



**UNIVERSITAT
JAUME·I**

**BUSINESS CONCENTRATION IN THE
CERAMICS SECTOR**

Author: Antonio Alonso Valdés

Tutor: Francesc Xavier Molina Morales

GRADO EN ADMINISTRACIÓN DE EMPRESAS

1049-TRABAJO FINAL DE GRADO

CURSO 2020-21

INDEX

<u>A. INDEX OF ILLUSTRATIONS</u>	4
<u>1. INTRODUCTION</u>	5
<u>2. THEORETICAL CONCEPTS</u>	6
<u>2.1. Cluster and industrial district</u>	6
<u>2.2. Merger and acquisition</u>	12
<u>2.2.1. Internal growth</u>	12
<u>2.2.2. External growth</u>	12
<u>2.2.2.1. Merger</u>	13
<u>2.2.2.2. Acquisition</u>	14
<u>3. THE VALENCIAN CERAMICS INDUSTRY</u>	17
<u>3.1. Ceramic cluster</u>	17
<u>3.2. Ceramic history</u>	18
<u>3.3. History of the industrial district</u>	19
<u>3.3.1. Historical background</u>	19
<u>3.3.2. From 1960 to the present day</u>	20
<u>4. CLUSTER ASSOCIATIONS</u>	22
<u>4.1. ASCER (Spanish Ceramic Tile Manufacturer`s Association)</u>	22
<u>4.2. ANFFECC (National Association of Manufacturers of Frits, Glazes and Ceramic Colours)</u>	25
<u>4.2.1. History of the association</u>	26

4.2.2. More recent developments.....	27
<u>4.3. ASEBEC (Spanish Association of Manufacturers of Machinery and Capital Goods for the Ceramic Industry).....</u>	<u>28</u>
<u>5. EMPIRICAL STUDY.....</u>	<u>30</u>
<u>5.1. Price of the transaction.....</u>	<u>31</u>
<u>5.2. Type of procurement.....</u>	<u>33</u>
<u>5.3. Whether the acquiring and acquired companies are part of the Spanish ceramics cluster.....</u>	<u>34</u>
<u>5.4. Acquiring company related or not to the production activity.....</u>	<u>37</u>
<u>5.5. Activity of the acquired company.....</u>	<u>38</u>
<u>5.6. Nature of purchasing.....</u>	<u>40</u>
<u>6. TREND TOWARDS CERAMIC CONCENTRATION.....</u>	<u>40</u>
<u>7. FINAL CONCLUSIONS.....</u>	<u>43</u>
<u>8. BIBLIOGRAPHIC REFERENCES.....</u>	<u>47</u>

A. INDEX OF ILLUSTRATIONS

Illustration 1. Price of acquisitions.....	32
Illustration 2. Type of procurement.....	34
Illustration 3. Internal or external companies to the cluster.....	36
Illustration 4. Number of transactions according to the nature of the acquiring company.....	38
Illustration 5. Type of activity of acquired companies.....	39
Illustration 6. Distribution of the value of sales in the ceramic cluster.....	41

1. INTRODUCTION

The aim of this paper is to carry out an analysis and evolution of business concentration in the Spanish ceramics sector, more specifically at the level of the province of Castellón.

I decided to carry out this work because it seemed to me to be an interesting subject to deal with. Another important reason why I decided to choose the topic "Current and future challenges of the ceramic tile firms" was because of the importance of the ceramic sector in the province of Castellón, of which I am a member, and I found it interesting to investigate in more detail and learn new concepts about this industry.

After several proposals from my tutor, Xavier Molina, on the specific topic to be addressed in the paper, I decided to choose "Business concentration in the ceramic sector". It seems to me an interesting topic as it is a fact that is being observed in the ceramic sector in Spain, more specifically in the ceramic cluster of Castellón, with an increasing trend.

The analysis of the work is divided into several main blocks which are the following:

1. Theoretical concepts: the work begins with the explanation of several relevant theoretical concepts for a better understanding of the topics to be analysed later on.
2. History of the ceramic industry: then, an explanation of the history of ceramics is given, more specifically, the history of the ceramic industry as flooring and cladding.
3. Descriptive statistics: with data obtained from the Catedra de transformació del model económic (UJI-GVA) (2021). Concentration and acquisitions of companies in the ceramic cluster during the period 2010-2020, an analysis is carried out on several acquisitions of companies belonging to the ceramic sector.
4. Conclusions: finally, a conclusion is drawn on the aspects learnt and the conclusions drawn in this work, as well as a more personal assessment.

The ceramic sector in Castellón is of great importance as 80% of the companies in this industry are located in this cluster, as well as 94% of Spanish ceramic production according to Ascer data. This high percentage is due to several reasons, among which the following stand out:

- ❖ The chemical composition of its clays is unique to the area.

- ❖ The existence of companies with automated processes as a result of various conversions carried out.
- ❖ The habit of the businessman of the area with an exporting tendency in traditional product sectors such as citrus fruits.
- ❖ The proximity to the ports of Castellón and Valencia.

In addition, the sector has a great relevance at national level as it is one of the most important industries where it is the third largest surplus producer. It also stands out internationally, being the second largest exporter and the fifth largest producer in the world in 2019.

The subject of the work, business concentration in the ceramics sector, is of great importance for the sector to be able to compete in international markets. Throughout the paper, both the advantages and disadvantages of this practice will be explained.

Next, I will start by explaining the theoretical concepts in order to have a better understanding of the rest of the topics that will be dealt with in the paper.

2. THEORETICAL CONCEPTS

The theoretical concepts that we are going to analyse in more detail are: the cluster and the ceramic cluster, the industrial district and mergers and acquisitions.

2.1. Cluster and industrial district

In this initial part of the paper, the first topic to be discussed is the concept of "Cluster". This term was first introduced by the economist Michael Porter (1990), in his book *The Competitive Advantage of Nations*, which referred to it as "a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by common and complementary characteristics, including final product or service firms, suppliers, financial institutions, and firms in related industries". Porter also stressed the economic importance of a region, since the competitiveness of a region depends on the competitiveness of its industries, and that in turn, industry performs more efficiently if it belongs to a network.

The main utilities attributed to a cluster are to increase the competitiveness of the industry as well as the collaboration between the participating companies and institutions. A cluster encompasses a wide range of companies and entities such as

suppliers, distribution channels, customers, manufacturers of complementary products and companies from other industries that are related in their activities, among others.

We can distinguish between several types of targets, the first of which refers to the business cluster. This type of cluster brings several specific benefits to the companies that are part of it:

- ❖ Increasing the innovation capacity of companies: the business cluster allows companies to acquire the capacity to introduce greater innovation in their production processes and in the organisation as a whole.
- ❖ Reduce costs: the cluster allows the companies that are part of it to complement each other and share their skills, knowledge and resources so that all of them have greater efficiency and have to assume lower costs.
- ❖ Increasing productivity: this increase in productivity is generated from services that cluster member companies can access that they did not have access to before, as well as the new knowledge, skills and resources acquired within the cluster. Innovation also plays an important role for companies to improve their production processes and improve their capacities, as we have already mentioned.

As a result of these objectives, others are generated, such as those related to R+D+i. Within this type of objectives we can find the way of acting jointly with clients or suppliers that allows them to request better resources, sharing experiences between companies to develop forms of innovation more easily or sharing resources so that they can develop processes, services or products that individually they would not have sufficient capacity to be able to carry out.

There are also objectives that are related to the business. On the basis of these objectives, cluster companies can opt for:

- ❖ Possibility of access to international and even national markets that would be more difficult and time-consuming to access individually.
- ❖ Thanks to this business concentration, sales are increased and, on the other hand, competition within the cluster is reduced, where collaboration and cooperation between companies allows new large-scale projects to be carried out.
- ❖ Costs are reduced, as we have explained above, and also those related to promotions and activities.

There are various types of clusters. Depending on who the industries are associated with, we can distinguish between: vertically integrated clusters, which are those where the industries that come together do so on the basis of buying and selling relationships as in a supply chain, and horizontally integrated clusters, which are those that include companies with a common market, that make use of the same technology or use similar material resources.

On the other hand, there are other common types of clusters related to knowledge such as:

- ❖ Industrial cluster: this is the one referred to by Porter, which is a concentration of interconnected companies and institutions in a geographical area with the aim of improving their competitiveness.
- ❖ Factor endowment cluster: this type of cluster is created on the basis of comparative advantages. That is, the companies that form part of this type of cluster specialise in those activities that provide them with the greatest advantages.
- ❖ Technological cluster or techno-cluster: the groupings that form part of this type of cluster are based on high technology and are usually supported by large research and knowledge centres.

Finally, we will analyse the advantages and disadvantages that clusters can cause. In terms of advantages, we can highlight the following:

- ❖ Access to economies of scale: the companies associated with the cluster can improve their production processes and reduce their costs per unit produced, gaining access to new markets and increasing their profits.
- ❖ Greater stability: the companies that form part of the cluster are assured of their permanence in the market.
- ❖ Access to aid and research: they can receive aid that they would not be eligible for individually, as well as carry out joint research that allows them to obtain new innovations and technological advances.
- ❖ Attraction of new clients: the agglomeration of companies within a territory allows them to attract a greater number of clients and thus broaden the market for the companies that form part of the cluster.

On the other hand, there are the disadvantages that clusters can present, which are the following:

- ❖ Greater management complexity: there may be a greater probability of error in management tasks as a result of the number of companies.
- ❖ Dependence on trust and cooperation: if there is no climate of trust and cooperation between the companies that are associated to the cluster, the concentration of these companies will not generate any benefit and may even be detrimental to each other.
- ❖ Need for a minimum group of stakeholders: if there is not a minimum number of interested companies and stakeholders willing to invest, the cluster cannot be realised.
- ❖ Greater interaction between stakeholders: there is greater interaction between stakeholders from a high number of transactions due to the proximity allows them to have more learning and trust.

Another theoretical concept to be highlighted and which is also related to the main topic of the paper is the concept of "Industrial District". This concept is originated by the renowned economist Alfred Marshall in his book "The principles of Economics" defines the concept as "concentrations of specialised sectors in a specific locality" (Marshall, 1890, p.42) and discusses its characteristics. According to Marshall, economies can benefit from advantages associated with location. This is a topic that is still being studied today. For the author, a district provides "great advantages in having a constant labour market" (Marshall, 1890, p.54) where as the district grows so does the number of workers who are skilled and trained from which the district benefits. In addition, being located in the same area allows for the growth of suppliers, which allows for greater cost efficiency and cost reduction.

