UNIVERSITAT JAUME·I

TECHNOLOGICAL OUTSOURCING AS A COMPETITIVE ADVANTAGE IN ORGANIZATIONS

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1. INTRODUCTION

This project has been carried out based on the concept of technological outsourcing. First, the concept of outsourcing would be defined. Next, the different characteristics that technological outsourcing (both, at organizational and business level) can have today would be named, with its advantages and disadvantages. And finally, the different functional and structural characteristics that technological outsourcing can have in the present, and its applications with the I.T. (Information Technology) and with the I.S. (Information Systems).

As Moreno (2008) says, outsourcing is a business tool that functions to increase income and reduce expenses in a company. Therefore, this business model allows companies to effectively and efficiently manage their internal activities, thus allowing external activities to be commissioned by other companies (outsourced).

In this way, outsourcing can be defined (Romero, 2002) as the action of subcontracting the activities of a company, with the result of being more productive, self-reliant and independent, by transferring all the bureaucratic burden (administrative, fiscal, accounting,...) to another company, which has experience working as is set out for outsourced companies. This also serves as an aid for the company, since it greatly streamlines processes, such as planning, execution, preparation of new procedures and organization; being this step, with the transfer of proceedings, bypassed.

Other authors define technological outsourcing (Ramírez et al., 2015) as the outsourcing of information systems (I.S.), becoming one of the most used and accepted methods in organizations with information technology systems/equipment (I.T.). However, despite the fact that there are many studies that affirm the growth of outsourcing on I.S., the primary objective is not to know the number of companies that have been able to apply outsourcing in their internal management or the scope that the effort could have had outsourcing in recent years; instead, the main objective lies in the outcomes that this "concept" may have within any organization, both nationally and internationally, at the present time and in the future of companies. Therefore, to know about such results, there are many analysts and economists who try to "figure out" the results of outsourcing with their empirical theories, such as Cullen, Seddon and Willcocks (2008).

Based on the previous academics and professionals, in the economic-business field, (Cullen et al., 2008) made a study between 1994 and 2003 to verify the importance that outsourcing had on companies. The study was carried out on 100 cases, and ruled that companies that outsourced their activities had a higher probability of success than those that did not. Finally, in 2004, he concluded that business process outsourcing (B.P.O.) had brought about a considerable improvement for those companies, regardless of the outsourcing objectives that they had initially. A company that outsourced was more successful and profitable over a long period of time than a company that did not outsource.

1.1. Historical origin of technological outsourcing

In the **etymological origin**, the word outsourcing comes from English[1], which, translated into Spanish, refers to "subcontracting". In business this is referred to as the process a company follows to hire others, as a "method" or "solution" for new companies to take over such outsourced activities. In addition, if the word is analyzed by parts, outsourcing is out, which refers to "from outside"; and source, which refers to "cause" or "origin".

As for the **historical origin** of outsourcing, it dates back to the 20th century. As a result of a rise in the creation of new companies (start-ups), such as Silicon Valley, new ways of paying and doing business/transactions between stakeholders emerged, taking advantage of opportunities, synergies, economies of scale, thus beginning to reduce the risks of collection and non-payment. (Almanza and Archundia, 2015).

However, and to the surprise of many companies, the number of tasks to be carried out was still considerable. Therefore, these companies found that the organizational structure of the company was much more complex and dynamic than initially thought. For this, it was required "external help", which would serve as a "complement" or an "add-on" to the company. That is to say, as Friedman affirms in the book *The World is Flat: A Brief History of the Twenty-First Century* (2002), outsourcing has allowed companies to divide the activities within an organization into simpler parts, making companies much more efficient.

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[1] Meanings.com. Available at: https://www.significados.com/outsourcing/

Regarding the concept of technological outsourcing, it emerged in the post-industrial era, more specifically in the year 1970, when it began to give its first glimpses and is at this moment when large companies in the sector began to implement technological outsourcing in their business model, such as Pryce Waterhouse Coopers (PwC[2]) and Electronic Data Systems (EDS), both American companies dedicated to consultancy. This was basically due to the fact that many areas and departments were practically computerized, and if they wanted to keep remained just as competitive and strong in the market, they had to implement technological outsourcing in their day-to-day management (Hernández et al., 2008).

In 1980 a period of "globalization" began as well as a Marxist movement, lasting until the beginning of the 21st century. It is a period of rapid development, advancement and progress of science and technology; and that could not prevent many companies from laying off people and replacing workers with machines. It was a period of "globalization", changes, capitalism over communism, prosperity for some and poverty for others, technological and information technology progress (in companies and in society), advocacy of the new against the old, and diversity cultural, political and ideological. However, there are anti-capitalist and anti-globalization movements against it, and they try —not without much success— to defend their ideals and principles (Castells, 2002).

In the 1990s, technology outsourcing dominated the business market and became a widely used business model. An example of the most important and reputable outsourcing alliance at the time was between Eastman Kodak and IBM. This alliance allowed Kodak to focus on its core business while IBM took over Kodak's I.T. affairs. As a result, in 1998 technological outsourcing managed to raise large amounts of money, exceeding billions of dollars, thus, becoming a rather consolidated business model inside the business world (López, 2005).

As for the businesses of companies, as the newspaper *The Guardian* (2002) calls —a post-modern phenomenon—, public and private services are focused on reducing costs, increasing profits and satisfying their customers by improving services and launching new more attractive, striking and tentative commercial campaigns, for consumers (Sieber et al., 2006). Therefore, companies aim at concentrating all their activity in being able to provide a better service: more specialized, specific and satisfactory for the client, thanks to technological outsourcing.
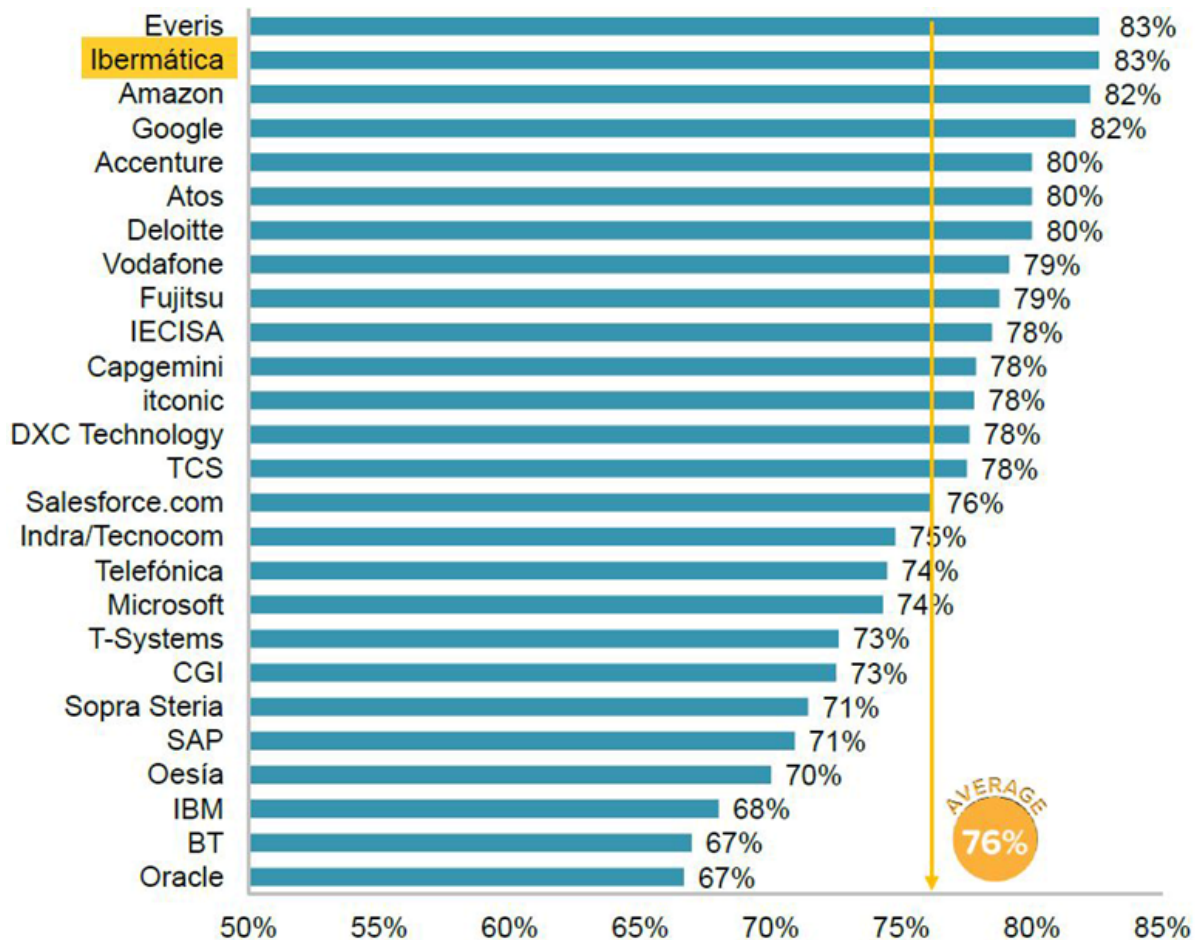
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[2] PwC is recognized as one of the Big Four consulting firms, along with Deloitte, EY and KPMG.

Finally, regarding the difference between the panorama before COVID-19 and the one afterwards, particularly to technological outsourcing, the following can be observed. In first place, Whitelane Research and Quint Wellington Redwood, two prestigious consultancies dedicated to the search for specialized I.T. outsourcing, produced reports in which they demonstrated that, since 2013, a Spanish company (Ibermática[3], an outsourcing company) managed to position itself very strongly in the technology outsourcing market, achieving positive and favorable results. The analysts showed that Ibermática outsourced many of its I.T. services. In addition, they verified that Ibermática was going through a moment of splendor and great boom, which caused the company to improve its business image towards its clients, and whose consumers, they admitted, were more satisfied and happy with the service received. And continuing with the good line of events, the analysts affirmed that technological outsourcing would go through more good times, thanks to the appearance of the Cloud and Multi Cloud, which would cause "long lists of hybrid providers" and "a complex scenario of suppliers with portfolios that, while competing, would complement each other" (Ibermática, 2020).

