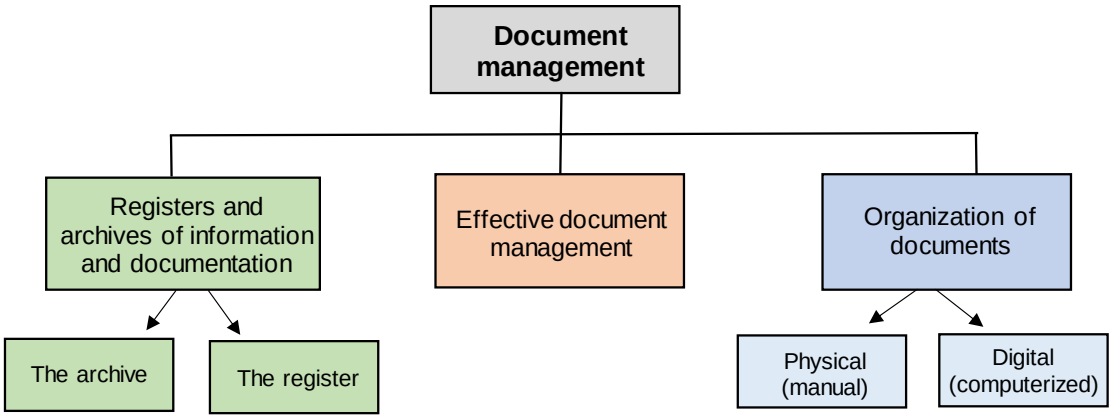

Figure 10: Structure of Document management. Own elaboration

3.1 Registers and archives of information and documentation

3.1.1 The archive

Archiving means keeping useful documents in an orderly way, doing it in a logical and efficient mode that allows them to be located as quickly as possible when needed.

The main function of the archive consists of the conservation of documents, since the Law obliges it to do so by establishing minimum conservation periods, during which their presentation may be required. These documents will be kept in the correct order and classified. This conservation provides information on the functioning and matters dealt with by the entity. The archive will be effective when you quickly find what you're looking for. Another function of the archive is to be an active information center that allows you to relate new documents to those already archived. In addition, serves as a means of consultation when inquiring into the actions from the past. The file also serves as evidence when the body or entity seeks to prove the performance of an act or the manner to do it.

Types of files:

Depending on the degree or frequency of use:

- **Active or management archives:** they collect documents recently delivered to the entity or of frequent consultation.
- **Semi-active:** they contain documents from active archives because the specific work has been done on them.
- **Inactive:** it gathers the documents that having lost all their operational and functional value, they retain historical, political, or documentary value.

Depending on the location:

- **General or centralized:** documents that are kept in the same place and are consulted by different departments.
- **Decentralized or partial:** they are located in the different departments of the entity. These can also be:
    - Departmental or by sections - in the department itself as it is constantly used by the department.
    - Personal - of each work position so that it can be immediately accessible to the person working with them.

3.1.2 The register

By registration we mean the action of annotation and referencing the archives. All documents entering or leaving the firm must be registered so that their entry or exit can be monitored. The register basically fulfils the function of facilitating the location of a certain document in addition to:

-Testify that a document has or has not passed through the entity in question.

-To know the final destination of a document (if it has been destroyed or archived).

-To locate the specific place where the document or writing is located.

-To know the most significant data of a document without the need to consult it directly since the register is written down.

We can classify the registers in three big groups:

- **General registration:** it is the register of the correspondence. It consists of recording all incoming and outgoing communication with the outside world, it can be of two kinds:
    - General registry of entry - The corresponding entry will be made of all documents received
    - General check-out - The departure of official documents and communications addressed to other institutions or individuals will be registered.
- **Auxiliary registration:** administrative entities may create other registers in the corresponding administrative units of their own organisation in order to facilitate the submission of written documents and communications. These registers shall be auxiliary to the general register, to which they must communicate any entries they make.
- **Archive register:** to record all those documents that have been archived.

3.2 Effective document management

In companies there are thousands of documents of different types and that is why it is very important to have control over them. For this reason, it is necessary to codify and register these documents in order to be able to track them effectively.

There are different ways to record documentation and each company must adapt it to its organizational structure.

For example, the code for each department could be three digits, three letters, or a combination of letters, digits, and special characters. The important thing is that it relates to the organizational unit and that care is taken not to repeat the code.

Also, it could be coded based on the type of document. You can classify them according to whether they are letters, invoices, circulars, payment orders, etc.

Regardless of which mode is chosen, it is very important above all that the registration and updating of documentation be carried out by a department or person who has access to both the internal and external relations of the Organization.

3.3 Organization of documents

3.3.1 Physical (manual)

When a company has physical documents, it should follow these three steps very closely:

The classification.

This will consist of hierarchically grouping documents by means of groups or classes, from the broadest to the most specific, in accordance with the principles of origin and original order.

There are three elements that we can consider in the classification of documents: the actions to which they refer, the organic structure of the dependency that produces them, and the issues or matters on which they deal:

- The actions. Every organization or entity is created with a purpose, for which it has sufficient attributions or competences to achieve the objectives.
- The organic structure. Any entity also needs organization to achieve its goals, that is, an organized structure that allows it to function properly.
- The issues or subjects. This is an element that does not derive directly from the firm but of the perception of it, that is, from the matters or subjects that each one believes to observe both in their activities and in their organization.