A concept that Marshall adds in another of his books, "Industry and Trade", and relates it to the industrial district is the commercial atmosphere, which favours the possibility of originating the necessary competencies for industry while promoting innovation among those smaller firms in the industrial district.

Furthermore, the author states that within the industrial district, the individuals who are part of it have an easier time than others who are not part of the district to move from one company to another, as do the entrepreneurs and workers who are part of it, i.e. there is an industrial atmosphere. The industrial district is a stable population where a deep-rooted local culture is acquired with a socio-economic intertwining where relationships exist that favour the diffusion of knowledge. The characteristics that Marshall describes in the concept of the industrial district can be summarised in the term

"agglomeration", referring to the presence of specialised companies together and the services they provide.

Another economist who analysed the concept of industrial district was the Italian Giacomo Becattini (Becattini, 2000), according to whom, in addition to Marshall's definition of the concept, it is also necessary for the companies that form it to integrate with the local community of people in order to acquire the values, social norms and culture to carry out bottom-up industrialisation. According to him, an industrial district is "a socio-territorial entity characterised by the active presence, in a delimited, natural and determined territorial area, of a community of people and a population of industrial enterprises". (Becattini, 2000, p.67).

In this way, based on Becattini's definition, the most outstanding characteristics of the Italian industrial model appear, which can be very similar to the one used in Spain.

- ❖ The first is that it is a delimited territorial system. The geographical area where the district is born, located and developed must be delimited. It should not be confused with a community that is closed and isolated from the rest, but rather the opposite, since in order for it to grow, it is necessary to relate to companies outside the district, which is why it must be a flexible model.
- ❖ The second characteristic is that it is a community of people. This community represents the same values and rules among the people who are part of it. It is also important that companies or districts with a close territorial proximity are part of it and that cooperation with them has been created, because if these conditions are met, the industrial district model is more likely to develop properly.
- ❖ Existence of small and medium-sized specialised companies. One of the characteristics of the industrial district is the presence of a large group of small and medium-sized enterprises which are specialised in a specific phase of the industrial production process. One of the easiest ways to verify the existence of a production district is to check whether, in addition to the companies that produce the main products, there are also companies that have specialised in a specific part of the production process.

- ❖ Balance between competition and cooperation. Within the industrial district there are unique economic relationships between the components that make up the district because competition and cooperation are combined. This is due to the fact that if the specialised companies that form part of the district are close to each other and are also small, in each part into which the economic process is subdivided the companies that form it tend to compete with each other when offering the same good or service. According to Becattini (2000), he explains that competition within a district is higher than outside it due to the proximity between the companies that form it and also due to the reception of the practices that neighbouring companies carry out and which cause the rest of the companies to make movements in a more agile way in response. On the other hand, there is cooperation and collaboration between companies, which leads to a shift from a concentration of companies to an industrial district. These activities benefit the district as they allow the innovative processes that are carried out to make it more dynamic as well as increasing trust between the companies that form it.

- ❖ Barriers to entry and exit. The barriers to entry into the district and the culture and identity generated by the companies that form it limit the entry of new companies from outside the district. The companies that tend to form part of an industrial district tend to be born, grow and die within it.

In the following, we will explain the different types of organisations found in an industrial district, these are the following:

The first of these is the concentration of companies of the same activity which offer services or final products. It is also possible that instead of being several companies, there is only one single company from which the district is formed around it, although this is less frequent.

The second type of agent are public or private bodies which provide information and technical support such as universities, research centres, standardisation institutes such as the Institute of Ceramic Technology, financial institutions, government institutions, among others.

The third and last type of organisation are those companies that are within the production cycle of the sector and that directly or indirectly affect it, such as suppliers of materials, machinery, components, specialised services, distribution companies, among others.

2.2. Merger and acquisition

An important concept to be discussed is the methods of strategic development, based on the notes of the Universitat Jaume I (2019). Topic 5: Strategic development methods (course notes 1024). Unpublished material. There are two forms of development, internal growth and external growth. First of all, we are going to analyse the first one.

2.2.1. Internal growth

Internal growth or development is carried out through investments that the company makes in its own structure with the aim of increasing its size through the construction of facilities, hiring new personnel, among others. Its main characteristics are:

- ❖ It involves investment in new production elements that allow the company to increase its production capacity.
- ❖ It is a traditional form of growth, also known as "natural or organic growth".
- ❖ Development is based on the implementation of its capacities and resources.

The sales involved in this form of growth are:

- ❖ Possibility to manage the decisions of the growth process since the company can decide the type of technology it acquires, the location where it develops the growth, among others.
- ❖ It is a less costly form of growth compared to external growth.

As for the disadvantages, we can highlight the following:

- ❖ It is a form of slow development, so you have to have good planning and not have an urgent need to grow.
- ❖ The company only has its own resources available for growth.

2.2.2. External growth

Next, we will analyse the second of these, external growth or development. This type of development is based on the acquisition, association, control or participation in other companies or their assets that are in operation.

Its main characteristics are as follows:

- ❖ The production capacity of the acquired company is obtained.

- ❖ Analysing the operation from the macroeconomic point of view, it does not represent an increase in real investment or aggregate output.

There are several reasons that justify this type of external development. Some of these reasons are the following:

- ❖ Economic efficiency reasons. From external growth the company incurs a reduction in costs by integrating other companies.
- ❖ Strategic reasons. The acquiring company has new resources and capabilities, can enter a new industry or market, has a lower level of competition in the industry, gains the advantages of vertical integration and increases its size.

In terms of the advantages of this growth, we can highlight the following:

- ❖ It is an easier way to gain access to mature industries.
- ❖ It is a faster form of development than internal growth.
- ❖ It facilitates the internationalisation of the company and the process of unrelated diversification.
- ❖ It allows the entry into another industry or market by being able to choose the most appropriate moment.

On the other hand, the disadvantages of external growth are the following:

- ❖ It does not allow the growth process to be managed in the same way as internal growth.
- ❖ It is a more costly form of development compared to external growth.
- ❖ It can be a problem when integrating the production, organisational and cultural systems of both companies.
- ❖ It requires a large amount of information to be gathered and requires a negotiation process.

There are several types of external development. In the following we will analyse each of them.

2.2.2.1. Mergers

Merger of companies. This is the merger of two or more companies to form a single company in which at least one of the original companies disappears in legal form. There are several types of mergers:

- ❖ Pure merger. A new company is created from the merger of two or more companies which contribute all their resources. The original merging companies disappear to form a new company.
- ❖ Merger by absorption. One of the companies absorbs the other, which disappears. The absorbing company integrates the assets of the disappeared company.
- ❖ Merger with partial contribution of assets. One of the companies merges while the other only contributes part of its assets.

2.2.2.2. Acquisitions

Acquisition of companies. This is an important concept that we will analyse in more detail. Its definition is the act of obtaining a type of product or service from a transaction. In order for this transaction to take place, it is essential that the buyer places a purchase order and that the bidder accepts payment. There are several steps behind an acquisition. In the first step, the buyer must plan the purchase he intends to make by identifying the characteristics and quantities of the product he is interested in. Once the standards have been determined, the selection process can begin. For this process, the applicant has to take into account several characteristics such as the acquisition price and the quality of the product among the most important ones. Once these parameters have been taken into account, the buyer must look for a bidder that fits his parameters and start a negotiation for the acquisition of the product.

Focusing more on the subject of the paper, we are going to analyse the concept of acquisition from the point of view of the acquisition of a company. Company acquisitions and mergers, a very common practice in the ceramics sector, is one of the ways for companies to grow externally. The acquisition of one company by another is done by taking over the shares without merging the assets of both companies. The fact that one company acquires the shares or part of the shares of another company does not mean that the former has full control over the acquired company. This depends on the percentage of the share capital that has been obtained by the acquiring company. It will also depend on the way in which the remaining non-acquired shares are distributed, as it will not be the same whether they are concentrated in many investors or in a few.

There are three main ways of acquiring a company; through a conventional sale and purchase, by financing part of the acquisition price through debt (leveraged buyout (LBO)) or through a public share offer (IPO).

- ❖ Conventional purchase and sale: this type of acquisition is carried out by means of the payment of a sum of money agreed with the seller through which the buyer acquires possession of the company.
- ❖ Leveraged buyout (LBO): this type of acquisition is where a significant portion of the purchase price of a company is financed through the use of debt. This debt is supported by both the buyer's equity and the assets of the acquired company. As a result, a high debt ratio is usually achieved.
- ❖ Takeover bid: this consists of making a public proposal with the intention of buying shares in a listed organisation at a given price. Any person, whether natural or legal, has the power to make a takeover bid. A price is offered, which is usually paid in cash, but there is also the possibility of shares or a mixture of the two, i.e. mixed (cash and shares). The main objective of the takeover bid is to acquire a significant stake in the organisation's share capital, which allows control of the company to be obtained. It is advisable to acquire the company when it is trading below its value.

There are several reasons why companies engage in mergers and acquisitions. This paper will highlight economic and market power motives. Within the economic motives, companies making an acquisition have the possibility to:

- ❖ Reduce costs through economies of scale, since the integration of two companies with similar production and commercial systems generates synergies.
- ❖ Through the acquisition, the acquiring company acquires new resources and capabilities that it did not previously possess.
- ❖ With the acquisition of another company, it is also possible to access tax incentives that allow greater benefits to be obtained thanks to exemptions and/or bonuses.

On the other hand, there are also a number of market power reasons for firms to take over other firms. These reasons include the following:

- ❖ It is one of the ways for a firm to gain access to some industries with high barriers to entry.
- ❖ When it is a horizontal integration acquisition, where a firm acquires another firm that is active at the same level of the industry value chain, the acquiring firm seeks an increase in power within the industry with the aim of reducing the level of competition.
- ❖ In the case of a vertically integrated acquisition, when several companies whose activities are at different stages of the production cycle are integrated, the

acquiring company seeks to benefit from the advantages that this integration offers, among which the following can be highlighted:

- Reducing production costs through economies of scale.
- It allows the company to have greater bargaining power.
- It allows the company to have greater control of the processes.
- Synergies can be created that allow for greater efficiency in the supply of human and material resources.
- Greater ability to set prices.
- In the case of forward vertical integration, it allows for a closer relationship with the end consumer.
- Greater possibility of taking advantage of economies of scope.
- The company obtains higher margins.