Continuing with this trend, analysts were optimistic about these very satisfactory results. As for Ibermática, it managed to have, and maintain its position for two consecutive years (Graph 1). As can be seen, the first year it managed to satisfy his client portfolio, with 81%; and the second year, with 83%, positioning itself on the top with Everis, an experienced company founded in 1996. Regarding new competitors, Amazon and Google followed closely with 82%. In this way, and continuing with Ibermática, it dealt with the following aspects in its fields of I.T. outsourcing activities: services to the final consumer and solutions, contractual agreements, maintenance and testing of apps, and pricing in the business sector. All these technological activities helped to ensure that the service offered was adequate, expected and ideal for the consumers from a technological outsourcing company from San Sebastián (Ibermática, 2020).

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[3] Ibermática is an outsourcing provider, whose services are related to information and communication technologies in the Spanish market. Created in 1973 with headquarters in San Sebastián.

Graph 1. Ibermática, a Spanish outsourcing company, before the pandemic (2018)

Company	Percentage
Everis	83%
Ibermática	83%
Amazon	82%
Google	82%
Accenture	80%
Atos	80%
Deloitte	80%
Vodafone	79%
Fujitsu	79%
IECISA	78%
Capgemini	78%
itconic	78%
DXC Technology	78%
TCS	78%
Salesforce.com	76%
Indra/Tecnocom	75%
Telefónica	74%
Microsoft	74%
T-Systems	73%
CGI	73%
Sopra Steria	71%
SAP	71%
Oesía	70%
IBM	68%
BT	67%
Oracle	67%

AVERAGE 76%

On one hand, in terms of post-pandemic technological outsourcing, it is observed that outsourcing services went from being 12% (before the pandemic) to being 21% (after COVID-19). This has been mainly due to the fact that many Spanish companies found themselves having to outsource some of their activities due to the impossibility of being able to work physically, and the change from office work to teleworking led to an organizational redesign and structural remodeling of the company itself. Therefore, 41% of businessmen assured that some of the main reasons why they decided to outsource was, firstly, to reduce costs and, last but not least, to simplify tasks (Grant Thorton, 2021).

On the other hand, Grant Thornton's study affirmed that, despite only 12% of businessmen who claimed to be outsourcing before the pandemic, the concept was retained by many other businessmen; but, the real reason for implementing this system was the appearance of COVID-19. Also, the initiative arises as an "urgent" or "last-minute" measure, since no one knew or assumed that this pandemic would have such an impact on society (both in Spain and throughout the world). Therefore, it can be said that it was the only possible/viable solution, given the seriousness of the situation that many companies were facing at the time.

Next, as shown in Graph 2, it can be seen that 41% of businessmen in Spain chose to outsource to reduce costs and make their processes more efficient, 36% of businessmen considered or opted for outsourcing to improve and develop their digital and technological area, 32% to have a better knowledge and information of the suppliers in their respective sectors, 26% to guarantee the viability of the business, 24% to centralize the services of their organization, 23% to have a broader client portfolio and an external provider with experience in the sector and, finally, 18% bet on this to offset the business impact when there were no public aid.

Having said this, it is observed that 36% of Spanish businessmen who wanted to implement outsourcing were to improve and develop their digital and technological area. In other words, almost half of Spanish businessmen wanted (after the COVID-19 pandemic) to promote the technological area of the company, and strengthen it with respect to the other departments and areas of the company.

Graph 2. Aspects that have more weight in the decision to outsource (2021)

| Cost reduction and process simplification | 41% |
Technological and digital development	36%
Wider knowledge about my sector regarding suppliers	32%
Ensuring viability	26%
Centralization of services as an integrated solution	24%
Supplier with a broad customer base and proven experience	23%
International visibility and suppliers development	21%
Compensation for withdrawal of public subsidies	18%
Others	1%

Source: https://www.grantthornton.es/sala-de-prensa/2021/

Lastly, experts affirm that technological outsourcing has been a complete revolution, and they appreciate that this is being something very relevant in the business sector. Hence, it is observed that the outsourcing of technological and computer services, the so-called technological outsourcing, brings many benefits to companies in this regard.

As a curiosity, according to the latest survey carried out by Adecco outsourcing, in 2022, energy companies are pioneers in outsourcing, followed in second place by Information and Communication Technology (I.C.T.) companies —which in turn outsource— and companies in the chemical sector (Ruiz, 2022).

Graph 3. Outsourcing in the different business sectors (2022)

Source: https://ticnegocios.camaravalencia.com/servicios/tendencias/el-outsourcing-tecnologico
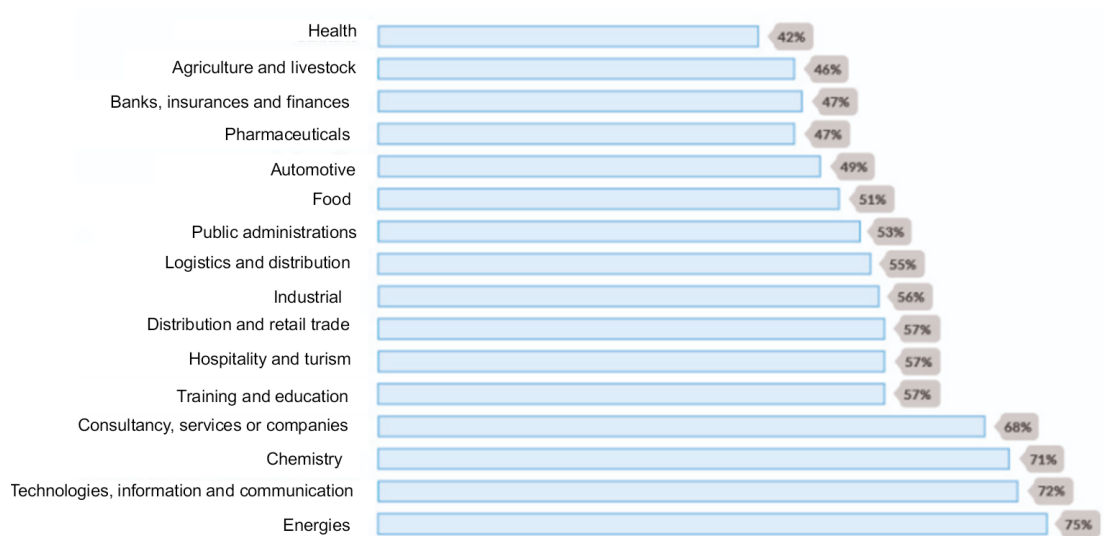
Summarizing, at present, technological outsourcing is being very useful for the day to day of many organizations, as reinforcing and investing in the technological area is synonymous to "economic stability" and "guarantee of the economic-financial resources of the company"; as technology is a very changeable, sensitive and dynamic area, where companies always have to be innovating and updating (with new applications, software, computer equipment, ...).

2. DEFINITION OF TECHNOLOGICAL OUTSOURCING

Some definitions of technological outsourcing are the following:

- Gonzalez et al. (2015) from European Journal of Management and Business Economics[4], defines technological outsourcing as follows: "Information Systems (I.S.) outsourcing has become a basic strategy to direct the unstoppable changes introduced by Information Technologies (I.T.). For this reason, among others, I.T. outsourcing and outsourcing has experienced an unstoppable growth in recent years".

- Navarro (2020) from Byte[5] magazine defines technological outsourcing as follows: "Technological outsourcing allows us to have authentic specialists capable of solving all the problems derived from I.C.T., and at a competitive cost (...). Organizations realize this, since technological outsourcing is increasingly demanded by companies".

2.1. Objectives of technological outsourcing

Regarding companies and their different ways of developing their business, the following can be observed about technological outsourcing. In the first place, the outsourcing of some areas means that the company can improve its resources and processes, being able to take advantage of its synergies and competitiveness. In addition, globalization has favored communication and telecommunications technologies, causing the following events: a major development in all areas of business management, an increase in added value, an improvement in production processes, greater —and better— creation of jobs (with more specific skills and knowledge), greater development of economic activities, more pronounced and accentuated sociological changes, and higher market demand (Goicochea, 2018).

Having said that, in this section we will mention the following objectives related to technological outsourcing. First of all, the **main objective** of technological outsourcing is to add value to the company, thanks to the incorporation of technological solutions that allow reducing all processes and focusing solely and exclusively on those processes that are critical for the company (Dimensiona, 2023).

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[4] The European Journal of Management and Business Economics is dedicated to the publication and dissemination of rigorous theoretical, methodological or empirical research articles related to the areas of business economics.
[5] Byte is an American magazine, related to computer technology. It is dedicated to I.C.T. professionals.

Regarding the **specific objectives or main objectives** of technological outsourcing, as observed in Image 1, they are the following: flexibility, efficiency and quality of processes, increased productivity, improvement of quality and improvement of competitiveness (Dimensiona, 2023).

Image 1. Why do companies need to do technology outsourcing? (2023)

1. Flexibility	2. Efficiency and quality of processes	3. Higher productivity
Outsourcing offers the ability to adapt to new scenarios in a changing business ecosystem by solving needs with cost, time, and process optimization.	The development of the company's production processes is optimized and streamlined by focusing on its critical tasks, leaving the ICT efforts on the supplier.	Outsourcing allows cost optimization since the investment is made based on the project requirements and it is not necessary to have a full-time internal team.

4. Quality	5. Competitiveness
Every human and material resource of the company is dedicated to its main function.	Talent and resources are focused on the business by having technological solutions that solve non-critical tasks. This contribution of value results in competitive capacity and increased sales.

Source: https://www.dimensiona.com/es/servicios-y-soluciones-tecnologicas/outsourcing-tecnologico/

Secondly, in terms of the **general objectives** of technological outsourcing, they are the following (Ruiz, 2022):

- **Focus on the core[6] of the company:** This section refers to the fact that many of the processes or activities of the company are not closely related to the central activity of the company and this can be an obstacle or an impediment for the company, as it is needed workforce, space and time to be able to complete a given task/activity, being this not always possible. In these cases, technological outsourcing provides an advantage or opportunity for the company by delegating some tasks to an external company, or specialized professionals, helping minimize the workload in all the departments of a company.