The organization.

When organizing a file, three types of classification can be established:

- Functional classification: The functions of the entity that generates or has generated the archive fund are the elements taken into consideration to classify the documents. Following this criterion, we will group the documentation according to the activities of the company.
- The organic classification: In this system the data is grouped according to the different administrative divisions or organic structure of the entity.
- Classification by subject: This type of classification is the result of the analysis of the content of the documents.

The organization does not end with classification, rather it is completed with the arrangement of the various elements, i.e., the ordering. It is a material task consisting of relating some elements to others according to a criterion established in advance, whether it be the date, the letters of the alphabet, the numbers...

The installation of the documents

The installation of the documents in the warehouse is a task closely related to the organization and consists of the physical location of all the files by means of installation units, whether they are boxes, folders, or books. Boxes and folders are groups of files, in the form of packages or protected by a container, thus placed on the shelves to offer greater protection to the documents and resistance to harmful agents.

3.3.2 Digital (computerized)

Any company has generated over time a volume of documents that are necessary to file, making it necessary to enable a physical space to store them. Thanks to technological advances, it is possible to transform all this documentation into digital files that do not take up any kind of space and are easier to store and manage.

The main structure used to store data on storage devices are electronic files, whose organization is based on that of manual files.

A file is a collection of information on a single subject and organized in such a way as to allow access. There are two types of files:

Permanent. These are the ones that contain relevant information for the program. There are three types of permanent files:

- Master file: This contains the data that is essential for the operation of a particular application and shows the current status of the application.
- Constant file: This contains a fixed type of data.

- Historical file: this is the file where the records deleted from the master file are.

Temporary. They contain information relevant to a certain program, but not to the application as a whole. Their data comes from the permanent files and there are two types of temporary files:

- Intermediate: are those that store results from a program to be used by another program in the same application.
- Of results: in which elaborated files are stored that are destined to an output device.

4. Document management applied to accounting

Once we know the theoretical part of document management, we must know that in practice, many companies do not follow these processes and, moreover, the current management system does not meet the current expectations and needs of organizations.

Therefore, once we have seen how digital transformation affects firms, in which situation and degree of digitalization are companies in Spain and after seeing what document management consists of, I would like to analyze one of the many document management software on the market today, which proposes to improve efficiency within the organization, cover the needs of today and be one step closer to automation.

We live in a world where every second counts, so automation helps you make the most of your time when it comes to performing many actions at once. The truth is that more and more companies are choosing to invest in some automation tool that makes their daily work easier, although getting familiar with these tools is often complicated.

As we have seen, both digitalization and document management are issues that concern all types of sectors, businesses, companies and even, within companies, all departments. Therefore, to carry out this analysis, I will focus on a specific department in order to study a suitable tool for the tasks carried out by that department

As during my four years of university one of the subjects I liked the most was accounting, and since I am doing the curricular internship in auditing (where we review the accounting statements), I will focus on this area as I find it very interesting and one of the most important in any company. Keeping the accounts of a firm is not an easy task and for this reason I believe that digitalization in this department can be very effective.

Business accounting is the discipline that records all the transactions of the company and classifies them in order to analyze and interpret the results of the firm and the situation in which it finds itself. In other words, accounting consists of recording all economic operations in order to know where everything the company has come from, where it has gone and how much is left.

Accounting also helps to make good decisions and provides the information necessary to make sales forecasts, expenses and other calculations required for the proper administration of the company.

In this area, therefore, various tasks are carried out. In this paper, I will focus on one of them to see how the digital transformation affects it and how these programs can improve the efficiency of the department. Afterwards, we will see if this can be extrapolated to the other tasks.

5. Invoice processing

Invoice processing is a daily activity in any company. The supplier invoice entry process includes all the tasks of handling incoming invoices in the firm, from the arrival of the invoice to the final settlement.

The process that involves the payment of a supplier's invoice starts with the arrival of the invoice at the door of the company, regardless of the methods of arrival of the invoice such as via email, post, fax, etc. Once the invoice arrives, the staff must ensure that the document is actually an invoice and, once verified, it is sorted and ordered according to its category.

If there has been a purchase order related to that order, the invoice should then be compared with the purchase order to ensure that the amounts match. If the price is correct and the products have arrived correctly, the person responsible will have to approve the invoice. In the case that it exceeds a certain amount which is limited by the firm, the senior manager of the person processing the invoice may have to approve the invoice. This, of course, differs from company to company.

Once the invoice has been approved and there have been no changes, the invoice is posted in the accounting system.

This is how traditional invoice processing is explained. As I said, they can arrive through different channels and that means adding some extra steps to this process. Many companies receive physical invoices, which they scan and archive. Other firms receive them online and store them on their computers. And, in most of the time, we find both cases; they have suppliers that use the traditional way and others that are more digitalized.