There are also other methods of strategic development besides those discussed above. These methods are business cooperation and strategic alliances. It is an agreement between two or more unrelated companies, i.e. they are independent, where both share and unite part of their resources and capabilities so that from this interrelationship both companies can increase their competitive advantages without merging. Some of their main characteristics are the following:

- ❖ There is no subordination of any kind within the cooperative relationship between the companies.
- ❖ The companies that enter into this agreement lose part of the autonomy in their organisational system by having a certain interdependence between the companies.
- ❖ It is an intermediate method between internal and external growth.

There are several reasons why companies adopt this type of strategic development.

Economic reasons: it is an efficient way for companies to organise their economic activity, they can access economies of scale that they would not be able to individually, and they reduce their costs.

On the other hand, the strategic reasons: access to new resources and capabilities, decreased industry competition and new advantages from vertical integration.

Some of the benefits of business cooperation and strategic alliances include:

- ❖ To be able to position oneself in a better competitive position.
- ❖ Access to new resources and capabilities.
- ❖ The companies that are part of it acquire greater flexibility and efficiency.

- ❖ It saves time in several activities.

On the other hand, there are also several disadvantages:

- ❖ Coordination can sometimes be complex between the companies involved.
- ❖ It can lead to a loss of autonomy in decision-making.
- ❖ Each of the partners may have different interests.
- ❖ It can lead to the loss of the competitive position that each of the companies had before the coordination agreement was made.

The points we have just analysed, merger and acquisition, are incorporated within the term "Mergers and Acquisitions" (M&A) which comes from the English financial vocabulary and which is commonly used among clients of different nationalities to refer to the concepts we have just explained.

Once the theoretical concepts have been analysed, we are going to analyse the most important facts about ceramics in Spain and how it was introduced over the years in the Valencian Community and more specifically in the province of Castellón.

More importance will be given to the history of ceramics as a ceramic flooring and cladding sector, as this is where it is most closely related to the work we are dealing with.

3. THE VALENCIAN CERAMIC INDUSTRY

In this section I will first explain the concept of the ceramic cluster, then the history of ceramics and in another section I will focus on the history of ceramics as flooring and cladding, more specifically in the industrial district of Castellón.

3.1. Ceramic cluster

The next theoretical concept to be dealt with is defined and focused on the main topic. This is the "Ceramic Cluster". According to the sectorial plan of the ceramic cluster elaborated by the Generalitat Valenciana (Hervas-Oliver et al., 2018) The ceramic cluster, which is formed by manufacturers of frits, ceramics and machinery, in Spain is located in the province of Castellón, more specifically in the regions of Les Planes and Alcora. It is the most competitive ceramics cluster in Europe, with a turnover of around 5,000 million euros, representing 30% of the province's industrial turnover, and provides direct employment for around 20,000 people, 85% of which are permanent, quality jobs. At the same time, counting also the indirect jobs and induced jobs, these can represent

around 60,000 jobs for the province. It is one of the most important sectors in the Valencian Community, second only to large sectors such as the automotive and food industries. It is one of the most powerful clusters in terms of innovation, being co-leader at European level together with the Sassuolo cluster in Italy.

The cluster brings great benefits to the economy of the province of Castellón as it plays a key role in the relationship between companies in the exchange of commercial and technological knowledge, playing the role of intermediaries.

Among the most notable benefits that the ceramic cluster brings to the companies that belong to it, to the economy of the sector and the trends that are expected in the near future are the following:

- ❖ It allows companies to be more internationalised, with a greater weight in ceramic markets around the world.
- ❖ It tends towards greater concentration and larger groups, which means more cooperation between the companies that make it up, consolidating it as a sector.
- ❖ Due to greater innovation and better practices and technologies, thanks among other things to Industry 4.0, it allows companies to be more productive and efficient.

The Spanish ceramics cluster is a highly internationalised cluster that depends, to a large extent, on its exports. In order for the good trend in the sector to continue along this path, several points need to be strengthened, among which the following stand out:

- ❖ Support for the formation of groups in order to increase the size of companies through integration and/or cooperation and thus achieve greater specialisation and efficiency.
- ❖ Supporting the Spain brand in order to strengthen it as an international image. To this end, it is essential to support international trade fairs and events such as CEVISAMA.
- ❖ Promote technological and innovation capacity, characteristics that differentiate Spanish ceramics.

3.2. Ceramic history

According to the Asociación Española de Fabricantes de Azulejos y Pavimentos Cerámicos (ASCER, 2020) the use of ceramics applied to architecture has a long history since its use began more than 4600 years ago by the Egyptians. Glazed ceramics later

came to Europe through the Islamic culture around the 13th century. Ceramics became very important in the peninsula from the beginning of the construction of the Alhambra in Granada.

The introduction of ceramics in the Valencian Community emerged during the 14th and 15th centuries. One of the key factors for this to happen was the decision of the Christians to move the pottery production centre from Malaga to Manises. At that time, the most important export client was Italy, with Venice being the most important, although there were also other important clients such as Egypt, Turkey and Syria.

In the 16th century, new technical inventions were discovered in Italy, such as polychromy, which led to the decline of Manises tiles, where blue monochrome was used. Finally, these pieces ended up being manufactured in Valencia with the help of the people from Talavera and Andalusia, who were in charge of starting up these factories. This is where the baroque and classicist tilework of Valencia was born and continued until the 19th century.

3.3. History of the industrial district

Next, we are going to focus on the history of the ceramic industry as flooring and cladding with a focus on the Castellón cluster.

3.3.1. Historical background

The first precedent that refers to industrial ceramics in Castellón was during the industrialisation plan for Spain, which was supported by the Royal Factory, when a factory was founded in Alcora by the Count of Arlanda. This was carried out as a result of being offered good conditions as he was offered large tax exemptions and where most of the workers were close to the factory location.

During the 19th century, the main location of ceramic production in the province shifted from Alcora to Onda, where the geographical situation of this second location is similar to that of Alcora. During the late 19th and late 20th centuries, there was a boom in the creation of new companies around the town of Onda. This was the result of the creation of a railway route linking Onda with Villarreal, where the production centre was located, and with the port of Castellón. Thanks to this, large quantities of ceramics were exported to South America. The main markets were Barcelona, Andalusia, South America and North Africa.

From the beginning of the 20th century until 1970, there was a great expansion of the district in the province of Castellón. At the beginning of this century, the territories of La Plana were mainly dedicated to agricultural functions.

Onda was the largest centre for the production of tiles and ceramic products in the whole of Spain. During the years of the Spanish Civil War, between 1936 and 1939, there was a slowdown in production, but it never stopped. From 1946 to 1956 there was a crisis in the production of citrus fruits, so a large part of the agricultural producers decided to opt for the ceramic sector.

3.3.2. From 1960 to the present day

In 1962 and 1964, the most important technical advances were made with the use of automated presses and tunnel kilns dedicated to the tile firing process respectively. In addition, there was a major change from coal to fuel. Thanks to these developments, productivity increased steadily.

During the 1970s, there was a major expansion of the district due to a large growth of the industry as a result of restructuring and technological improvement. Due to the large increase in the number of companies, in 1977 the association of ceramic producers, ASCER (Spanish Association of Manufacturers of Ceramic Tiles and Flooring) was born. The great growth experienced during this decade, more specifically between 1969 and 1983, is reflected in the opening of more than 40 new plants and the doubling of the number of workers.

This boom came to an end as a result of the oil company crisis in the 1970s and also as a result of the instability of the Spanish government due to the transition after Franco's death in 1975.

The 1980s were characterised by the beginning of the process of internationalisation of the district, which began to export part of its products to foreign markets. This marked the beginning of the "Second Industrial Reconversion" where important changes were made in the production processes and the value chain, thus speeding up the time to market and the quality of the products. One of the first important changes was the introduction of a technological improvement, the introduction of the gas pipeline and also the introduction of the single-fire system. With the arrival of gas in the factories in 1981, a great technological change took place in the sector. This advance made it possible to improve product quality, reduce cooking times, save energy and expand production. In this way, the cluster ended up consolidating itself, with great growth and becoming the

leading producer in Europe and second in the world, as well as leading the design, quality and trade of ceramic tiles together with Italy.

During this decade the ITC-AICE (Instituto Tecnológico de la Cerámica) was also born, which is an important strategic partner for the ceramic district, helping in the technological processes of the SMEs.

As a consequence of the restructuring and technological improvement experienced during the 80's, the 90's saw a great growth in the production and income of the district. During this decade, a large number of companies belonging to support industries such as frits, glazes, colours and inks or baths and sanitary ware were born and grew.

Many companies began to encompass the production of the entire range of ceramics in order to take advantage of economies of scale. Some of these firms are Porcelanosa, Taugrés, Vives and Pamesa. Business concentration, diversification of production and the opening of new markets were the main trends during these years.

The years from the beginning of the millennium to the present day are divided into two parts, the stage before 2007 and the stage after 2007, referring to the beginning of the international financial crisis.

The years before 2007 are characterised by the entry of a major competitor, China, onto the world market. China is not obliged to respect energy-related problems as it does not have to respect the Kyoto agreements on the environment, which means that it can produce the same product but at a lower cost, as well as having a cheaper workforce. As a result, China came to dominate the world market with more than 30% of production, causing Spanish production to decline.

Spain decided to focus on the quality of its products and on its two main sectors, frits and roof tiles, thus solving the problem.

From 2007 onwards, the world crisis appeared, which affected the ceramics district as it was directly interrelated with the construction sector, which was the most affected by the crisis. As a consequence, demand in the ceramics district fell steadily from 2007 to 2012. To remedy this problem, the district increased the export of its product to other international markets from 2010 onwards. The most affected sector was the roof tiles sector due to its dependence on the construction sector, which made it difficult for it to recover, while the frits and machinery sectors managed to reach the 2007 levels in 2012 thanks to the increase in exports.

Between 2007 and 2012, the domestic market fell by 66% and exports increased by 6.8%, which is not enough.

The ceramics district underwent a great change as a result of the crisis and today it continues to face great challenges such as climate problems, Spain's energy dependence, the emergence of new producing countries and the maturity of the market.