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[6] *Core: Central or core competence, is the basis of a company's competence.*

- **Recruitment of business talent:** The fact that an I.T. department of a company, whether small or medium, has professional knowledge but does not always achieve the main goal/objective as an outsourced company would. In other words, the skills and abilities of the workers do not always manage to redirect themselves to the main focus of the business, since they are assigned to other less important or redundant activities that do not have a direct impact on the benefits/results of the company. Therefore, technological outsourcing helps the company to delegate these less important tasks to trained personnel.

- **Innovation as the purpose of the company:** This last objective complies once the company has managed to fulfill all its purposes (greater efficiency in production processes, improvement of its commercial and marketing strategy, better orientation of what it offers , …). Then, technological outsourcing will help the company to maintain that success through innovation, finding improvements in goods and services, investigating and analyzing new trends/innovations that appear in the market, and implementing improvements related to technology, personnel and/or organizational structure.

2.2. Outsourcing stages of technology outsourcing

This section will refer to the stages that a company must follow when considering outsourcing. Below (Image 2) the following steps to be observed (Vilanova, 2017):

Image 2. Stages of technological outsourcing in a company (2017)

Source: https://luisvilanova.es/fases-de-outsourcing-tic-importancia-sla/
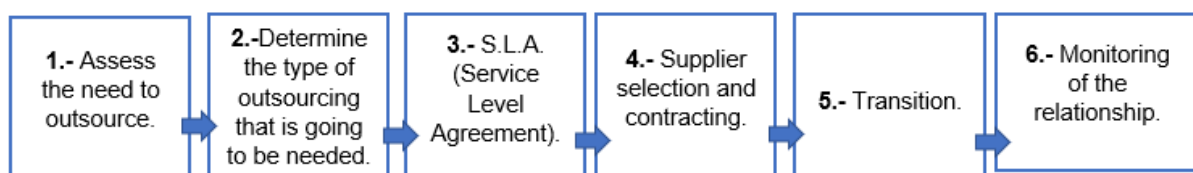
1.- The first step is to assess the "need" that the company has to outsource some activities. To do this, first you have to analyze the structure of the I.C.T. department, the work that the company does, its type and the resources that are used in this regard. Subsequently, it is necessary to know which position the company is on the market so the technology outsourcing company will know if its work is more focused on the business core, —which is about providing added/incremental value to the company — ; or if, on the contrary, it is a job with a more structural or organizational nature —which is a

service/structural task—, doing so by talking to the directors, managers, bosses, ... that make up the organization, to determine the objectives, competitive advantages and/or benefits (both quantitative and qualitative) that the company expects to obtain when implementing technological outsourcing in its business model.

2.- The second step is to determine the type of outsourcing that is going to be needed. In other words, depending on the level of risk and situation in which the company is to outsource, four types of technological outsourcing can be defined:

- The first modality is a type of outsourcing where the cost of the service will play a fundamental role in the process. As there are many offers on the market, "low criticality support services" are the most appropriate. Some examples are: messaging platforms related to marketing and advertising, equipment maintenance and user systems, among others.

- The second modality is a type of outsourcing used to measure the correct performance and recommend the outsourcing that best fits/adapts to each situation. In this case, because of the "highly critical supports" no longer add value to the company, this can cause the work to be paralyzed, as there is a network and/or systems failure, or it can be due to some computer/digital error.

- The third modality is a type of outsourcing that consists of maintaining the same level of service offered while achieving a higher value is granted/offered to the supplier. In this case, the point is that "low criticality supports" add value to the company and, therefore, it is advisable to proceed with technological outsourcing. This may be due to the following reason: since the relationship with hardware providers is dynamic and always innovating, the commercial relationship between both parties must be close. That is to say, it is interesting that the relationship is not only commercial and exclusively for the purchase of hardware devices, but —since there is so much technological innovation— it is recommended to have a closer professional relationship (advice, support, maintenance, research,...).

- The fourth modality is a type of outsourcing in which it is convenient to acquire new knowledge and I.C.T. skills in order to completely finish the work that remains to be done. In this case, the "highly critical processes or supports" add value to the company and are aligned with "how to do it". Therefore, its outsourcing is not recommended due to the choice of provider being critical. This may be because there are certain software processes or applications where the support of the storage servers is very specific and there are not many providers in this regard. In addition,

the company's reengineering outsourcing allows processes to be made more efficient and effective; which simplifies the tasks to a great extent.

3.- The third step consists of the S.L.A.[7] (Service Level Agreement). This step is based on the outsourcing of processes or services of the I.T. department, which allows the outsourcing company to analyze the areas, observe the relationship that exists with the company's suppliers, control goals, fulfill purposes —follow a common objective—and penalize the outsourcing company itself, in case of not complying with what was promised.

As well, when establishing the S.L.A. it allows you to know at all times what company services are available, what quality standards are being set, what production processes are being executed, what goods and services are being delivered (each period of time), what cost exists for failing to comply with the S.L.A., which variables and/or systems are used when applying the S.L.A., how the S.L.A. is implemented in the company, …

Through the application of the S.L.A. a review and control of these variables can be made. In other words, the S.L.A must be agreed by the directors of the company and subject to a series of guidelines, norms or rules. With this, compliance with the content which will be analyzed in maximum detail. An example of this would be the following: «The company receives a provider that offers "web hosting", at a percentage of 98%; and, in addition, this provider establishes a penalty (in case of non-compliance) of 2%.» However, as mentioned above, it is important that everything is described in maximum detail, so that the S.L.A. can correctly interpret what is being asked of him. Therefore, the correct example would be the following: «The provider —named above— states that it will provide "web hosting", under the domain of company "X". The contract will be for one year (12 months) and the use of the service will be constant. It is only allowed to drop a "4"% and it cannot exceed "3" hours. In addition, the service outage interval cannot be less than "6" hours. At the moment in which it is breached, for any reason, the outsourcing provider will be penalized with "5"%, during the entire year of the contract. Furthermore, it is cumulative. In other words, for each case of non-compliance, an additional "5"% will be added to it. In case you want to modify or rectify such a contract, it will be done annually, and under the agreement of the directors and managers of the company. »

Finally, the S.L.A. It must be subject to the business value (added/increased) and the criticality of outsourcing. Therefore, the I.C.T. responsible has to agree with all those

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[7] S.L.A. (for its acronym in English) is a contract that establishes the responsibilities and obligations between a company and its client.

responsible for the company the functions, the risk and, in the possible case, breach of contract penalty.

4.- The fourth step deals with the selection of the supplier and contracting. The selection of the supplier or technology outsourcing company to be contracted involves the recognition of candidate suppliers, those who have been suitable for possible contracting by the company. After the needs to be outsourced have been detailed, experience and budgets are requested from different suppliers, such budgets are to be contrasted, negotiations to be made with the I.C.T. manager (of the S.L.A.) and, finally, the best company is hired. However, and as recommended by many experts, you should continue dealing with the suppliers that have been excluded in the elimination phase, to improve and enhance the qualitative value of the company.

5.- The fifth step is the service transition. This point basically deals with the fact that the outsourcing service or process must be supervised under the control of the I.C.T. manager, who will be responsible for guiding and controlling the activity. Furthermore, a group must be formed in the I.C.T. department to inform the external provider the services and activities that must be carried out. Finally, the internal group of the company disappears, the outsourcing company is left in charge of the I.C.T. knowledge. and the person in charge of the S.L.A. stays ahead of the events that may happen.

6.- The sixth step is monitoring the relationship. Once the S.L.A. and all the processes (services and activities) have been transferred to the external company, an internal control team must be set up to supervise and note that the outsourcing company is complying with what was agreed. This team will be constituted by members and personnel from other areas linked/related to it. Finally, there are mathematical calculations that show the importance of following it correctly; in general, the success of the S.L.A., and the criticality values, depend (almost exclusively) on the technology outsourcing company that has been hired.

2.3. Technology outsourcing criteria

Regarding the criteria used to classify technological outsourcing, they are the following:

❖ According to the **scope of the service:**

→ **Application outsourcing:** Activities related to the development, maintenance or support of computer applications are subcontracted.

→ **Infrastructure outsourcing:** Outsourcing of management and maintenance services of the technological infrastructure, such as servers, networks, storage, …

→ **Business Process Outsourcing (BPO):** In addition to technology, entire business activities and processes are outsourced, such as human resource management, customer service, accounting, …

❖ Depending on **supplier location** (Westcon Comstor, 2019):

→ **Offshore technological outsourcing:** The offshore model offers the company the opportunity for another company —located outside the home-country— to carry out the same activities of software development, support and maintenance of I.T. equipment. However, even if the expenses are lower —since they usually transfer these activities to developing countries—, they must be especially careful with the communication language, as this could cause misinterpretation and/or confusion between both companies, causing serious problems, such as: that the software does not work because the language does not match or that the support is not viable, …

→ **Onshore technological outsourcing:** In this case the professionals or experts are in the same country as the company that has contracted such services. However, the prices will be relatively higher than —in comparison— the previous case. However, the positive aspect is that such company does not have anything to fear/worry about (in terms of working conditions, cultural barriers, language,...); and, consequently, this ensures the contractor company has everything it demands/expects to have, without any type of impediment (electronic devices, software, apps, computer programs,...).

→ **Nearshore technological outsourcing:** In the last case, it is a combination of the two previous models. In other words, the company receives technology outsourcing services in a nearby country and this can help the company itself a lot; since, the main reason for carrying out nearshore outsourcing is that the offers you receive are better and the cultural, time difference, ..., is not excessive either.

❖ According to the **duration of the contract:**

→ **Long-term outsourcing:** A long-term contract is established with the supplier, generally for several years. A long-term strategic partnership and stability in services are sought.

→ **Short-term outsourcing:** A contract is established for a shorter period of time, generally for specific and temporary projects or needs.

❖ Depending on the **supplier relationship:**

→ **Multisourcing outsourcing:** The contracting company divides tasks and services among multiple external providers. Each provider specializes in a specific area.

→ **Single service outsourcing:** The contracting company outsources all technological activities to a single external provider.

2.4. Theoretical models of technological outsourcing

Within the theoretical models, there are different studies —and investigations— carried out by different authors and experts —in the field of technological outsourcing— that affirm the importance of government laws, such as progress for innovation, business security and autonomy of the same. However, there are theories and empirical models that relate these laws/norms to the technology used in each "field of study" (Catarina, 2023).