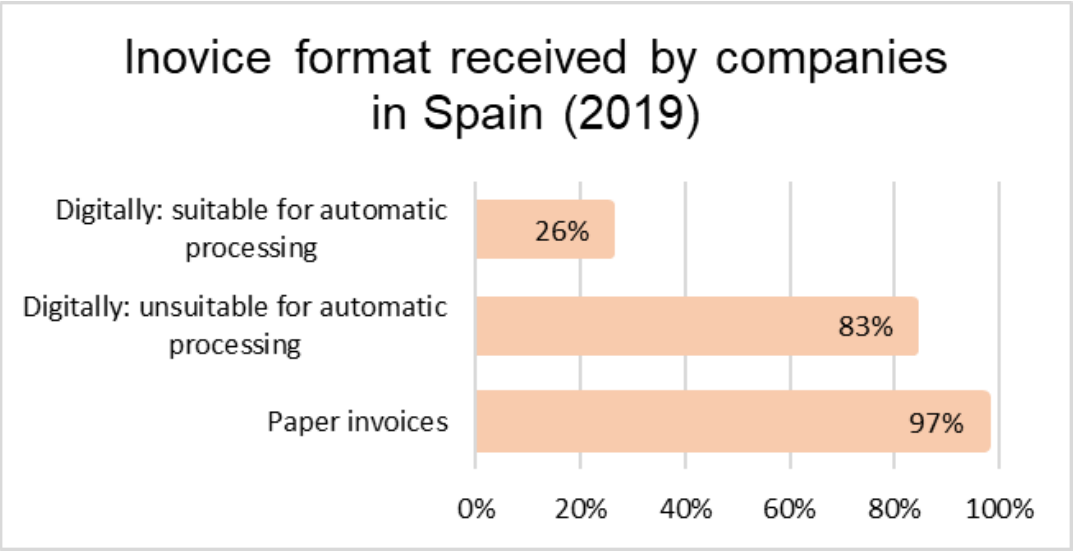

Table 2: Invoice format received by companies in Spain (2019). INE

As we can see table 2 provided by the INE (Instituto Nacional de Estadística), 97% of companies in Spain received at least one paper invoice. But this graph is not exclusive, meaning that not only do they receive paper invoices, but also digital ones, although we see that to a lesser extent. 83% have also received an electronic invoice in a format that is not suitable for direct processing by document managers (such as PDF format or a scanned invoice) and, finally, only 26% have also received electronic invoices that are suitable for automatic processing

This shows us that, despite the new technological advances and facilities, most businesses tend to work with the traditional format so both, the physical and digital world, have to coexist.

For this reason, a company cannot pretend that everything will be digitized since this would mean losing most of its suppliers that issue physical invoices, but what it can do is, once they have those invoices in their computer system, to speed up the next step, which consists of transferring all the information that the invoice has to the accounting.

This part of the accounting process is usually the most monotonous and tedious and that is why companies can benefit from improved efficiency in this field by digitalizing themselves with automatic processing programs.

And this is precisely what I would like to analyze, what this invoice processing software consists of, the advantages it can provide to companies, how its implementation works and, of course, the viability of such an investment.

5.1 The software for invoice processing

This kind of programs are known as an ERP system (Enterprise Resource Planning). This software integrates all the needs of the company in a single program that optimizes the time of the employees. One of its uses, and the one we are going to analyze is for invoice processing.

The Invoice Processing application automates the reception, validation and approval flow of incoming invoices, allowing companies to streamline their accounts payable procedures.

It consists of collecting the data from the invoices that arrive. This is previously configured since, although in general all the invoices are similar, the distribution of the relevant information can change depending on the supplier. For this reason, a template is established with the different providers with which the company deals so that when the invoices arrive, the program automatically recognizes which supplier they belong to and knows how to extract the necessary data for accounting.

This is made possible by OCR (Optical Character Recognition), a computerized analysis system that allows a text document to be scanned into an electronically automated file. Debitoor (2020).

Once the data is captured by scanning the supplier's invoice, the software performs the automatic check against the purchase order and all the information is sent to the company's ERP system. The person responsible then receives an email alert to let them know they have an invoice to approve. If there are other people involved in the vendor invoice approval workflow, email alerts are automatically sent to these people as well.

Once processed, invoices are stored in a secure digital archive, directly connected to the system, so any authorized user can quickly search on and retrieve invoices, from any browser. The archive greatly simplifies reporting and audit support and can be tied to a records management system for document disposition at the appropriate time. In addition, the program takes into account the lifetime of the document. In Spain, the tax authorities require you to keep them for a minimum of 5 years, but after this period, you can set them to be automatically deleted, thus leaving more space available.

One issue that is of great concern when we talk about digitalization is the security of our documents. This software manipulates data, deals with encrypted PDF's, totally secure, but then storage is a matter for the business. This storage can be either in the cloud or in the company's server, which already has a security system.

In the following scheme we can see in a more graphic way the process that this software follows to process the invoices, from the first step that is the reception of them, until the

last one where a report is extracted to conclude that the whole process has gone correctly.

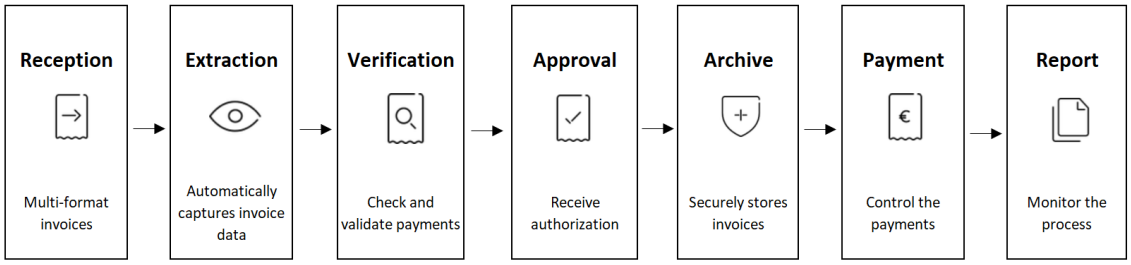

Figure 11: Software process. Own elaboration.