Once the history has been explained and we have an idea of how it has been introduced in the area of the province of Castellón as well as its evolution, we are going to identify the role played by the different associations related to the ceramic sector.

4. CLUSTER ASSOCIATIONS

The different associations we are going to analyse are: ASCER, ANFFECC and ASEBEC. In this point we will highlight the functions performed by each of them and the benefits they bring to the ceramics sector.

4.1. ASCER (Spanish Ceramic Tile Manufacturers' Association)

An important player in the business concentration of the ceramic sector is ASCER. According to the association itself (ASCER, 2020), this association was created in 1977. Currently, it represents around 95% of the sector's production and is one of the sectoral associations with the largest representation in Spain. The head office is located in Castellón de la Plana as a result of the fact that it is in the province of Castellón where the country's ceramic cluster is located.

Previously, this role was played by the Agrupación Nacional Sindical de Industriales Azulejeros (ANSIA), which had been in operation since 1959, a role that was taken over by ASCER. In the past, there were also several business organisations dedicated to the tile industry, such as the Tile Manufacturers' Guild based in Onda, which was founded in 1927.

The association is governed by a General Assembly made up of the members of the association, in addition to the governing board which is responsible for carrying out the actions and objectives agreed by the members of the association.

ASCER provides different services that help the ceramic sector. It is an organisation formed to support, defend and promote the common interests of the ceramic industry. Its activities are focused on carrying out a joint action of the sector in those situations in

which individual companies could not carry out this type of actions. This type of action requires a high degree of flexibility in the functions in order to be able to respond quickly and efficiently to changes in the environment. There are several large areas of action in which the services provided by ASCER can be framed:

- ❖ Commercial, promotion and communication issues
- ❖ Labour and training issues
- ❖ Industrial matters
- ❖ Statistical and sectoral reports
- ❖ Legal services for complaints
- ❖ Publications for members and the general public
- ❖ Databases
- ❖ Supplier agreements
- ❖ Institutional relations

The organisation carries out various activities. Among them, we can highlight four main blocks:

- ❖ The first of these is foreign promotion. As we have already explained, the Spanish ceramics sector is a particularly export-oriented sector, as the figures show, with more than half of its sales going to foreign markets in more than 180 countries. The aim of the association in this field is to promote Spanish ceramics internationally, supporting the foreign image of the industry and positioning Spanish ceramics as a product of quality, design and innovation, thus helping the internationalisation of the associated companies.

It uses a brand of origin to encompass all this promotion under the name of "Tile of Spain" to position the Spanish ceramic product under the aforementioned characteristics. The "Tile of Spain" brand is currently registered in more than 20 countries with which the Spanish ceramics sector carries out a large number of exports.

"Tile of Spain" uses different tools for international promotion, some of them are the following:

- Country Plans: communication campaigns in various media of construction, decoration, architecture, among others in countries such as the United States, Germany, France, Italy, the Russian Federation and the United Kingdom.
- Attendance at international trade fairs.

- Technical Seminars: training seminars to alleviate the lack of knowledge about the current possibilities that can be found in ceramic construction.
 - Ceraspaña magazine with promotional publications of the "Tile of Spain" brand focused on an international level.
 - Advertising campaigns on "Tile of Spain".
- ❖ The second of the activities carried out by the ASCER association is national promotion. Although a large part of the ceramic sector's income comes from exports, the domestic market is also important for the sector's turnover. This domestic market accounts for around 20% of the Spanish ceramic industry's sales.
- Since 2005, ASCER has had a nationally focused communication plan aimed at positioning ceramic floor and wall tiles as innovative and versatile products. This plan is mainly focused on an influential public within the sector, such as architects and interior designers. The main actions carried out can be divided into two blocks: PR actions and communication campaigns. After a study carried out between 2007 and 2009, it has been concluded that ceramics previously had an image of being a simple construction material and nowadays it is a design element with a high qualification.
- ❖ The third activity refers to the environment. ASCER is involved in providing information and advice on the understanding of environmental aspects and their compliance. As well as providing all kinds of services and agreements related to the environment, it also organises information days for interested companies in the sector, providing them with the necessary tools to comply with environmental obligations.
- ❖ Finally, the association carries out several sectoral innovation projects. ASCER has an R&D&I department which promotes projects that support the sector. Some of the most important projects it has launched are:
- "DRAC Project": this project has been designed with the main objective of carrying out a medium to long-term strategy to develop ceramic products that are user-oriented. Thanks to this project, a large amount of valuable information has been obtained.
 - Project 4Senses": this project has been created on the basis of the results obtained from the previous innovation project, the "DRAC Project". The

aim of this project is to obtain information on the multisensory interaction of people with the environment in order to develop technological products and services for the ceramics sector.

It has also launched other smaller but equally interesting and important projects such as: ventilated façades and energy efficiency, dry installation, application of ceramic worktops, among others. In order to carry out these innovation projects, ASCER has had the help of numerous entities such as the Regional Ministry of Enterprise, the University and Science of the Valencian Community and the Institute of Ceramic Technology (ITC).

4.2. ANFFECC (National Association of Manufacturers of Frits, Glazes and Ceramic Colours)

ANFFECC is another association related to the ceramic industry in Spain, in this case, it is the association that brings together all the Spanish producers of ceramic frits, glazes and colours. The associated companies are the suppliers of the tile companies in the sector, as they use these products in their production, more specifically by supplying the preparations that allow each of the pieces produced to have their characteristic colour and finish.

For years, Spanish frits have been world leaders in terms of design, R&D&I, quality, sales and customer service. One of the consequences is that more than 70% of the frits produced by Spanish companies are exported to international markets. There are several markets to which they are sold: Europe, the Orient and Latin America are some of them.

The association currently has 23 associated companies, most of them are located in the province of Castellón, this is because they are very close to their customers in the ceramic sector, more specifically the tile producers, which is called the ceramic cluster located in the towns of Onda, Vila-real and Alcora already explained above.

The main objective of the association are the common interests that the associated companies have, for this reason the association is mainly dedicated to:

- ❖ To participate and represent the members in the different committees of organisations that are of interest to the associates such as Cevisama, the Castellón Chamber of Commerce, Feique, CEOE, CEV and Eurocolour.

- ❖ To carry out and coordinate studies and projects that are of common interest to the associates.
- ❖ To defend and look after the interests of the associated companies at both national and European level.
- ❖ To make interventions in national and international forums.
- ❖ To establish and obtain agreements with public and private entities on aid and collaboration.

4.2.1. History of the association

According to the association itself (ANFFECC, 2021), the ANFFECC association was created on 15 November 1977 by a group of 19 entrepreneurs who were dedicated to the manufacture of frits, glazes and ceramic colours with the main objective of founding the association in order to defend their needs and interests jointly.

Some of the founding companies have already disappeared, as is the case of Silika or Spinelcolor, and others have merged to create a single company, as is the case of Endeka. Apart from these changes in some companies, most of the founding companies of the association still exist today.

The first objectives that the association set itself were the labelling of products related to the activity in order to avoid confusion, relations with other associations of the same activity and the negotiation of collective bargaining agreements such as the one in which the association is currently registered (Collective Bargaining Agreement of the Chemical Industry).

In the 1980s, the association began to make itself known and joined several agreements and associations such as the Confederation of Employers of Castellón (CEC), the Ceramic Industry Research Association (AICE), which it joined, and the Federation of the Spanish Chemical Industry (FEIQUE).

Although the aforementioned agreements were important at the beginning of the association, the most important agreement during these years was the one between ANFECC and Enagás. This agreement was signed for the supply of natural gas, which led to the extinction of fuel oil, which until then had been used as a source of energy.

Moving on to the 1990s, this decade stands out for the importance given to environmental issues. As for the association, it began relations with European associations such as Epsom in France, Ceramicolor in Italy and VdIMI in Germany.

ANFFECC also participates in the development of IPPC - Integrated Pollution Prevention and Control, where it defends the limits on emissions in the glass sector on behalf of Spain before the European Commission. In addition, together with Asebec and Ascer, it makes agreements with supply companies to reduce costs.

4.2.2. More recent developments

With regard to the most recent evolution with the entry into the 21st century, this stands out for the international expansion and the crisis suffered by the sector, as well as the revolution that originated with the appearance of digital inks.

With the entry into the new century, the association focuses on internationalisation, which allows it to enter and establish itself in new countries, both in terms of sales and the creation of production plants in other destinations. The sector also experienced a notable increase in investment and development in R&D&I, which as a consequence led to an increase in innovation in the sector. Thanks to these advances and expansion, tile companies from other countries have positioned the Spanish glaze industry as the best in terms of quality, innovation, design and customer service. An important factor that led to a considerable increase in sales and production in the sector was the construction boom experienced during these years, although on the other hand, margins on some products also decreased due to the increase in the price of raw materials. Other costs that also increased were environmental costs due to increased protection and respect for the environment. It was during these years that ANFFECC strengthened its institutional relations by signing several agreements related to the environment as well as holding several meetings with the Ministries of the Environment and Industry.

It was at the end of the first decade when the international economic crisis hit the Spanish ceramics sector, which also affected the frits sector, which was able to resist thanks to the internationalisation work carried out previously, allowing it to export to other countries. It was in the middle of the economic crisis when a new revolutionary product appeared worldwide, ceramic inks that allow digital ink-jet printing. This new way of glazing saves time and costs as well as providing decorative options that had not been possible until then. This factor allowed the industry to recover from the economic crisis and continue with the growth that the sector was experiencing thanks to exports, where record sales were made as a result of the market in countries such as Italy, Russia, China, among others.

Currently, Spanish companies in the ceramic frits, glazes and colours sector continue to invest in research, development and innovation in the sector. They also continue to increase production and sales at international level with their research and production bases in Spain.

4.3. ASEBEC (Spanish Association of Manufacturers of Machinery and Capital Goods for the Ceramic Industry)

ASEBEC is the Spanish Association of Manufacturers of Machinery and Equipment for the Ceramic Industry. According to ASEBEC itself (ASEBEC, 2021), this association acts as an employers' association, that is to say, it brings together the sector's entrepreneurs, and its main objective is to develop different lines of work that will allow the sector to maintain the growth it has achieved in recent years. Thanks to this, the association has been able to afford its own technology, which is characterised by its ability to adapt perfectly to the needs of the ceramics industry.