- First, the authors Sieber et al. (2006) affirm **that the outsourcing process of technological outsourcing is defined by processes and activities closely related to I.C.T.;** but, an organization must agree with what such technological outsourcing proposes (with the services it offers) in order to formalize a contract, in where both parties must express their consent.

As a peculiarity, Ramírez (2015) affirms that contracting out or "subcontracting" can not be used as a synonym for outsourcing or "externalization"; since the commercial relationship is longer in the latter and, therefore, more risks of a legal-business nature are shared. However, companies related to outsourcing come to establish agreements that —in one way or another— can lead to "contractual freedom" and "incremental organizational innovation of the company"; allowing it to be, this way, more efficient in a longer period of time.

- Secondly, **there are variables that cause the success of a project based on business models.** These models obtain all the appropriate information (based on previous research) that cluster vital aspects, such as: the correct way of how

companies are managed, the impact that a company can have on the market when changing its internal management/organization ,… (Gaspar et al., 2011).

The following are examples of theoretical models of technology outsourcing:

Image 3. Technological enactment theory (2020)
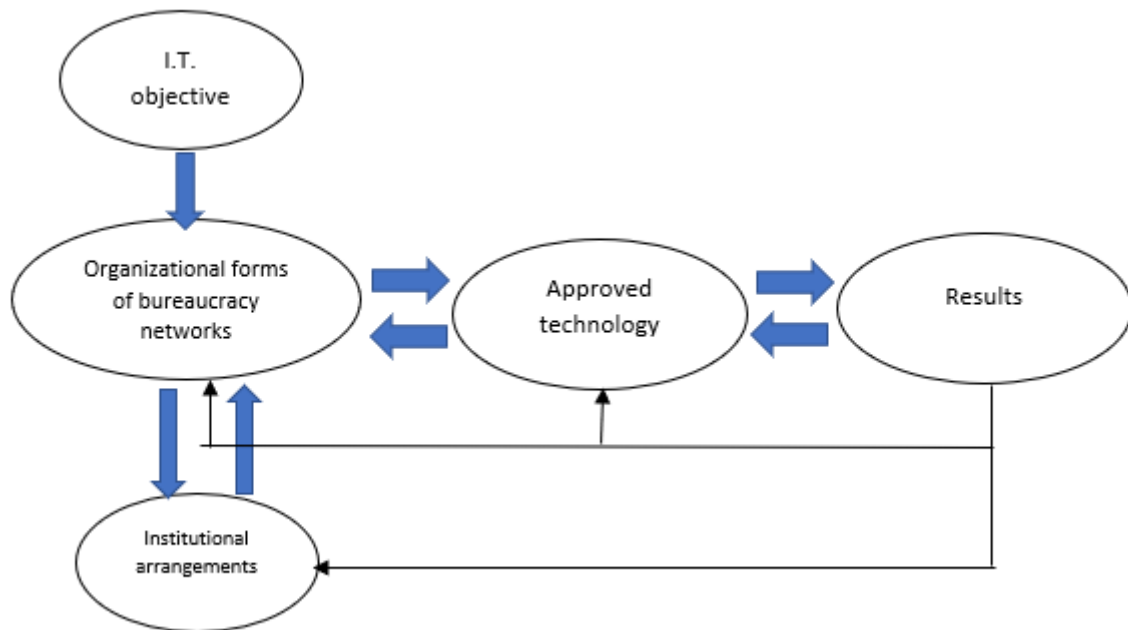
→ The first example is the following (Image 3): One of the theories, which allows visualizing the I.T. and becoming a business success (González et al., 2020) is the **"technological enactment theory"**. In this theory it can be observed that the objective is being converted by organizational forms of bureocracy networks, under the governmental restrictions of a country. That is, if the technology used and implemented in the organization manages to be approved by the laws of that country, then said bureaucratic procedures will be carried out so that it continues to work. Otherwise, if the results obtained —by implemented technology— end up being negative and are not accepted by the laws of that country. the technology will have to be modified or the main objective will have to be modified/replaced by another objective (with other forms of organizational networks and/or another way of executing it).

Image 4. I.T. outsourcing model and network typology (2020)
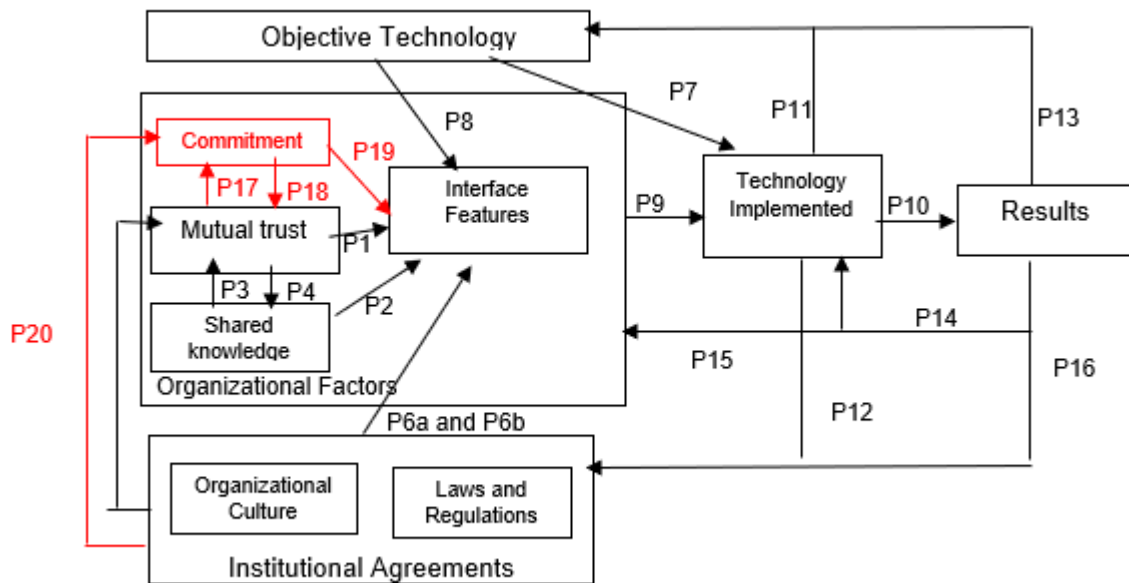
→ The second example is the following (Image 4): The **"I.T. and network typology"**, tries to carry out different dynamic interactions; but, combining it with the knowledge, functions and objectives and interfaces of others. That is, as Giraldo et al. (2020), the scenarios with "commitment" (P20, P17, P18 and P19) are better than the scenarios that have only "mutual trust" (P3, P4 and P1). In the first scenario, having a greater "commitment", both within the organization and in relation with the institutions and in society, allows growth and development more quickly than the scenarios that have only "mutual trust".

Image 5. Comprehensive model of I.T. outsourcing success (2022)
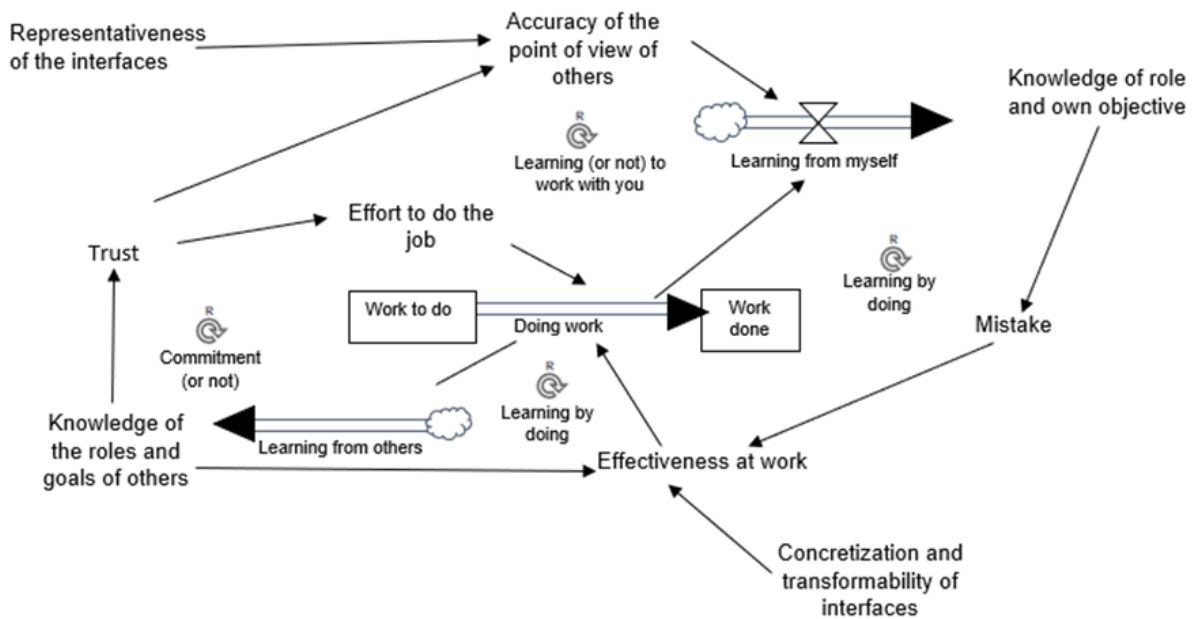
→ The third example is the following (Image 5): The "**comprehensive model of I.T. outsourcing success**" (Azabache, 2022), tries to differentiate the knowledge of a company. In the first situation, it can be observed how knowledge is given by the roles and objectives of others; and, as in the second situation, the knowledge of the role and objective is given by itself. So, in the first scenario it can be seen that the greater the trust is, the more effort and effective the work turns out to be (since there is support from others). Whereas, in the second representation, it can be seen how the knowledge is lower, producing errors and, therefore, it has to learn by itself (since it has no support). Therefore, it can be affirmed that productivity will be higher and better by having a team in the I.T. department.