It is a very simple and visual process easily controllable by any employee who has access to it. For this reason, no formation is needed to use it, it is very intuitive. Anyone who knows how to handle any digital application can understand it perfectly. For the start-up there is a training that is given to the technicians of the company that receive it (IT department) in case any process has to be modified in the future or users have to be added/deleted. However, there is also the possibility of buying packages of hours, so these tasks can be carried out by the technicians of the company that sells this software.

The implementation of this document manager has great benefits for companies.

The first of those is to overcome the barrier of manual data entry. We know that entering supplier invoice data into the accounting system, validating the data, authorizing the invoice, and then archiving a copy of the invoice are extremely slow processes when done manually. It also and increases the possibility of errors in payments, having a direct impact on cash flows

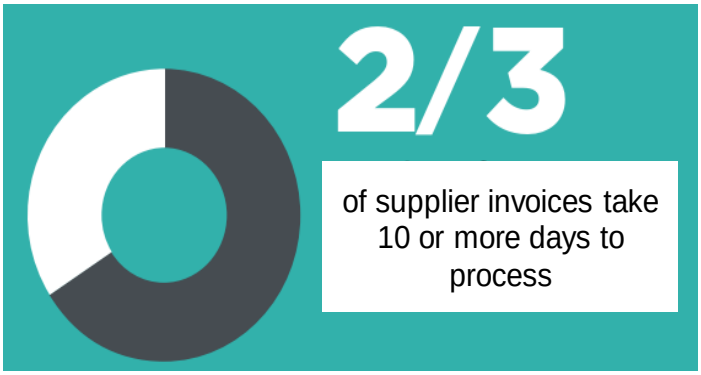

Figure 12: Time to process an invoice. Canon/RS Consulting.

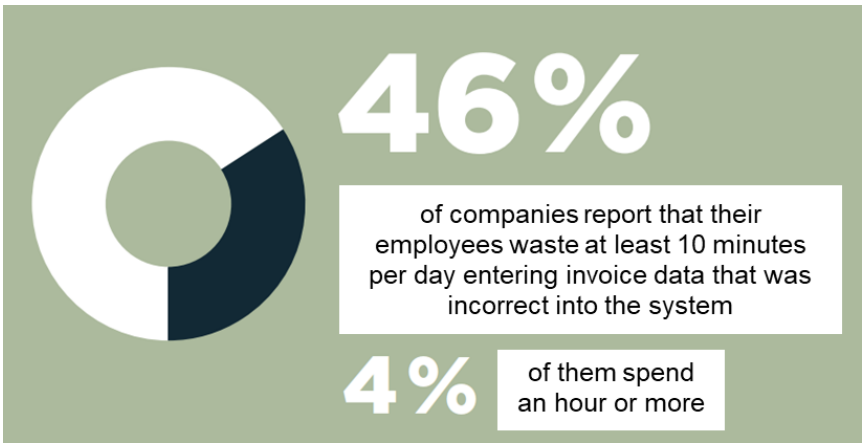

Figure 13: Time wasted when errors in an invoice. Canon/RS Consulting.

These errors are also very time consuming as they can lead to misunderstandings with suppliers. This leads to payment claims, risks of surcharges for late payments...

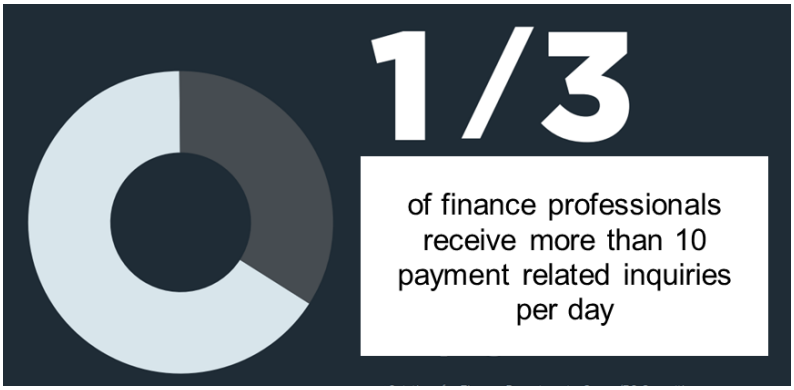

Figure 14: Time wasted in invoice inquiries. Canon/RS Consulting

In contrast, with these programs, by reducing invoice processing time, early payment discounts can be increased and the relationship with suppliers improved.; in addition, staff will have more time to focus on business-critical activities, thus improving the efficiency of the department. This efficiency will also come from saving time and money by automating data entry and electronically controlling processes. This way, errors, delays in payments and penalties can be avoided.

Also, it provides visibility, because you are able to instantly access interactive, real-time dashboards to monitor and analyze the accounts payable process and therefore be able to make informed decisions on payments and manage your cash flow in an optimized way based on accurate, real-time information.