Currently, ASEBEC is made up of a group of 71 companies, within which it can be divided into various subgroups that focus on a specific specialisation and which cover the entire sector on a national level, covering the aforementioned activities. All these machinery-related companies have made great efforts in recent years to make their quality internationally recognised.

In terms of structure, the sector works almost exclusively for the Spanish tile industry, but over time it is gaining strength in international markets through exports, specifically in countries such as Mexico, Brazil, Turkey and Egypt. The strong point where the Spanish ceramic machinery industry stands out is in specific aspects such as the glazing lines, where it enjoys great prestige at international level. Nor should it be forgotten that a significant number of the companies that are members of ASEBEC are small workshops responsible for the maintenance of the plants.

After identifying the most important associations in the sector and describing each one of them, we are going to carry out an analysis of the Catedra de transformació del model económico (UJI-GVA) (2021). Concentration and acquisitions of companies in the ceramic cluster during the period 2010-2020 where we can find data on several acquisitions of companies in the ceramic cluster and observe in detail each of the factors that influence these operations.

5. EMPIRICAL STUDY

From this point, the second part of the work begins, the field study, and the one that has taken the longest and most difficult to collect all the data necessary to carry it out.

This study has been carried out with the data obtained from the Catedra de transformació del model económic (UJI-GVA) (2021). Concentration and acquisitions of companies in the ceramic cluster during the period 2010-2020.

In recent years, the cluster has undergone several notable changes as a result of the concentration of companies. On the one hand, it has experienced a high reduction in the number of member companies and, on the other hand, a process of acquisitions and other types of operations related to the change of ownership between companies. This process has been positively received by the organisations and institutions linked to the cluster thanks to the benefits attributed to them, such as the attractiveness of investment, the contribution of financial funds to the sector, the generation of economies of scale and the increase in efficiency, the internationalisation process, among other advantages. The study that follows aims to confirm this reduction in the number of companies and to order the acquisition operations in order to make it easier to understand the nature and importance of the phenomenon.

The study is limited to the ceramic cluster and the main productive activities, which include the manufacture of ceramic floor and wall tiles, and the main auxiliary activities such as the manufacture of frits and glazes, ceramic machinery and installations, and companies dedicated to the atomisation of clays and raw materials. The data sources obtained to carry out this study on procurement operations have been collected from specialised publications during the period of time between 2010 and 2020. The publications in the report were obtained from digitalised information from the Periódico del Azulejo, Economía 3, Expansión, Castellón Plaza and El Periódico Mediterráneo.

To begin the analysis, the evolution of the number of companies in the cluster from 1985 to the present day was analysed. It was found that there was a significant growth in the number of companies in the cluster during the first two decades (1985-2005), with a significant decrease in the number of companies from the latter year onwards. In 2005, there were a total of 181 companies dedicated to the final product, compared to 81 in 2020. As for the number of frits and enamels companies, these have gone from 28 in 1990 to 19 in 2020. With these data we can observe a clear reduction in the number of companies, especially in the final product companies.

Other relevant information is the creation of companies during this period, where a notable decrease can be observed from the mid-2000s onwards, with its lowest point in 2004. In 1994, 14 companies directly related to the cluster were created, while none were created in 2004. In addition to this, the disappearance of companies in the sector was accentuated during these decades, with the year 2013 being the year that saw the highest number of disappearances, with a total of 10.

In summary, we can classify the keys to business concentration in several points:

- ❖ A halt in the creation of companies in the middle of the decade (2000-2010).
- ❖ Systematic disappearance of firms in the decades (2000-2020).
- ❖ Growth without business creation as a result of high barriers to entry.
- ❖ Marginal impact of the acquisition process on the decline in the number of firms.

The movements analysed in the report date from 2004 to 2020, in which we can observe different types of acquisitions in which several aspects have been analysed: the price of the operation, the type of acquisition, if the acquiring company belongs to the Spanish ceramic cluster, if the acquired company belongs to the Spanish ceramic cluster, if the acquiring company is related to the investment fund, the activity developed by the acquired company within the ceramic sector and, finally, what is the nature of the purchase. We will now analyse each of these aspects in more detail.

5.1. Price of the transaction

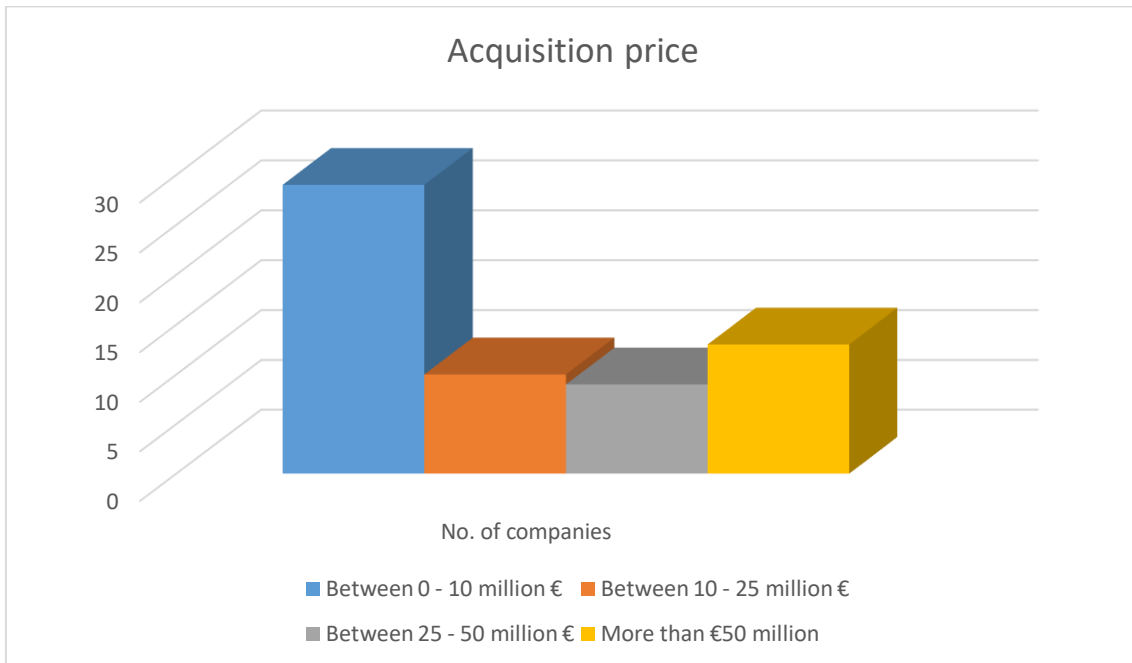
We will first analyse the quantities of the purchases by segmenting them into several ranges. These ranges cover the following amounts:

- ❖ Acquisition price between 0 and 10 million euros: among the 61 total acquisitions analysed, in 47.54%, the transaction price ranges between these amounts.
- ❖ Acquisition price between 10 and 25 million euros: among the 61 total acquisitions analysed, in 16.39%, the transaction price ranges between these amounts.
- ❖ Acquisition price between 25 and 50 million euros: among the 61 total acquisitions analysed, in 14.75%, the price ranges between these amounts.
- ❖ Acquisition price of more than 50 million euros: among the 61 total acquisitions analysed, in 21.31%, the price is higher than 50 million euros.

As can be seen, most of the transaction prices range between 0 and 10 million euros, as 29 of the 61 transactions analysed share this range. Another interesting fact is that,

instead of following a downward trend in the number of acquisitions as the amount of money in the transaction increases, from 10 - 25 million to 25 - 50 and more than 50, the acquisition prices remain at the same levels and even increase slightly above 50 million as can be seen in the following graph with a total of 10, 9 and 13 transactions respectively.

Illustration 1: Price of acquisitions



Source: Own elaboration

Other data to highlight is that the transaction with the lowest transfer amount is 0.75 million euros and the highest is 560 million euros, which means a big difference between the lowest and the highest analysed acquisition. The total price of the 61 transactions analysed is 3282.35 million euros, which is an average of 53.81 million euros per transaction.

As a conclusion we can draw that almost half of the companies prefer to make larger acquisitions where the purchase price does not reach ten million euros. This is either because most companies do not have sufficient capacity to make larger acquisitions or as a defensive strategy where large companies acquire smaller companies to avoid competition in the medium-term future. Another reason may also be the intention to acquire these small companies as a source of innovation, since the acquiring company

acquires the innovation of the acquired companies and these small companies tend to put more resources into research and innovation than large companies do.

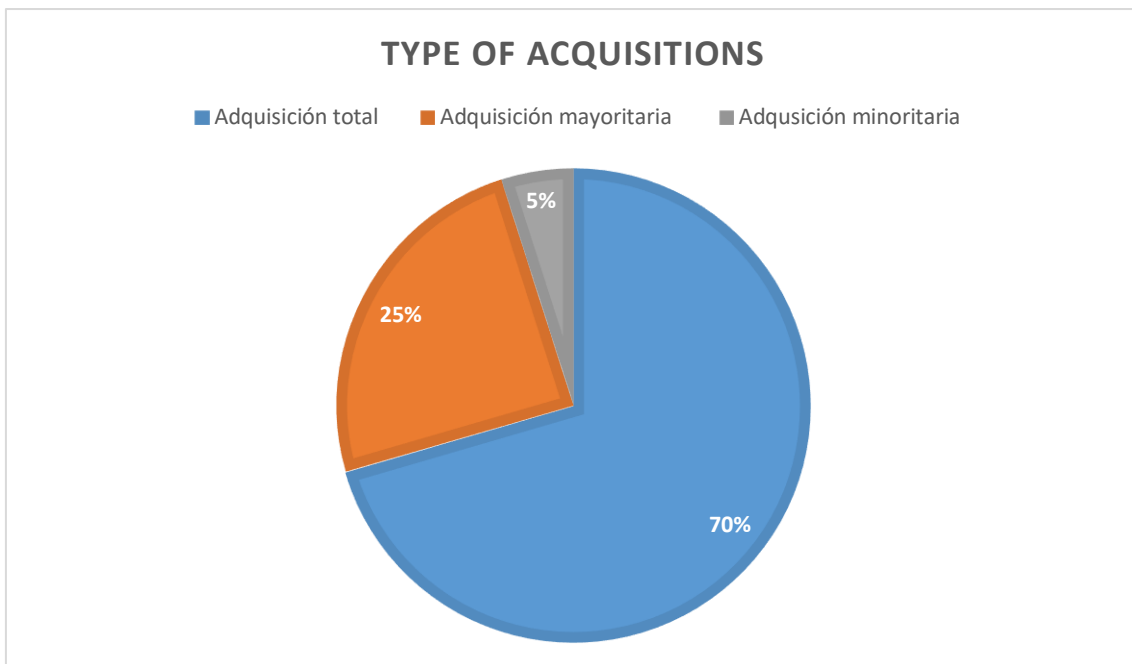
5.2. Type of procurement

The following is an analysis of the most common type of acquisition in the 61 acquisitions analysed. For this purpose, a distinction was made between three types of acquisitions according to the percentage of the acquired company obtained by the acquiring company:

- ❖ Total acquisition, this means that the acquiring company has acquired 100% of the share capital of the acquired company. In the analysis carried out, 70.49% of the acquisitions are of this type, representing a total of 43 of the 61 acquisitions analysed.
- ❖ Majority acquisition: this occurs when the acquiring company obtains more than 50% of the share capital of the acquired company but without obtaining 100%, as in this case it would be a total acquisition. Having obtained more than 50%, the acquiring company has a greater decision-making power than the acquired company. In this case, 24.59% of the operations analysed are of the majority type, i.e. a total of 15 of the 61 acquisitions analysed.
- ❖ Minority acquisition, this type of acquisition is carried out when the acquiring company obtains less than 50% of the share capital of the acquired company, therefore, the acquired company still has a greater decision-making power than the acquiring company. In this type of acquisition, only 4.92% of the acquisitions are minority acquisitions, which means that only 3 of the 61 acquisitions analysed were of this type.

As we have been able to observe, when a company decides to acquire another company, it usually does so with a total acquisition. On some occasions, the acquisition tends to be of the majority type, since although it does not have total control over the acquired company, it does have greater decision-making power. As far as minority acquisitions are concerned, we have seen that they hardly ever occur in the ceramics sector.

Illustration 2: Type of procurement



Source: Own elaboration

As a conclusion to this analysis, we can comment that companies that decide to acquire another company normally carry out the acquisition in full, 75%, or if not, in majority, 25%, so that the acquiring company can have total control over the company it has acquired and can take the relevant decisions when managing the company. In the case of a minority acquisition, the acquiring company will have the same relevance when it comes to making decisions, but it will depend on the acquired company, which will have a higher percentage of share capital.

The fact that most acquisitions are carried out outright means that the agreement reached between the two parties is hostile, since the two companies have not reached an agreement on a merger, which would have meant an agreement between the two parties, and the acquiring company has decided to buy the acquired company in the face of the latter's opposition to the agreement.

5.3. Whether the acquiring and acquired companies are part of the Spanish ceramics cluster

The next aspect to be analysed is whether both the acquiring and acquired companies are internal or external to the Spanish ceramics cluster. To do so, we first focus on the acquiring company:

- ❖ As for the acquiring companies that are internal to the ceramic cluster, a total of 25 companies out of the 61 analysed are companies that do form part. This is equivalent to a percentage of 40.98% of the total.
- ❖ On the other hand, the total number of purchasing companies that are external to the ceramics cluster is 36, which is equivalent to a percentage of 59.02% of the total.

Next, we will analyse the acquired companies:

- ❖ A total of 45 companies acquired by the acquiring companies are indeed internal to the Spanish ceramic cluster, which is equivalent to a percentage of 73.77% over the total of the 61 acquisitions analysed.
- ❖ Of the acquired companies that are external to the Spanish ceramics cluster, a total of 16 acquired companies are not part of the cluster. This is equivalent to a percentage of 26.23% of the total of the 61 acquisitions analysed.

As can be seen, in the case of the purchasing companies, there is a slight tendency for these to be external, with 6 out of 10 companies being external to the Spanish ceramics cluster. On the other hand, there is a change in the trend among the acquired companies, as most of them do form part of the Spanish ceramics cluster, with more than 7 out of 10 acquired companies being internal to the cluster.

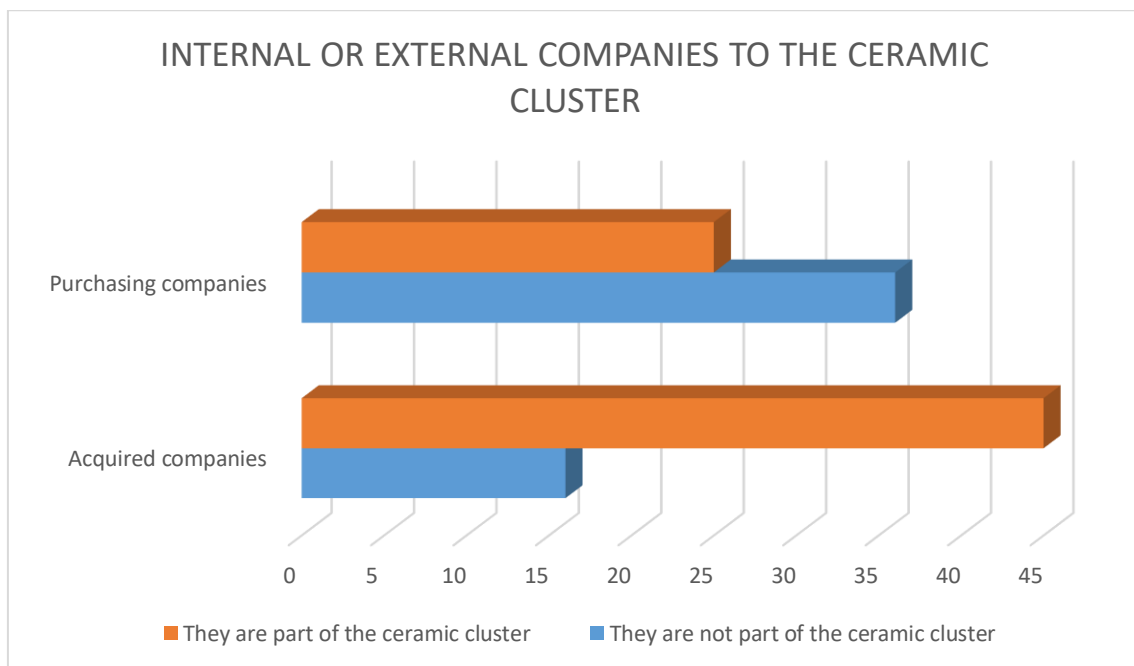
Among the acquiring companies internal to the cluster, these tend to acquire companies that are also internal to the cluster, since out of the 25 acquisition operations carried out by internal acquiring companies, a total of 22 acquired companies are also part of the cluster and only the remaining three are companies acquired from outside the cluster. On the other hand, external acquiring companies also have a greater tendency to acquire companies internal to the cluster, but not as markedly as in the case of internal acquiring companies. In this case, out of a total of 36 transactions, 23 correspond to acquisitions from companies internal to the cluster and 13 from companies external to the cluster.

On a general level, it can be concluded that in most cases the acquired companies clearly belong to the ceramic cluster. As for the acquiring companies, there is a slight tendency for them to be external to the cluster. If this trend continues to increase, it may imply a loss of control over the capital of local companies, which means that companies outside the cluster are gradually but steadily acquiring greater control over the Spanish cluster and its capital.

By relating the type of acquiring company, whether it is internal or external, and the price of the operation, we can draw several conclusions. In the acquisitions with a total amount

of more than 25 million euros of the analysed acquisitions, there is a total of 22 operations, of which 20 operations have been carried out by purchasing companies external to the Spanish ceramics cluster. The only two acquisitions with a transaction price of more than 25 million euros that have not been carried out by companies outside the cluster have been made by the same group, the Pamesa Cerámica Group. These two operations correspond to the acquisitions of the companies Argenta Cerámica and Cifre Cerámica in 2020. The amount of the operations is 76 million euros in the case of the acquisition of Argenta and 75 million euros in the case of the acquisition of Cifre.

Illustration 3: Internal or external companies to the cluster



Source: Own elaboration

With these data, we can conclude that larger operations in terms of economic quantities are usually carried out in the vast majority of cases by companies outside the ceramics cluster, so that the companies that do form part of the cluster generally prefer to acquire smaller companies where the total amount of the operation is not as high as the acquisition operations carried out by companies outside the cluster and which opt for larger companies.

5.4. Acquiring company related or not to the production activity

Next, we will analyse what type of companies they are, in terms of their relationship with the production activity. We have been able to distinguish three types of acquiring companies: related companies, companies belonging to a holding company and investment funds. In the following we will analyse each of them:

Same activity, i.e. the acquiring company and the acquired company carry out the same activity within the ceramics sector. In this case we have been able to observe that in 31 of the total of 61 acquisition operations analysed, the company is related to the same activity, i.e. a percentage of 51%.

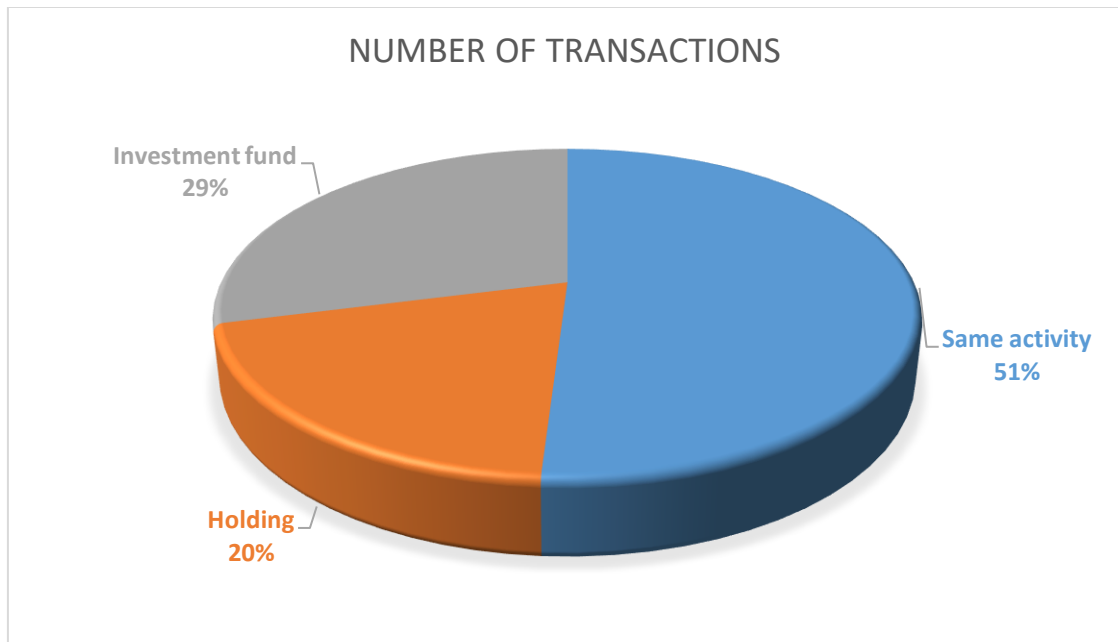
Holding companies, i.e. groups that own companies belonging to different businesses more or less related to the ceramics sector. These represent 20% of the total.