Image 6. Value generation and knowledge transfer model (2016)
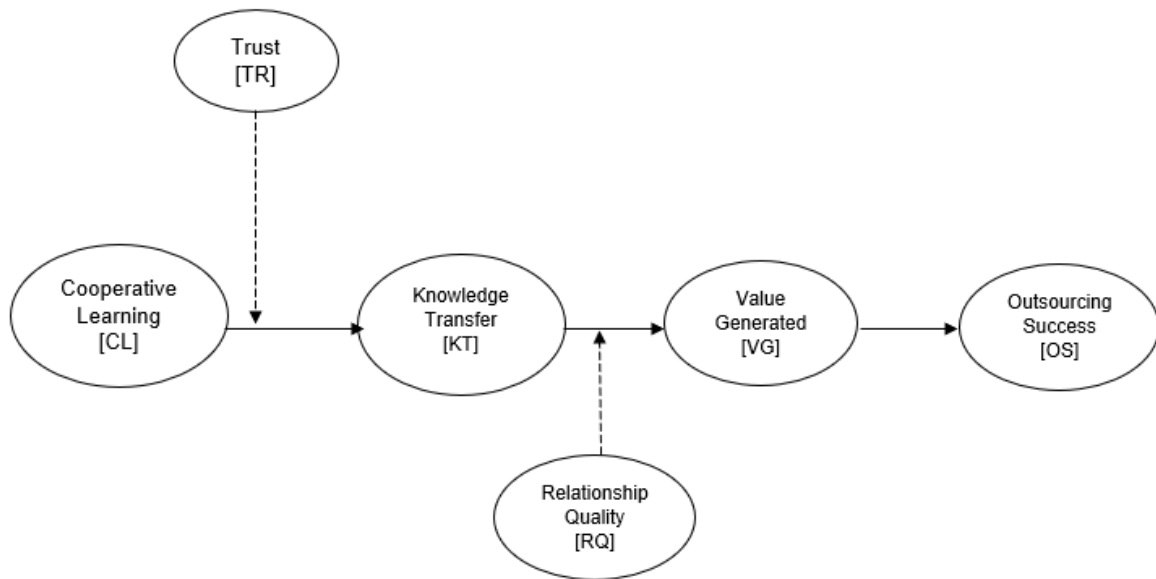
→ The fourth example is the following (Image 6): The "**model of value generation and knowledge transfer**" (Cañón, 2016), deals with the fact that cooperative learning is essential for the success of technological outsourcing. In other words, as the company learns from mistakes and acquires more knowledge, the value generated is greater and, therefore, trust and quality is higher. With this, a stronger and more capable team can be generated to face new obstacles, problems and risks; which may arise in the future.

Regarding these four theoretical models of I.T., it can be said that —using these four business models in a company— it is possible to know if the organization is using the resources correctly; or if, on the contrary, the company is misusing the implemented technology. Therefore, with the know-how, and with the skills and abilities of the workers, the staff can know exactly what resources they need and how to apply them. This is basically because they understand these four technological models —perfectly— and, therefore, they know how to use the right technology and the right resources. Therefore, they waste the minimum possible resources and materials (Catarina, 2023).

Some examples of how these four models can affect organizational relationships and I.T. outsourcing are the following (Catarina, 2023):

● Shared knowledge causes information to be shared in different directions.

- Shared knowledge produces a positive effect on the confidence of workers.

- Employee trust has a positive effect on the quality of interface features.

- The results of the interface produce a positive effect on the technology implemented and on organizational factors.

- The implemented technologies produce a positive effect on the organization as a whole.

To conclude, it is interesting to know the environment where the technology to be implemented shifts. That is to say, some "potential indicators of the quality of implementation" are specific to a concrete/specific place (and not in another); since, they are based on a "specific number of technological artifacts". Furthermore, it is interesting to know the time or duration of functionality of such technology; since, problems can be solved more easily, increase productivity and/or be more efficient in the company (Catarina, 2023).

2.4.1. Regulatory frameworks for technological outsourcing

❖ **The economic regulation of outsourcing in the European Economic Community (E.E.C.)**

Regarding the outsourcing contract, it is an agreement between a company and a service provider; where the provider agrees to supply the services related to information technology to the client (in this case, the company that has contracted the services). Therefore, the contract can be defined as a document in which —the lessee company— expresses and shows that it agrees with the contracting company (lessor), to cover a series of services related to technological activities . Thus, within the European regulatory framework, Directive 2006/73/CE of August 10, 2006 and Directive 2004/39/CE of the European Parliament and of the Council; He cites that outsourcing activities belong to "investment activities". That said, the European Commission referenced on December 18, 1978 the activities of "subcontracting", within article 85 (section 1), in the Constitutive Treaty of the European Economic Community (E.C.E.) (Ramírez, 2015).

In the same way, in article 2 (section 3) of the Exemption Regulation; it cites as "vertical agreements" the assignment, consideration and right of use and usufruct, to the intellectual and industrial property of the "subcontracting" services. This allows referencing subcontracting activities; since, when supplying goods and services, they must be under the consent of the contractor and subcontractor (Ramírez, 2015).

Regarding the "horizontal cooperation" agreements, which are referred to in article 101 of the Treaty on the Functioning of the European Union (T.F.U.E.), explicit as "outsourcing" the contractual agreement on research cooperation, which is maintained by both companies when performing their functions (Ramírez, 2015).

Regarding the Resolution of Parliament, approved on March 26, 2009; dictates that subcontracting and outsourcing are two different but related concepts. The casuistry resides in knowing at what level such "outsourcing" is located; since, the definitions have been adapting as the outsourcing activities were transforming and becoming what it is nowadays. Therefore, it is a very dynamic, changeable term and one that is in continuous evolution (if compared to outsourcing in the 20th century). Therefore, the current definitions are more modern and innovative (Ramírez, 2015).

❖ **The economic regulation of technology outsourcing in Spain**

As regards the juridical-legal treatment in Spain, it is based on codifications in the digital pre-era: Civil Code, Commercial Code….; and in the current digital era: the Law of 17/2009 or Industrial Property Law, which deals with free access to the right to service (Ramírez, 2015).

With regard to the Corporate Tax Law in Spain, article 35 of the Royal Decree Law, of 4/2004 of March 5, it is stated that: Research activity is also considered to be the notion or idea of software, provided that it involves a significant scientific or technological progress (with algorithms, theorems, operational languages,...); and, furthermore, they are not considered as habitual or routine activities of I.T. activities. (that is, they must be unusual or sporadic activities) (Ramírez, 2015).

Therefore, the "institutional arrangements comprise the organizational culture, as well as the laws and regulations" (Catarina, 2023). However, the Spanish legal framework is being shaped and adapted to the reality of companies. That is, the rules are not rigid. As companies progress, prosper and change (improving their facilities, creating new organizational forms, new production processes, applying new technology systems,...); then, the norms will also change —in extent— to the evolutionary, social and cultural stage of the country —and of the region—. Therefore, progress in I.T. it is paramount for regulations to change; to be modified.

2.4.2. Internal and external risks of the technological outsourcing company

❖ **How does it affect the technology implemented within a company?**

On the one hand, organizational factors are those that define whether there is a regulated framework. In other words, the agreements that can be made are of a business nature and, therefore, the organizational culture is what will determine if there is a good business climate; or if, on the contrary, there is not. In the first case, know-how, information, knowledge can be shared... In this case, as there is a good climate in the company, the negotiations are fair and the commitments between the workers are maintained. In the same way, the rules and laws are followed correctly. Otherwise, the fact of having a company with "zero trust" —by the workers—, this can cause the business culture to be incorrect and, therefore, the laws and rules, which are fundamental, are not complied with. , for the development and success of the company (Catarina, 2023).

On the other hand, other existing concerns in the organization of a company are: budgets, loss of control, controversy with public authorities, decrease in benefits (due to environmental disasters, political factors, ...), dangers in internal management , policies that generate low performance, among others (Catarina, 2023).

Regarding the evaluation of outsourcing risks in a company, there are two (mainly), and they are the following (Catarina, 2023):

- **Common risks:** They are related to unforeseeable costs. They do not have a secure source of income. In other words, the benefits change year after year, in a versatile way, and for different reasons. Some examples are: damage to the company's reputation, brand, increased competition, regulatory changes, ...

- **Catastrophic risks:** They are related to infrequent facts/events, and of an extraordinary nature. They have a very low probability of their occurrence; but, in case they happen, it can imply great damages. Example: natural disasters.

In many cases, common risks outweigh catastrophic ones, as they pose unpredictable and more frequent risks.

Next, as seen in Image 7, it can be seen how technological changes are the result of consequences, both internal and external, of the company (Ramírez, 2015):

Image 7. Factors that affect a company's technology (2015)
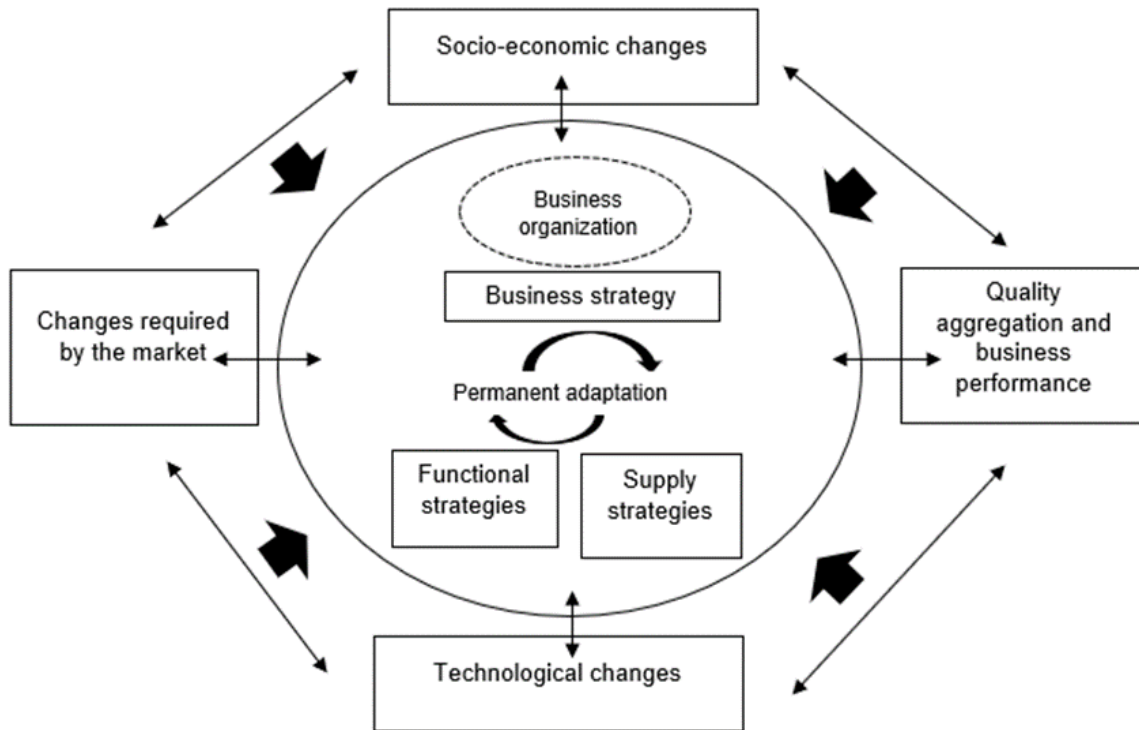
Image 9 shows how a company's technology is affected by both internal and external factors. In the first place, regarding the external perspective, the aggregation of quality and business performance causes the company some technological changes, since it must adapt to the new quality regulations. Then, as the change is required in the market, come the changes of a socio-economic aspect (government demands, policies, price changes, market factors,...). All of this makes the company's demands change according to the interests and needs of consumers, and other external agents (stakeholders, competitors, suppliers,...) (Ramírez, 2015).