Moreover, the advantage of this program is that it is scalable, so you can take it to all the processes of the accounting area and other departments, only having to expand the consultancy of the other processes.

This means that, although it is a cost for the company, it quickly becomes an investment that brings great results. In the Spanish market there are several companies that offer this software today and the truth is, its price varies depending on several factors.

First of all, it must be explained that there are two ways to acquire the document manager, through renting, where you pay monthly fees for about 60 months or acquire the program directly. In addition, the purchase does not only include the program, but also the consultancy, the licenses, the installation of the program in the company, the implementation and the start up.

One of the factors that makes the price of this invoice processing software vary is the infrastructure that the company has. Every business has a different infrastructure, and each one needs one type of installation and implementation. In addition, it is also taken into account if the company wants to make the information dump online once a day, or if, on the contrary, they prefer twice a week…

Also, it is more or less expensive depending on the number of concurrent people who are going to use the system. This means the number of people who will be connected and working with those licenses at the same time.

For all these factors and many more, this is a personalized program, which is adapted to the needs of each company and therefore, as we have mentioned, its price differs in one place or another depending on the characteristics of each business.

But to get an idea, the base price would be 15.000€.

6. Practical part. Applying the software.

Throughout this project, we have been able to see invoice processing as another step towards digitization in companies and optimization of resources. Clearly, we have seen the great advantages that the implementation of this document management system can bring to a company, but many firms see this opportunity only as a cost.

To be able to demonstrate practically everything discussed in the theory and also to be able to answer the hypothesis raised in the introduction, about how efficient these types of programs really were for companies, I would like to analyze a real case.

This real case is the situation of Volkswagen financial services, which offers financing, leasing, services and insurance for vehicles of the Volkswagen Group

This company has recently acquired a document manager for processing invoices from the company CANON and, through the report they have produced, I will extract the data to make this comparison between the traditional way of managing invoices and this new

automated way. But, other data that I will need to estimate this improvement in efficiency and cost reduction, I will use data that are known in the industry, according to standard parameters such as the salary of an accountant in this company.

6.1 Volkswagen Financial Services

Volkswagen Financial Services is the financial entity of the Volkswagen Group in Spain. Present in more than 40 countries, it is the largest supplier of automotive financial services in Europe.

The main objective of Volkswagen Financial Services is to offer a full service that meets the mobility needs of each and every one of its customers. To do achieve that, they have developed four lines of business: Finance, Renting, Insurance and Mobility. It has 50 years of experience in the Spanish market and is supported by Volkswagen Financial Services AG, the Volkswagen Group's finance company, which enables them to guarantee service coverage worldwide, as well as offering financial solutions and services for each of the Group's automotive brands. The wide range of services offered ranges from the development of a personal financing plan, adapted to the specific needs of each client, to the management and maintenance of comprehensive mobility services.

6.2 The challenge

The challenge in this company was that, until 2014, invoice approval was, as in so many other companies, a manual process from beginning to the end. Something that in their case became more complex as they were subject to a management circuit for this class of documents of up to five levels, with reception, validation or accounting processes, in which many people may be involved.

The firm then considered having a document management system that would prevent them from having to search for the supplier who had ordered the invoice when they received it, from sending the invoice from one office to another to manually include the relevant data, stamps and signatures on the printed documents, and then entering the final invoice into their accounting system, as well as saving and maintaining the physical document in an archive.

Therefore, they aimed to eliminate paper in their document processes, speed up the approval processes for supplier invoices, save paper by avoiding unnecessary printing and avoid possible loss of invoices. In addition, the impossibility of changing, intervening or altering the SAP application, Volkswagen's international accounting system, required a solution that could be integrated into its working scheme without major modifications.

6.3 Analysis

The company handles approximately 500 invoices per month. Following, we will look at the involvement and cost of doing it the traditional way, as they were doing it until now and then, we will compare it with the resources, time and direct employee with this document manager of invoice processing. The three most relevant and quantifiable aspects in this process are mainly three: space, time and workforce.

6.3.1 Costs incurred in the traditional way

SPACE

As we have seen throughout this project, the large number of invoices received by a company requires us to have physical space to archive and store them. Many times, companies are not aware that this physical space is an expense for them. In the case of Volkswagen financial services, they are located in El Prat de Llobregat, Barcelona, and to quantify the cost of storing all these documents physically, we can see how expensive the square meter is in this area.

In this industrial zone we find a warehouse and space rental company, Multistore, so we can know how much it costs for Volkswagen to have that space dedicated exclusively to the archiving of these files.

One of the options that fits best is a 12m^2 library and desktop space. This means a cost of 48,97€ per month (taxable base, amount without VAT). Multistore (2020).

Figure 15: Cost of library space per week. Multistore

This would imply a monthly storage cost of 196 euros. If we take into account the invoices that the company receives per month, 500, this would mean a cost of 0,40€ per invoice, only for the physical space required.

TIME

Time is very valuable in the management of these procedures, we have been able to see that having a good control and monitoring of the process can help us to process payments faster, to be more efficient and to have a better relationship with our suppliers, thus being able to achieve economic advantages.