Investment funds, i.e. organisations that manage an investment portfolio of various businesses and carry out financial strategies. These represent 29% of the total.

Importantly, although companies related to the same activity account for more than half of the total number of companies, 51%, this is not reflected in the monetary amounts of transactions as it is the lowest in this section with 17% of the total (562 million €) while the holding company accounts for a total of 18% (592 million €) and the investment fund for 65% of the total (2128 million €).

We have seen that slightly more than half of the companies that have carried out an acquisition are related to the same activity as the acquired company, but that this dominance is not reflected in the monetary transactions.

Illustration 4: Number of transactions according to the nature of the acquiring company



Source: Own elaboration

In conclusion, we can highlight that this trend in the power of investment funds may pose some threats, such as speculative practices, and also limits some of the advantages of the practice of acquisitions such as synergies or economies of scale.

5.5. Activity of the acquired company

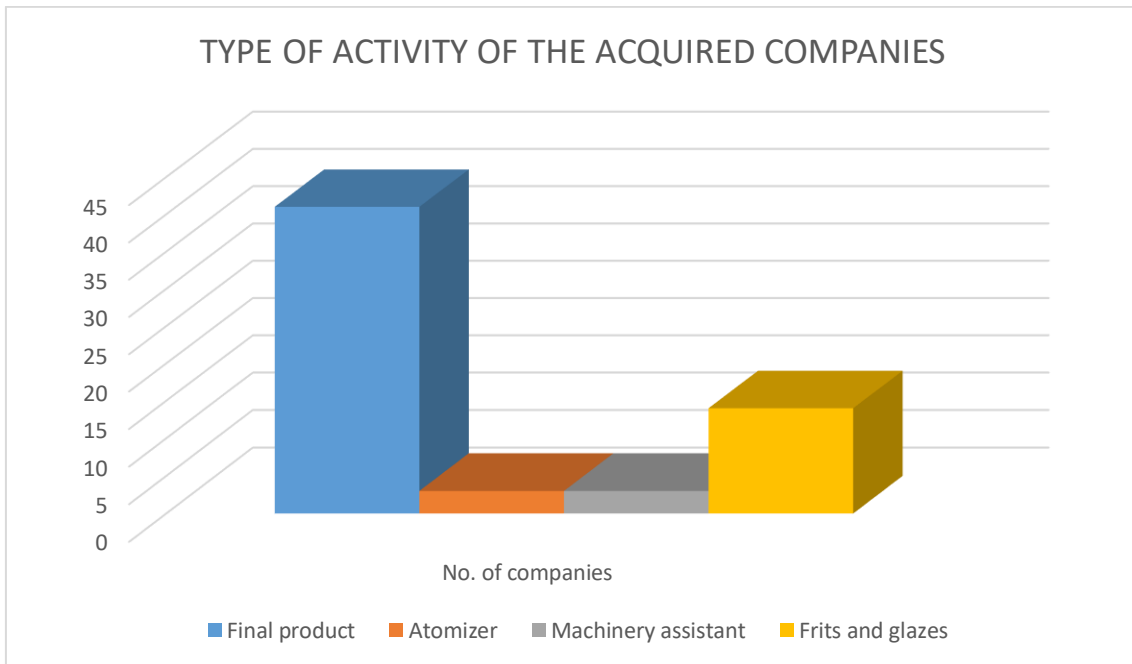
The next aspect to be analysed is the activity carried out by the acquired company within the ceramics sector. To this end, the companies have been segmented into four different types of activities, which are as follows:

- ❖ Final product, this segment includes those companies that dedicate their activity to the final product of the ceramics industry. In this segment, a total of 41 companies out of the 61 analysed focus their activity on the end product, which represents a percentage of 67.21%.
- ❖ Atomising companies, only 3 companies out of the acquisitions analysed focus on this activity, which represents a percentage of 4.92% of the total.
- ❖ Auxiliary machinery companies, within this activity there are 3 companies of those analysed, which represents a percentage of 4.92%, the same percentage as the spray-drying companies analysed.

- ❖ Frits and enamels, this activity concentrates those companies whose activity is focused on the production of these materials composed of glass. This activity includes a total of 14 companies out of the 61 analysed, which represents a percentage of 22.95%.

As we can see, most of the acquired companies focus their activity on the final product, as almost 7 out of 10 companies carry out this type of activity. On the other hand, both the atomising and auxiliary machinery companies do not reach 5% of the total of the 61 companies analysed, which means that these activities are concentrated in just a few companies in the sector. Finally, there is a considerable number of companies dedicated to frying and glazing, where almost 1 out of 4 companies focus on this activity.

Illustration 5: Type of activity of acquired companies



Source: Own elaboration

In conclusion, we can say that the companies within the sector are largely dedicated to the final product. There is also a notable number of companies whose main activity is frits and glazes. This means that in the ceramics industry there is no need for a large number of auxiliary machinery companies or spray drying companies, or that these functions are carried out by companies that are not part of the cluster or even outside the sector.

5.6. Nature of purchasing

Another aspect that is analysed in the study is the nature of the purchase of the acquired company, i.e. whether the acquisition operation was carried out on the basis of the market price or whether it was due to a bankruptcy liquidation. For this purpose, we will analyse them individually:

- ❖ Companies acquired on the basis of the market price account for a total of 49 of the 61 transactions analysed, i.e. a percentage of 80.33%.
- ❖ Companies acquired in bankruptcy liquidation account for a total of 12 of the 61 transactions analysed, i.e. a percentage of 19.67%.

As can be seen, there is clear evidence that the majority of companies acquired, more than 8 out of 10, are acquired on the basis of the market price. An observation regarding this percentage of 80.33% is that 3 of the companies analysed were in debt and 1 had financial problems.

We can conclude that the purchasing companies prefer to acquire companies that are in a situation of insolvency liquidation where they are unable to pay their debts to creditors from the company's assets. It should also be noted that one out of every five companies acquired is in a situation of insolvency liquidation, which means that there are indeed companies that acquire companies in this situation, although at a much lower rate than companies acquired on the basis of the market price.

After analysing company acquisitions in the ceramics sector and explaining each of the factors that influence them using statistics and graphs, we are going to carry out an analysis of the trend in ceramic concentration over the last few years and how it is expected to continue to evolve.

6. TREND TOWARDS CERAMIC CONCENTRATION

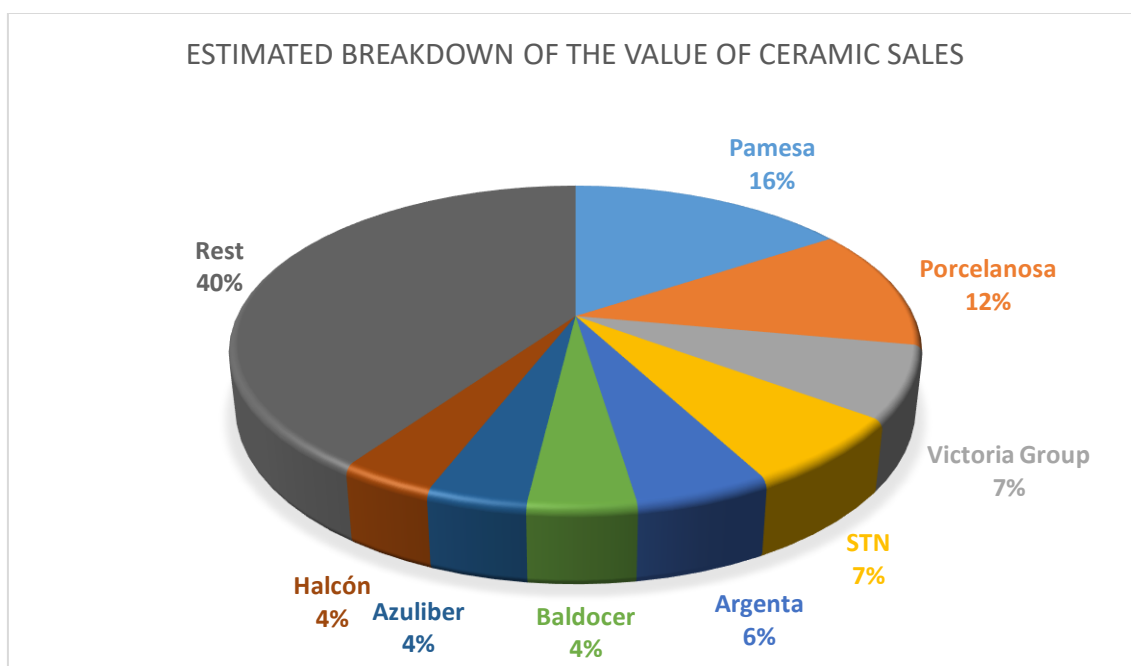
In recent years, there has been a trend towards the concentration of companies in the ceramics sector in Castellón. This is mainly due to the establishment of increasingly powerful business groups, the entry into the sector of international investment funds and the formation of strategic and commercial alliances in order to take advantage of synergies.

It is true that currently the ceramic sector is still a varied group of companies, as it is made up of more than a hundred of them. However, it is increasingly the large corporations that have the most weight in the group of all of them, with a production

capacity and a market share far above the rest. This is reflected in the "Tile of Spain Report 2021" (Alimarket, 2021), which shows that the eight largest groups in the ceramic sector currently account for around 60% of the total sales of the Tile of Spain brand.

Last year, the sector had a total turnover of more than 3.7 billion euros, of which a total of 59.7% corresponds to sales made by this group of eight companies, which is made up of the Pamesa Group, Porcelanosa Group, Victoria Group, STN Cerámica, Argenta, Baldocer Group, Azuliber and Halcón Cerámicas.