Secondly, regarding the internal perspective, the business strategy is the main objective, which will propel the company to continue with its core business. Therefore, inside are the functional strategies and supply strategies. Functional strategies are technical-operative procedures, designed to maximize the productivity of a company. While supply strategies are about finding out, analyzing, controlling, and improving the distribution and data network. However, for all this to work, the company has qualified personnel who are in charge of corroborating these results and transferring this information to the different departments of
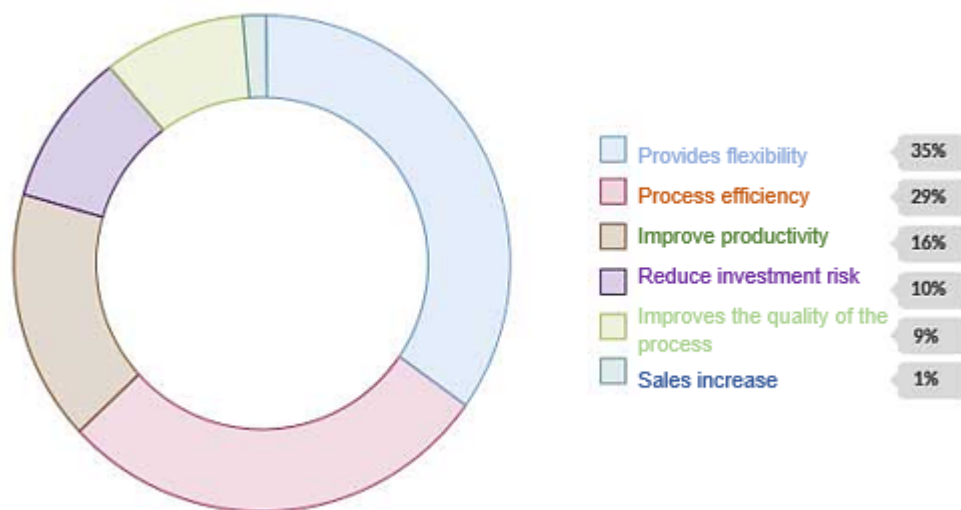
the company. Regarding technological development, this has allowed the company to codify and simplify the results; so that they are easier to understand (Ramírez, 2015).

Finally, regarding the services offered by technological outsourcing, these services can be considered as: intangible, homogeneous, non-consumable, inventoriable (analogue or digital support) and packageable (physical packages) (Ramírez, 2015).

2.5. Advantages and disadvantages of technological outsourcing

In this section we will talk about the advantages and disadvantages of technological outsourcing in the current scenario. First of all, as can be seen in Image 8, the advantages of technological outsourcing are the following:

Image 8. Advantages of technological outsourcing (2022)

Provides flexibility	35%
Process efficiency	29%
Improve productivity	16%
Reduce investment risk	10%
Improves the quality of the process	9%
Sales increase	1%

Source: https://ticnegocios.camaravalencia.com/servicios/tendencias/el-outsourcing-tecnologico

Therefore, in terms of the **advantages** that exist, they are the following:

1.- It provides flexibility: This is that, with technological outsourcing, companies can act in a much faster and more flexible way (Rubio, 2019). In addition, this allows companies to adapt to all kinds of situations and complexities, regardless of the degree to which the company is developed/found (iBeetel Solutions, 2021). Therefore, with I.T. management companies can develop numerous businesses and activities, thanks to the contribution of new technologies. Likewise, there is also a continuous, 24-7-365 service available. Lastly, flexibility helps to solve problems related to I.T., such as: backups in the cloud, computer disasters or the impossibility of registering some type of computer data, among others (Team, 2023).

2.- Efficiency in the processes: In this part there are two aspects to take into account. In the first place, <u>the increase in innovation</u> within the company is an important aspect; since, by investing in new technologies, the team is better able to develop new projects (Rubio, 2019). Therefore, innovation makes it possible to better use resources and time (iBeetel Solutions, 2021). That is, the contribution of innovation in technological resources allows companies to be much more effective and efficient; resulting in long-term positive benefits (Team, 2023). Also, companies that have known how to direct their efforts well have a good chance of success; since, they have been able to analyze and improve their production processes, launching new commercial or marketing campaigns that attract the attention of consumers; and, therefore, they are companies that always seek the continuous improvement of their processes, products (goods and/or services) and resources (Ruiz, 2022).

Secondly, and related to the above, <u>access to the latest technology</u> is another factor to highlight (Rubio, 2019); since, by hiring a technological outsourcing company, this allows access to new technologies (such as artificial intelligence or IoT) (Team, 2023). Therefore, in the end, companies will be much more developed and better positioned in the business sector (iBeetel Solutions, 2021).

3.- Improves productivity: It is a "specialization", the fact of working with external professionals allows companies to specialize in a specific task and, in this way, perform it more quickly. In addition, the fact of focusing on their core business makes companies allocate their efforts in the areas where such work is really required (Rubio, 2019). Therefore, although there are activities that are present in companies, on many occasions they are not related to the main activity; and, therefore, productivity is affected. With this, it is necessary to reinforce and have adequate personnel to cover these production processes, which are less important or necessary for the company. These processes can also be an obstacle or an impediment for many of them. For this reason, technological outsourcing allows you to remove a large part of these activities and focus only on what is really important (in your core business) (Ruiz, 2022). The focus in the core business is, basically, concentrating all your efforts and business strategies on what will truly generate income/profits in the companies (Westcon Comstor, 2019). Lastly, with technology outsourcing, companies are more flexible, independent, dynamic and free to set their goals, strategies and/or objectives. Therefore, they are more competitive, since they generate greater value within the companies (Team, 2023).

4.- Reduces investment risk: In risk reduction you can find the following two characteristics. Reducing risk is synonymous with reducing expenses and controlling costs. Regarding the <u>reduction of expenses,</u> it can be observed that the costs of personnel, technological infrastructure, maintenance, ..., are solved thanks to technological outsourcing, which is in charge of the most expensive functions of the company (iBeetel Solutions , 2021). Therefore, hiring a technology outsourcing company allows you to help with expenses related to the maintenance or care of the technological infrastructure (Rubio, 2019). On the other hand, the labor costs of the professionals who work in such company are now transferred to the new external company. In addition, with the new external company, the companies will not have to worry about; since maintenance costs will be reduced and they themselves will be in charge of the services and/or activities related to I.T.. (Team, 2023).

On the other hand, with regard to <u>cost control</u>, it can be observed that technological outsourcing helps the contracted services to be fixed at a price and not have large changes in it (Rubio, 2019). Therefore, as mentioned above, I.T. outsourcing provides the company with security in its expenses; since, when committing to the technological outsourcing company, a series of services are agreed, with prices subject to it (Team, 2023). Finally, this allows the subcontractor company to agree to pay a fee each month, for an amount agreed with the contracting party; and, as a benefit, they obtain the guarantee of being able to use the technology at a lower price, since they do not pay its maintenance costs (iBeetel Solutions, 2021).

5.- Improves the quality of the process: This consists in the fact that the companies that have contracted technological outsourcing services must stipulate an agreement that ensures that the quality of the materials and technological resources that are used or have been used have not worsened (Rubio, 2019). Therefore, to ensure the quality of the production process, it must be agreed upon by a contract between both parties. On the other hand, all the professional and qualified personnel of the external company will provide help for this; that is to say, they will serve as support so that the subcontractor companies can carry out their main functions, without having to worry about other less important areas. Therefore, this will serve to provide the end customer with a product or service of the highest possible quality, thanks to technological outsourcing (Ruiz, 2022). Finally, saving money and resources (both, tangible and intangible) will increase the value of the main areas of the company; and, therefore, it will improve the quality of the product (Westcon Comstor, 2019).

6.- Sales increase: To finish the advantages, it must be said that companies that have the help of technological outsourcing, have an I.C.T. department, specialized in solving/helping companies with their technological needs, available at all times (Dimensions, 2023).

Having technological outsourcing allows companies to be updated and modernized continuously; since, the digital and computer transformation advances very quickly, causing companies to become obsolete in the technological area. Therefore, with technological outsourcing, companies obtain a solution to their problems; and, in addition, they allow efficient optimization of production processes, increase sales and generate greater benefits/income —over a long period of time— (Dimensiona, 2023).