When processing an invoice manually there are many actions to be taken. From the receipt of the invoice, the sorting according to supplier, then comes the checking of the data, the approval by a superior, the accounting in the system, the processing of the payment and finally the archiving of this invoice. This process, as explained above, can take up to 10 days from receipt to archiving. To summarize and quantify it, if we add up all the time required for each of these activities, we would arrive at an average of half an hour per invoice. It would take us 30 minutes to complete all these activities. If we multiply that by the 500 monthly invoices, we find that we need 10.000 minutes per month to process all the invoices that this company receives.

Apart from this, we have also seen that everything does not always work out right the first time, and this means that we have to spend extra time on an invoice. It is estimated that 10% of monthly invoices (50 in this case) arrive with some kind of error which must be reclaimed. As we have seen in Canon/RS Consulting statistics, it takes 10 minutes to re-enter this data that is wrong. This would mean 10 minutes x 50 invoices = 500 minutes per month.

Also, in those statistics we saw that workers lose 10 minutes in responding to issues related to invoice payments. Usually these questions arise in 30% of the monthly invoices (150 invoices in this case). This would mean adding 1500 minutes per month to resolve these concerns.

If we add up all these minutes (10.000 + 500 + 1.500) we get a total of 12.000 minutes, 284 hours per month.

To quantify this amount, we will relate it to the last element, the workforce.

WORKFORCE

Employees are undoubtedly the greatest asset of all companies. This is what differentiates them from each other and, in many cases, we do not know how to take advantage of this resource. Installing document managers in Volkswagen Financial Services helps us to allow workers to dedicate more hours to other activities that require human skills for a better performance of the company.

If we take into account a full 8-hour working day, we should know that not all of them are productive. Therefore, let's assume that 6 of those 8 hours are 100% focused on the work to be done. This would add up to 30 productive hours a week per person, 120 hours per month. If we have, at least, three employees working their entire day on processing the invoices, we would get 360 hours per month, which would cover the 284 hours we have estimated we need to process the volume of invoices that arrive at Volkswagen Financial Services.

The average salary of an accountant in Spain according to Indeed is 1.600 euros per month (Indeed, 2020). But this is the gross salary the workers receive, not the cost to the

company. To this amount we have to add the social security paid by the company, which for an office worker with a permanent position, is around 35% of the gross salary. This would be adding a cost of 560 euros per month per worker, making a total of 2.160 euros per month per worker.

Therefore, having three people performing this task means, for the company, a total cost of 6.480 euros per month. As we are not using those 360 hours in full, but only need 284, the monthly cost would be 5.112€.

This would mean adding an extra 10,23 euros to the cost of having the physical space to archive the documents.

Finally, it should also be taken into account that, when this process is carried out in an analogical manner, two copies of each invoice are usually made in order to carry out the traceability of the document. This means having a record of the process carried out and being able to verify how, when and where the data have been entered or modified.

Since quantifying this data also depends on several factors, we will estimate that we make these copies in a print shop, where they cost approximately 0.03 euros per copy. Copytop.(2020). If we make two copies per invoice and the company receives 500 invoices per month, this means a cost of 30 euros per month; 0,06 euros per invoice.

Therefore, according to this estimate, it costs to Volkswagen Financial Services 10,69 euros to process an invoice.

Below we can see a summary table of what we have covered, the costs of processing an invoice in the traditional way.

Traditional way			
	Unit	**Euros per month**	**Euros per invoice**
SPACE	12m^2	196 €	0,40 €
TIME	284h	5.112 €	10,23 €
WORKFORCE	3 employees		
COPIES	1000 copies	30 €	0,06 €
TOTAL COST PER INVOICE			10,69 €

Figure 16: Cost of processing an invoice with the traditional way. Own elaboration.

6.3.2 Costs incurred with invoice processing software

Now, we will make the same estimate but assuming that the company has already purchased this software to process their invoices. The price of the software we have mentioned is around 15.000 euros. This kind of assets are amortized in 5 years; therefore, we would have a cost of 250 euros per month. In this case, as they receive 500 invoices per month, it would cost 0,5 euros per invoice.

SPACE

There would be no problem of physical space now since, as we have mentioned, this program stores all the invoices whether in the cloud or in the company's server where we can easily access them without wasting time or money. This would mean a total saving in this element, the storage space.

TIME

Time and efficiency are key factors today and, we have seen that this process requires great attention. This software is going to make this long process, which we have estimated could take approximately 30 minutes per invoice, to be reduced to seconds, because it is an automatic process.

This is a great advantage for the company but not all the consequences are quantifiable. By reducing this time, as we have commented before, it makes us have a greater control of our payments to suppliers and therefore the relationship with them improves, being able to obtain great commercial discounts.

WORKFORCE

To make this assumption and to be able to quantify it, we will reduce the necessary people in charge of processing invoices to only one person, in order to monitor the whole process and verify that the software is posting the data correctly. The objective of this document manager, however, is not to reduce employees, but to allow them to dedicate their working hours to more relevant tasks

As mentioned, this software is automatic, so it only takes a few seconds to complete the whole process. If we estimate that in 20 seconds an invoice is already processed, with the 500 invoices that arrive monthly, in less than three hours they would all be accounted. During this whole process, it would only be necessary to follow up slightly that no errors occur, so, in two working days all this information could be approved. With the data we

have obtained before, if the cost of having a person is 2.160 euros, two days would be equivalent to 216 euros. This would mean a cost of 0,44 euros per invoice.

Finally, in this case no physical copies are needed so this would mean a total saving in this element.