Illustration 6: Distribution of the value of sales in the ceramic cluster



Source: Alimarket Construcción

This graph shows how the market is distributed with the percentage in millions of euros of each of the eight large groups, each of which has a turnover of at least 140 million euros out of a total market turnover of 3716 million euros. The graph estimates Pamesa's leadership as the group with the largest market share, with 15.7% of the market, which represents around 583 million euros. Behind Pamesa is the Porcelanosa group, which has reached 12.2% of the total market, representing a total of around 453 million euros. These two groups are the main market dominators in the ceramic sector, together they occupy almost 30% of the market with a turnover of more than 1000 million euros between the two groups.

These data show the trend of the Spanish cluster in a process of concentration of the sector where the market is increasingly reduced to a few companies. This is the result of the acquisitions and investments made by these groups in recent years, where they have been absorbing large companies in the sector.

In the case of the Pamesa Group, in recent years it has been acquiring large companies in the sector such as Argenta Cerámica, in this case 50%, Cifre Cerámica, Bestile and Taulell TAU, among others. If we look at the case of Argenta Cerámica, we can see that in the attached graph it appears as the fifth most powerful Spanish firm in the ceramics sector, which means that it is also acquiring large firms. It currently operates in more than 150 countries under the commercial brands Pamesa, TAU, Geotiles, Navarti, Prissmacer and Ecoceramic. It has more than 2,500 employees within the group and is the leading producer in Europe and one of the five strongest producers in the world.

This trend of concentration in the ceramics sector will continue in 2021 with several large-scale operations. We can highlight several of them, such as the creation of Altadia on 26 February, which arose from the merger of the Esmalglass-Itaca-Fritta (EIF) group and the ceramics division of Ferro (Ferro TBC). Altadia has thus become one of the most important and leading groups in the frits, glazes, colours and inks sector. The new corporation has a turnover of around 800 million euros, of which 417 million euros belong to the turnover of the EIF group and 386 million euros to Ferro TBC, and has 32 production plants distributed in 19 countries, as well as 19 distribution plants. The companies forming the new group are Esmalglas-Itaca-Fritta together with Ferro TBC, Oximet, Quimicer, Zircosil, Endeka, Gardenia Química, Vetriceramici and SPC colour. The Altadia Group will have approximately 3600 employees worldwide.

Another case that highlights the concentration of the ceramics sector in 2021 is the acquisition by the Pamesa Group of the firm Pulidos La Plana (PLP), dedicated to the polishing of ceramic pieces, which until then belonged to the SEM Group. Thanks to this new acquisition, the group has another plant of more than 7,000 square metres dedicated to ceramic polishing, cutting and grinding, which is located in the town of Onda. Furthermore, with this operation, the Pamesa Group increases its polishing capacity by 360,000 square metres per month, which means an increase of 27% in the polishing segment, where the group is the market leader.

In the case of the Pamesa Group, this type of strategy is working for them as, despite the consequences of the global pandemic caused by Covid-19, the group's sales in 2020 increased by 20% compared to the previous year, 2019, reaching a total turnover of 780 million. Moreover, this trend looks set to continue in 2021, with sales up 32% compared

to the same period in 2020. The idea that the group has is to continue growing along this path by continuing with the investment and expansion plan that they are carrying out, so in the first half of 2021 to the acquisition of Pulidos la Plana will be added the installation of 5 new production lines in their factories to increase their current production capacity.

Another aspect where its growth can be seen is in the increase of its workforce by 15% compared to 2019, with 2,500 employees at present.

After observing the trend of ceramic concentration in recent years and the importance of the large companies in the sector, we are going to make a final point of the work on the conclusions drawn and a personal assessment of it.

7. FINAL CONCLUSIONS

In this last section I am going to explain the conclusions I have been able to draw throughout my work, focusing on the advantages and disadvantages of the concentration of companies in the ceramics sector. In addition, a personal assessment is also included to conclude.

Finally, I am going to make a final conclusion based on the advantages and disadvantages that I have been able to extract from the analysis of the different concepts seen in the work, the material that I have been able to obtain and that has been made available to me and the analysis of the different data and statistics. I will start with the advantages, the most important of which are as follows:

- ❖ Larger companies: the main advantage of business concentration in the sector is the creation of larger companies, thanks to which the other advantages can be realised.
- ❖ Greater capacity for innovation: the sector has a higher technological level thanks to the concentration of companies where, thanks to this high technological level, they are able to have a greater capacity for innovation. Companies have the possibility of acquiring greater capacity to integrate innovations in their production processes and organisation, which allows them to gain advantages over other companies. In addition, companies share experiences among themselves and can develop new forms of innovation.
- ❖ Greater globalisation capacity: thanks to the aspects developed, the cluster companies have a greater capacity to access international markets more easily.

Thanks to the business concentration that exists in the ceramics cluster, the companies acquire greater decision-making power on an international level, being able to benefit from various aspects that this implies, such as the possibility of being able to offer a better image, promote a quality product and design, or being able to access international markets that could take companies much longer individually. This is an important aspect for Spanish ceramics as a large part of its sales are made from exports to other countries.

- ❖ Access to economies of scale: thanks to business concentration, companies can access economies of scale that allow them to have a lower cost per unit produced and, as a consequence, a greater margin to obtain profits.
- ❖ Access to synergies: this provides them with several benefits that they would not be able to achieve individually, such as: cost reduction, attracting new customers, less competition, among others.

After analysing the advantages of business concentration, we are going to analyse the disadvantages of this practice.

- ❖ Loss of territorial control: as a result of the appearance of a large amount of external capital in the sector, part of the companies that form part of the ceramics cluster are controlled by external companies, which means that it is not possible to have complete control over these companies, as well as giving rise to new costs derived from coordination.
- ❖ Appearance of new costs: these appear in those purchasing companies that have acquired new large companies as an external growth strategy, implying new costs derived from the need for coordination between the activities that make up each of the companies. In addition, when acquiring a new company, another weakness is produced by the loss of the advantage of specialisation in the event that the acquired company carries out another activity within the sector.
- ❖ Decreasing competition in the sector: the concentration of large firms within the sector means that fewer and fewer firms have decision-making power within the sector and therefore tends to result in less and less competition for these large firms. This can have negative consequences for the cluster.

- ❖ Barriers to entry: with the concentration of companies within the sector, where there are fewer and larger companies, new barriers appear for those companies that want to enter the market. Some of these barriers are the following:
 - Economic barriers: companies that want to enter the market need start-up capital that may be too high to be able to afford. In addition, large investments are also made in innovation, development and research (R&D&I), which is a key aspect.
 - Economies of scale: many of the companies that are already part of the sector have economies of scale, which allow them to manufacture each unit at a lower volume than new companies that can access the market and do not have economies of scale.
 - Strategic assets: companies that are already part of the sector have favourable access to raw materials or have logistics centres located in strategic areas.

These barriers make it more difficult for new companies to enter the sector.

Another of the conclusions that can be drawn from the analysis carried out during the study are the different types of growth strategies being implemented by companies in the ceramics sector. A clear example of the fact that each firm chooses a different type of strategy can be found in the two companies with the highest turnover in the sector, Pamesa Cerámica and Porcelanosa Group.

In the case of Pamesa, it has opted for external growth, i.e. its growth is based on the acquisition of other companies, as we have already explained in previous points. On the other hand, in the case of Porcelanosa, it has opted for internal growth, where its growth is focused on expanding its facilities by investing in its own structure.

To conclude this work, I am going to make a personal assessment based on the ideas I have been able to extract from the work.

I think that the concentration of companies helps the ceramic sector in a positive way as it allows the companies in the sector to increase in size and in this way they can compete and access international markets more easily. In my opinion, this aspect is key for the ceramics cluster because having a greater capacity for globalisation and being able to compete internationally allows companies to continue with a high level of exports, on which they depend to a large extent, as this is one of the main sources of turnover for companies in the ceramics sector.

It is true that there are several disadvantages as I have analysed above, but I believe that the advantages outweigh the disadvantages and allow the ceramics industry to continue to be important not only for the province of Castellón, where it generates a large number of jobs and boosts the economy as it is the most important industry in the area, but also on a national level since, as I mentioned at the beginning of this paper, it is one of the three most important industries in Spain. A large part of this is generated from the exports that the sector manages to make, being the second most important exporter in this sector.

I also think that labour has some limitations. This is because the concentration of companies is a practice that is being carried out more intensively in recent years but it is still too early to know how far-reaching it will be, so it would be necessary to monitor it over the next few years to find out for sure whether it will generate sufficient benefits as expected.

8. BIBLIOGRAPHIC REFERENCES

Alimarket. Retrieved 21 of April 2021 from

<https://www.alimarket.es/construccion/informe/327771/informe-2021-sobre-azulejos-en-espana>

ANFFECC. Retrieved 14 of April 2021 from

<https://www.anffecc.com/es/>

ASCER. Retrieved 12 of April 2021 from

<https://www.ascer.es/>

ASEBEC. Retrieved 15 of April 2021 from

<http://www.asebec.org/>

Becattini, G (2000). *Il distretto industrial:un nuovo modo di interpretare il cambiamento economico*. Torino: Rosenberg & Sellier.

Castellón Plaza. Retrieved 06 of May 2021 from

<https://castellonplaza.com/>

El Periódico Mediterráneo. Retrieved 08 of May 2021 from

<https://www.elperiodicomediterraneo.com/>

Catedra de transformació del model económic (UJI-GVA) (2021). *Concentración y adquisiciones de empresas del clúster cerámico durante el periodo 2010-2020*.

Economía 3. Retrieved 04 of May 2021 from

<https://economia3.com/>

Expansión. Retrieved 05 of May 2021 from

<https://www.expansion.com/>

GVA (2018). *Plan estratégico de la industria valenciana*

Marshall, A (1890). *The principles of Economics*. Londres: MacMillan.

Periódico del Azulejo. Retrieved 02 of May 2021 from

<https://www.elperiodicodelazulejo.es/>

Porter, M (1990). *The Competitive Advantage of Nations*. Londres: MacMillan.

Universitat Jaume I (2019). *Tema 5: Métodos de desarrollo estratégico (notes of the subject 1024)*. *Unpublished material*.