Secondly, as can be seen in Image 9, the disadvantages of technological outsourcing are the following:

Image 9. Disadvantages of technology outsourcing (2023)
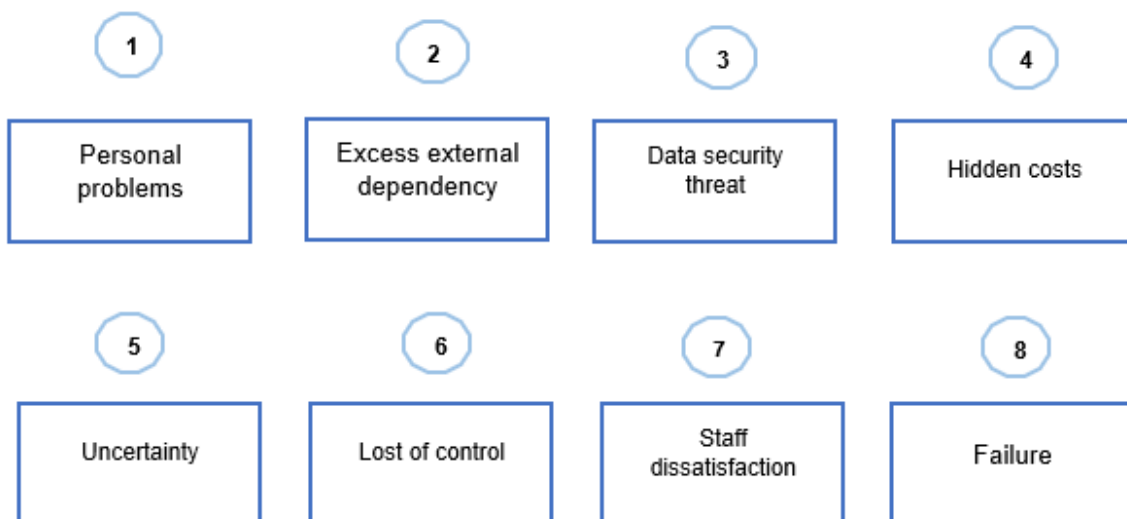
Source: Own elaboration

The **disadvantages** that exist are the following:

1.- Personnel problems: This refers to the fact that subcontracting an external company dedicated to I.T. can pose a risk to the company's personnel; since his job is in danger. In addition, another problem related to the hiring of technological outsourcing is that —the external company— does not have qualified personnel or experts in new technologies; which can pose another risk for companies —since they do not know how to execute or use the new I.T. — (Team, 2023).

2.- Excess of external dependence: This section refers to the fact that, with technological outsourcing, this could mean that companies leave a large part of their business to the new external company; and therefore there may be a risk. On the one hand, there is a related risk that the conditions applied by the external company are different; and, therefore, fails to meet the goals proposed / previously set. And, on the other hand, there is a risk/danger in which the external company does not get the resources to be optimized; and, therefore, —since they are not efficient— resources are wasted unnecessarily or incorrectly (Team, 2023).

3.- Threat to data security: The information held by a company is valuable, non-transferable and personal. Therefore, by transferring all the data and information to the new external company, all the information (which is confidential) is transferred to the new technology outsourcing company. For this reason, it is very important to correctly choose the external company that is going to manage it and take care of it; since, for the security of the companies, this will guarantee that there are no information thefts or any similar risk situation (Team, 2023).

4.- Hidden costs: In the I.T. services contract, sometimes the "extra" expenses that have been generated are not included; for example, due to a high number of telephone calls or the purchase of new resources or materials for companies. Therefore, it is important that before contracting an I.T. outsourcing service, all aspects are taken into account, both the associated expenses and the "extra" expenses; to know what the total/real amount would be and, with this, not have surprises later (Team, 2023).

5.- Uncertainty: As the technology outsourcing company tends to work in a much more free and autonomous way, the companies that have hired them usually live in a situation of "uncertainty" and "doubt", since they do not know how the outsourced company is working. In addition, the changes that it can make (such as: changes in structure, personnel, suppliers, ...) can generate insecurity and mistrust in the environment of companies (González, 2016).

6.- Loss of control: This is, primarily, the delegation of power. In other words, the companies that hire I.T. outsourcing services think about how they will delegate decision-making power to the outsourcing company; so that, in the event of losing authority over technological activities, it is vital to know how it will affect the whole. Therefore, special care must be taken with this (González, 2016).

7.- Staff dissatisfaction: When using technological outsourcing companies begin to have changes; and, this, can cause dissatisfaction to the personnel. Some changes may be of a structural and/or operational nature; and internal and/or external management (González, 2016).

8.- Failure: The control/dominion of power, total or partially, by the technological outsourcing company. Therefore, may be harmed or greatly harmed in this regard. For this reason, it is very important that companies analyze in full detail/attention what the intentions of the external company are; and if it is really an expert and professional company —as many claim to be— (González, 2016).

3. TECHNOLOGICAL OUTSOURCING PARADIGM

The new paradigm of organizations, the so-called liquid work or liquid workforce[8], is a business model that has been implemented in many organizations (Fernández, 2021). In addition, many experts state that, at present, technology is being an essential part of many companies. However, depending on the environment, sector and activity, the speed of technology change may be higher or lower (Gómez, 2018).

Next, as can be seen in Table 2, there are the following concepts related to technological outsourcing, within the liquid workforce paradigm:

Table 1. Concepts of technological outsourcing, in the liquid workforce (2021)

TECHNOLOGICAL OUTSOURCING CONCEPTS- LIQUID WORKFORCE PARADIGM	DEFINITION
1.- Open Space:	This concept deals with the opening of the facilities/offices themselves, leaving as a result: open and non-fixed workplaces. A clear example is that, in some organizations, they have allowed the workplaces to be the workers' own homes; which has facilitated the way of working, since it is more flexible, adaptable and comfortable for workers (Fernández, 2021).

[8] Liquid workforce: Refers to fluid workforce, that is, self-employed or occasional workers, who do their activity full or part time. In addition, these workers help companies to be much more competitive and resilient.

2.- Blended Learning:	This other term is used when the company's own workers have to coexist with external workers (from the technology outsourcing company). For this reason, e-Learning (internet) is also combined with face-to-face training for workers. However, in some cases, it is sometimes difficult to reach a consensus between both groups of workers (Fernández, 2021).
3.- Technological Outsourcing Workplace:	Technological outsourcing Workplace offers benefits to the organization, since its way of providing services is more "innovative". The trend of the workplace is to provide a specialized and autonomous service, with a high degree of professionalism in the digital and technological sector. For this reason, this new concept is a more flexible model, which is better adapted to the environment of the company and which is oriented towards: continuous improvement, control/review of processes (measurement of K.P.I.'s[9]), optimization and efficiency of resources, orientation to the goals and objectives of the company, among others. In this way, now, you no longer work only physically; but also, work is done virtually or online (Fernández, 2021).
	This concept is related to software. In other words, this makes it possible to give help to the different areas of the company; since it minimizes the workload, whether you work online or in-situ. In addition, it provides

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[9] A K.P.I. refers to Key Performance Indicator. It is a sales metric used to measure and track sales. Used by sales reps and/or senior management.

4.- Administrative Pool:	service to the employees, since the administrative pool is in charge of the repetitive tasks of the organization —and not of the central activities of the company—; which frees up a lot of work. Likewise, by streamlining tasks and making them more efficient, it increases the value of the company and makes it more attractive to customers/consumers (Fernández, 2021).
5.- Others: analytics, robotics, Artificial Intelligence or Big Data:	The technological tools and/or methodologies typical of technological outsourcing to obtain relevant, current, accurate and reliable information. Together with professional outsourcing experts, biased information can be contrasted, verified and analyzed. Once all the necessary information is available, some reports (sales, marketing and/or financial) are issued, in which the procedure of how the company's production processes are optimized/streamlined is stated, and what tools have been used to corroborate it (AmericaEconomía, 2019).

Source: Own elaboration

As can be seen, companies are following a freer, autonomous and independent work model; that allows them to get the maximum benefit possible, thanks to the new liquid workforce paradigm. In addition, production processes are evolving into different ways of working, which leads to different situations and/or work scenarios (Fernández, 2021).

As far as digital and technological development is concerned, this has made many companies see technological outsourcing as essential; since it allows qualified workers to be in charge of optimizing tasks. In addition, those that are difficult generate demotivation; but, at the same time, they are also necessary for companies, they are commissioned by an

external technological company, —which improves the company environment, and makes it more efficient/productive— (Fernández, 2021).

Finally, given the changes in the business paradigm, technological outsourcing will provide the company with a more specialized service: with professional personnel, tools and/or cutting-edge methodologies (such as S.C.R.U.M.[10], I.S.T.Q.B.[11] or I.T.I.L.[12]), with a stronger team (experts in knowledge and technological skills), and with more prepared managers, among others. Therefore, the contribution of new technologies will encourage the company to be much more solvent and competitive over a long period of time (AmericaEconomía, 2019).

4. SITUATION DIAGNOSIS (S.W.O.T.)

Below is a table (Table 3), where an analysis of the strengths, weaknesses, opportunities, and threats (S.W.O.T.) of technological outsourcing is made —within the current panorama—:

Table 2. S.W.O.T. of technological outsourcing (2023)

WEAKNESSES	STRENGTHS
W.1.- They usually have a different vision from the organization that has hired them. **W.2.-** Technology outsourcing companies' way of working may not end up being liked by the organizations **W.3.-** Outsourcing companies have a more independent, autonomous and free way of working. **W.4.-** Sometimes, technology outsourcing companies can generate insecurity and mistrust in organizations. **W.5.-** There is no total or complete guarantee that the outsourcing company	**S.1.-** The good practices and/or methodologies applied by the technological outsourcing company (such as: I.T.I.L.) are beneficial for the organization. **S.2.-** There is a commitment on the part of the technological outsourcing company, with the organization that has contracted it (policy oriented to customer service). **S.3.-** The business culture of technological outsourcing is very positive. **S.4.-** The help provided by technological outsourcing companies to organizations is very profitable (such as: reducing risk, reducing expenses, minimizing the

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[10] S.C.R.U.M. is an agile methodology project management framework, helps manage work.
[11] I.S.T.Q.B. stands for International Software Testing Qualifications Board. It is an internationally operating software quality certification organization.
[12] I.T.I.L. refers to the Information Technology Infrastructure Library. It is a good practice guide for IT service management.