Therefore, according to this estimate, it costs to Volkswagen Financial Services 0,94 euros to process an invoice with this software.

Below we can see a summary table of what we have covered, the costs of processing an invoice with this software.

Invoice processing software			
	Unit	**Euros per month**	**Euros per invoice**
SPACE	$0m^2$	0 €	0,00 €
TIME	12h	216 €	0,44 €
WORKFORCE	1 employee		
SOFTWARE	1	250 €	0,50 €
TOTAL COST PER INVOICE			0,94 €

Figure 17: Cost of processing an invoice with the software. Own elaboration.

As we can observe, the difference in costs between both options is significant since it entails a saving of 9,75 euros per invoice. We can also see the economic savings that this represents on a monthly and annual basis for Volkswagen Financial Services, having a volume of 500 invoices per month.

SAVINGS PER INVOICE	9,75 €
SAVINGS PER MONTH	4.875,00 €
SAVINGS PER YEAR	58.500,00 €

Figure 18: Savings when having the software compared to the traditional way. Own elaboration.

Therefore, beyond the efficiency when working, the speed in having that information and the simplicity that this document manager provides us, we see how it also implies a great economic saving, being something very profitable for this company.

6.4 Is it profitable for small businesses?

We have seen that in the case of Volkswagen Financial Services or companies of similar size with similar invoice volumes, the gain is very clear but, we can ask ourselves, what happens in smaller companies with smaller volumes of invoices? Is it still a profitable investment?

The answer is clearly yes, for small companies it is also very advantageous to invest in this document manager. To show it in a graphical way, I expose a comparative table with the costs that would have a small company that, for example, only receives 50 invoices per month, following the same criteria that in the real example shown in the previous section.

Traditional way			
	Unit	**Euros per month**	**Euros per invoice**
SPACE	1m2	16 €	0,32 €
TIME	28h	504 €	10,08 €
WORKFORCE	1 employee		
COPIES	100 copies	3 €	0,06 €
TOTAL COST PER INVOICE			10,46 €

Figure 19: Cost of processing an invoice with the traditional way. Own elaboration.

Invoice processing software			
	Unit	**Euros per month**	**Euros per invoice**
SPACE	0m2	0 €	0,00 €
TIME	3h	54 €	1,08 €
WORKFORCE	1 employee		
SOFTWARE	1	250 €	5,00 €
TOTAL COST PER INVOICE			6,08 €

Figure 20: Cost of processing an invoice with the software. Own elaboration.

SAVINGS PER INVOICE	4,38 €
SAVINGS PER MONTH	2.190,00 €
SAVINGS PER YEAR	26.280,00 €

Figure 21: Savings when having the software compared to the traditional way. Own elaboration.

As we can appreciate, although the savings per invoice are now lower than in the case of a larger company like Volkswagen Financial Services, it is still a very profitable investment that provides us with economic savings of 26.280 euros per year. This is without taking into account all the other aspects, discussed above, that this software brings to the company and are very advantageous for their future performance.

7. Conclusion

Digitalization has changed the way in which companies work, facilitating many tasks, simplifying processes, giving us new business opportunities and allowing us to have a greater scope; achieving the capture of a greater number of customers.

Nevertheless, as we have seen, digitalization is not 100% integrated in all companies. Nowadays, in order to be digitalized, it is not enough to have electronic devices in the company, to have social networks and to facilitate e-commerce, but this concept includes many more aspects. One of them, the treated in this project, the document management; the elimination of the physical paper and the implementation of programs that can make all those routine and heavy tasks without the necessity of personnel chopping numbers and dealing with great volumes of documentation.

We have seen that invoice processing software is a clear example of an advance for this digital transformation; for companies that have not been born with this world of technology so internalized but that, now, must adapt to this new rhythm of life to be able to subsist and remain competitive in the market.

This type of changes, at first, are not usually well received since many firms tend to see only the cost of this investment, and not all the benefits it will bring. Furthermore, we have seen that it is very important that they not only invest in digitalization, but also ensure formation and change management. Employees tend to reject new programs that they do not know about, because they think that they may not be able to understand how they work, or they may even think that their job may be in danger. But this is not the case, this kind of software is very intuitive and easy to use, and it is intended to help in the most monotonous activities, so that workers can focus on other more important tasks, where human value is really important. This also makes people more motivated, as they find that their work is worthwhile and does not just consist of transferring documentation to accounting.

In the case of Volkswagen Financial Services, we have seen how the implementation of this document management system can bring great benefits to the company. After calculating the costs of processing an invoice in the traditional way (analog) and calculating the costs with the implementation of this software (digital), we can conclude that it is clearly very efficient for a company to invest in this software to do this kind of tasks.

The saving per invoice obtained was 9,75 euros, which is a very high amount per invoice. Taking into account the volume of invoices that this company receives monthly, this represents a monthly saving of 4.875 euros.

We assess this aspect according to the volume of invoices and not the amount of these since, what really takes time is the different product lines. Even if it is a small invoice,

sometimes we find ourselves with many product entries and this saturates the employees as it requires many hours of work.

But, more than that, we have not only seen how this software can bring great benefits to companies like Volkswagen Financial Services, but also to smaller ones, with lower volumes of invoices received per month.