	workload or advice, among others).
will provide success to the organization.	**S.5.-** The contribution of new knowledge, skills and experience of the personnel, from technological outsourcing, helps to improve the organization.
	S.6.- Provides organizations with new technologies (NN.TT.) and optimize/improve their productive activities.
	S.7.- They focus on meeting the company's objectives, and on generating long-term benefits.
	S.8.- They are flexible, since they adapt to any type of organization.
	S.9.- They adjust to the costs, without affecting the quality of the service offered.
	S.10.- In some technological outsourcing companies, they offer bonuses and/or gifts, depending on their commitment.
THREATS	**OPPORTUNITIES**
T.1.- The regulatory framework and legal limitations of technology outsourcing.	**O.1.-** Within the external agents, the stakeholders, provide competitive advantages to technological outsourcing companies.
T.2.- The competitiveness of companies in the technological outsourcing sector.	**O.2.-** Technological outsourcing has been consolidating in recent years and is well regarded by organizations.
T.3.- The rapid evolution of innovation.	
T.4.-The resistance of organizations to change.	**O.3.-** The appearance of new technology has allowed technological outsourcing companies to improve their way of working
T.5.- The existence of organizations that do	

not agree with technology outsourcing companies. **T.6.-** The volatile trends of the market (P.I.B.[13], I.B.I.[14], ...) and political insecurity.	and be more efficient. **O.4.-** The COVID-19 pandemic led many companies to do technology outsourcing. **O.5.-** The existence of organizations that do agree with technology outsourcing companies. **O.6.-** The increase in companies that contract this type of services is to avoid becoming obsolete in the technological and digital area. **O.7.-** Any type of organization and sector is suitable (financial, health, education,...). **O.8.-** The majority of P.Y.M.E.S. bet on technological outsourcing.

Source: Own elaboration

As for **weaknesses**, there are the following:

W.1.- They usually have a different vision from the organization that has hired them. The vision that technology outsourcing companies have is usually broader, since they must be aware of more tasks and/or functions to perform. And, therefore, they must have a more extended vision to be able to have everything under control. Sometimes, there are discrepancies between the two companies, due to the difference in visions.

W.2.- Technology outsourcing companies' way of working may not end up being liked by the organizations. There are some companies that, for whatever reason, just don't like the way they perform/execute these technological tasks.

W.3.- Outsourcing companies have a more independent, autonomous and free way of working. This can cause companies to have a discomfort feeling from the partnership; by ceding part of the technological activities, part of the power of the company is also ceded. Therefore, there are companies that depend almost exclusively on the technological outsourcing company.

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[13] P.I.B.: in Spanish "Producto Interior Bruto", translated into English: Gross Domestic Product.
[14] I.B.I.: in Spanish "Impuesto sobre Bienes Inmuebles", translated into English: Real Estate Tax.

W.4.- Sometimes, technology outsourcing companies can generate insecurity and mistrust in organizations. Related to the previous section, and depending on how the technology outsourcing company works, whether they have a lot of power over the company that has hired it (or not) and other factors (internal and external), the organization's connection will vary. Therefore, there will be greater/less insecurity.

W.5.- There is no total or complete guarantee that the outsourcing company will provide success to the organization. In other words, technological outsourcing companies do not guarantee the success of the organization, since there are factors or variables that do not depend on technological outsourcing itself. Therefore, the company that has hired you may not do well financially.

Regarding the **strengths,** they are the following:

S.1.- The good practices and/or methodologies applied by the technological outsourcing company (such as: I.T.I.L.) are beneficial for the organization. Most companies benefit from the contribution of methodologies offered by technology outsourcing companies.

S.2.- There is a commitment by the technological outsourcing company with the organization that has contracted it (customer service policy orientated). The technological outsourcing company establishes a customer-oriented policy, which consists of: listening to the client, detecting possible improvements, evaluating customer satisfaction, … With the purpose of building loyalty and maintaining a partnership.

S.3.- The business culture of technological outsourcing is very positive. Most technological outsourcing companies offer the following (Anghelescu, 2013). :

- They achieve an incentive system adapted to each employee (flexible hours, teleworking, living wage,...).
- They offer an internal training plan.
- They have good internal communication (they listen to proposals, contribute ideas,...).
- Human talent is rewarded and retained.

S.4.- The help provided by technological outsourcing companies to organizations is very profitable (such as: reducing risk, reducing expenses, minimizing the workload or advice, among others). Value-added solutions are provided, which increase the value of the company.

S.5.- The contribution of new knowledge, skills and experience of the personnel from technological outsourcing helps to improve the organization. The employees of technological outsourcing companies provide both technical and practical knowledge related to information and communication technologies.

S.6.- Provides organizations with new technologies (N.T.) and optimize/improve their productive activities. By implementing better technologies for the company, it favors them to be more efficient over a long period of time. In addition, the technological outsourcing companies themselves verify that the technologies themselves are the most innovative on the market.

S.7.- They focus on meeting the company's objectives, and on generating long-term benefits. The main purpose of technological outsourcing companies is that companies can address themselves to meet their main objectives/goals; which will generate benefits and income in the long term.

S.8.- They are flexible, since they adapt to any type of organization. Technology outsourcing companies offer a series of specialized services, depending on the type of company. There could be "continuous" or "punctual" services.

S.9.- They adjust to the costs, without affecting the quality of the service offered. The costs of the company will be decreased. However, thanks to the efficiency of technology outsourcing companies, quality will not be affected.

S.10.- In some technological outsourcing companies, they offer bonuses and/or gifts, depending on their performance. This allows for a continuous and trusting relationship between both companies. In addition, it is a way to retain and build customer loyalty.

Regarding the **threats**, they are the following:

T.1.- The regulatory framework and legal limitations of technology outsourcing. This is considered a threat, since the government can set a price, quality standards and/or restrictions for technology outsourcing companies.

T.2.- The competitiveness of companies in the technological outsourcing sector. The competitiveness is growing. Likewise, more and more companies offer similar services at fairly competitive prices.

T.3.- The rapid evolution of innovation. Innovation has been changing in recent years at breakneck speed, causing many technology outsourcing companies to have to adapt to the new market demands and new technologies.

T.4.-The resistance of organizations to change. Many companies are reluctant to change and, therefore, pose a threat to technology outsourcing companies.

T.5.- The existence of organizations that do not agree with technology outsourcing companies. There are companies that do not agree with technological outsourcing, for various reasons (because they want to continue as they are, because they do not like changes, because it would mean laying off people, because they do not trust hiring an external company,... ..).

T.6.- The volatile trends of the market (P.I.B., I.B.I., ...) and political insecurity. It may happen that the government policies of a country do not encourage technological outsourcing companies to acquire new materials, resources and/or personnel (either because prices have increased, because the suppliers of computer equipment have moved to another country, ...). Furthermore, if there is insecurity in the country, many companies; or, well, they will cease to exist or they will go to move abroad.

Regarding the **opportunities,** they are the following:

O.1.- Within the external agents, the stakeholders provide competitive advantages to technology outsourcing companies. Stakeholders are the main providers of resources for technology outsourcing companies. Therefore, if they have a good relationship with them (suppliers) this can be an opportunity for technology outsourcing companies.

O.2.- Technological outsourcing has been consolidating in recent years and is well regarded by organizations. Throughout history we have seen how technological outsourcing has evolved to become what it is today (more innovative, efficient, with better computer programs and software,...). In addition, companies have introduced it into their internal and daily procedures, so as not to become obsolete in the technological and computer sector.

O.3.- The appearance of new technology has allowed technology outsourcing companies to improve their way of working and be more efficient. A crucial aspect for the development of technological outsourcing is the appearance of new technologies, which allows technological outsourcing companies to effectively and efficiently manage the organizations that have hired them.

O.4.- The COVID-19 pandemic led many companies to do technological outsourcing. During the coronavirus pandemic, many companies took the initiative to outsource technology, as an "urgent" measure, given the seriousness of the situation. It was the

"perfect excuse" as many companies did not take the risk before; but, thanks to the situation they had to do it during the pandemic and many have kept the relationship.

O.5.- The existence of organizations that do agree with technology outsourcing companies. There are companies that bet on this business model, since it is a way of ensuring that the company focuses on its main and/or most important activities. Meanwhile, the technological outsourcing company is the one that is concerned with less important or redundant activities, related to I.C.T..

O.6.- The increase in companies that contract this type of services is to avoid becoming obsolete in the technological and digital area. Many companies are afraid of being left out of the market, or that the competition will take away their market share; therefore, one way to update and modernize, both computer and digitally, is by outsourcing technology. This way, they won't have to worry.

O.7.- Any type of organization and sector is suitable (financial, health, education,...). Any area is valid to implement technological outsourcing in a organization. Therefore, this is an opportunity for technology outsourcing companies.

O.8.- The majority of P.Y.M.E.S. bet on technological outsourcing. A relevant fact is that the majority of small and medium-sized companies are attracted to technological outsourcing; since it provides them with benefits and, in addition, there is a trained staff, who is in charge of said computer tasks.

5. CONCLUSION

In conclusion, this work has been carried out to demonstrate the importance of technological outsourcing in companies, having many advantages in this regard, since it is quite useful, valuable and profitable for companies. On the other hand, as has been commented throughout this final degree project, it is significant to point out the analytical and problem-solving capacity that technology outsourcing companies have to face and to solve major problems and challenges that exist. Likewise, technological outsourcing can achieve great benefits for companies, such as innovating and modernizing the technological area of a company, or being more efficient over a long period of time, for example.

Based on these findings, it is essential that the company coordinates with the technology outsourcing company; since, as mentioned above, in some cases the technology outsourcing company is the one with the most power over the other company. Therefore, a good relationship between both parties is required.

Another fundamental aspect is that, according to several investigations, motivation and trust are key to the success of a company's technological outsourcing. A technological outsourcing company must always have energy, strength and vitality, to overcome obstacles (both internal and external to the company).

Finally, a key aspect for technological outsourcing to make its way and impose itself in all organizations is to go on doing, and demonstrating the veracity of the facts, showing other organizations that it really is effective and to reap many successes so as it can be unstoppable in the technological future of companies.

6. FUTURE WORK

To continue with this research it should be analyzed within the classification of outsourcing, the type of technological outsourcing that is the most common and/or the most successful and/or that is the most repeated among all companies. Some examples of types of technological outsourcing are: outsourcing of software, communications, systems, infrastructures,...

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