To prove it, we have observed that although the savings per invoice in these smaller companies are lower, it is still a very profitable investment that provides us with economic savings of 26.280 euros per year.

However, as we have also mentioned, the benefit obtained is not only monetary. Regardless of the economic amount, which can be more or less appealing, there are many more aspects that this software brings to the company and that are difficult to quantify.

First of all, we have to bear in mind that traceability is not the same for analog and digital. With this type of programs, it is much easier to have control of the entire process and know when data has been introduced or modified, who has done it, in which stage of the process our invoices are, etc. This allows, on the one hand, that when having audits, we are able to know at any moment where is the documentation that they request to us and having everything well structured, thus reducing the time that the employees have to be looking for the information, being able to be dedicated to other tasks. And on the other hand, we have seen that having this effective control of our invoices, makes the payments to suppliers to be made in the established terms and this improves our relationship with them, being able to get economic advantages in future purchases. This also allows the department to have a better allocation of its costs.

In second place, we must also take into account the environmental benefit that the implementation of this software brings us. By not making paper copies of all our invoices, we contribute to the reduction of paper use and, as the program is scalable, this makes it possible for information and documents to flow between departments without the need to print anything. Moreover, little by little, if companies become aware of the importance of the digital transformation, our suppliers will also be leaving paper aside, thus sending us more electronic invoices.

To conclude, and in relation to the situation we are currently experiencing which I have referred to in the introduction of this project, I have been able to confirm the importance of digitization in companies. The importance of not depending 100% on a physical space where all the documents are stored and the importance of digital processes so that the company can continue with its economic activity and, therefore, the economy as well. With this document manager, in the accounting area, this is possible. Apart from all the economic and non-economic benefits that it brings, explained above, the implementation of this software in the company allows us to work from anywhere, having everything necessary at a click, from our computers.

8. Bibliography

Alberto Delgado. (2016). Digitalízate. Barcelona: Libros de cabecera.

ALEXANDER DELGADO. (2011). El fax, un espécimen tecnológico que se rehúsa a desaparecer. 2020, de Vanguardia

Sitio web: https://www.vanguardia.com/tecnologia/115156-el-fax-un-especimen-tecnologico-que-se-rehusa-a-desaparecer-HBVL115156

CANON. (2019). Volkswagen Financial Services agiliza su procesamiento de facturas y prescinde del papel.

Canon/RS Consulting. (2019). El impacto de una visibilidad reducida del flujo de caja. CANON.

Coms. (2011). The History of Email . 2020, de Communication Studies

Sitio web: https://www.communicationstudies.com/the-history-of-email-infographic

Copytop.(2020). Precios imprimir. 2020, de Copytop

Sitio web: https://copytop.es/copisteria/copisteria-online-barata-1436

Debitoor. (2020). Sistema OCR. 2020

Sitio web: https://debitoor.es/glosario/ocr-escaneo

Daniel López. (2019). Internet: así nació y así creció. 2020, de Orange

Sitio web: http://blog.orange.es/red/historia-de-internet/

Esteban Borges. (2017). Computacion en la nube: la historia. 2020, de InfraNetworking

Sitio web: https://blog.infranetworking.com/computacion-en-la-nube-la-historia/

Evelio Martínez. (2011). El correo electrónico y su historia. 2020, de Veliux

Sitio web: https://www.eveliux.com/mx/El-correo-electronico-y-su-historia.html

Galo E. Cano-Pita . (5 de enero de 2018). ICTs in companies: evolution of technology and structural change in organizations . Dominio de las ciencias, 4.

Indeed. (2020). Salarios para empleos de Contable en España. 2020, de Indeed

Sitio web: https://www.indeed.es/salaries/contable-Salaries

ITMadrid. (2016). LOS IBM SERIES SYSTEM 360/370/390. 2020, de Blog

Sitio web: http://museodeinformatica.blogspot.com/p/blog-page_19.html

KYOCERA. (2019). La gestión documental. Definición, conceptos clave e importancia. 2020.

Sitio web: https://www.kyoceradocumentsolutions.es/es/smarter-workspaces/business-challenges/paperless/la-gestion-documental-definicion-conceptos-clave-e-importancia-en-la-actualidad.html

Mary Bellis. (2019). History of the Fax Machine. 2020, de ThoughtCo

Sitio web: https://www.thoughtco.com/history-of-the-fax-machine-1991379

Multistore. (2020). Calcula tu presupuesto. 2020, de Multistore

Sitio web: https://www.multi-store.com/tarifas-calcula-tu-presupuesto/

Nadia Luna. (2018). ¿Qué son las TICs?. 2020, de Entrepreneur

Sitio web: https://www.entrepreneur.com/article/308917

Patricia Nuño. (2018). ¿Para qué sirve la contabilidad?. 2020, de Emprende pyme.net

Sitio web: https://www.emprendepyme.net/para-que-sirve-la-contabilidad.html

Patricia Russo. (2009). Gestión documental en las organizaciones. Barcelona: UOC.

Tomás Cabacas. (2018). ¿Quién inventó el Cloud Computing?. 2020, de MCPRO

Sitio web: https://www.muycomputerpro.com/2018/07/03/historia-cloud-computing

XEROX. (2018). Solutions for Invoice Processing.

Sitio web: file:///C:/Users/SR216KT/Downloads/gdo_brochure_xerox_solutions_invoice_processing.pdf