

BUSINESS CONCENTRATION AND POSSIBLE EFFECTS ON INTER-PROFESSIONAL RELATIONS IN THE CASTELLÓN CERAMIC CLUSTER

P. Corma Canós

QPT S.L.

INTRODUCTION. OBJECTIVE

In the last ten years (2013-2023), we have seen an accelerated business concentration process in the Castellón ceramic cluster, affecting all sub-sectors (tile, glaze, equipment manufacturers, etc.).

This concentration process has taken different forms but with similar results in terms of increased average company size, a decline in the total number of companies (an effect stemming from the grave crisis of 2010-2012 and its aftermath, as well as from the current crisis in demand as a result of the war in Ukraine), and a potential impact on what is known as the ceramic cluster, both from the point of view of business relations and the global map of interrelations. These interrelations are one of the basic characteristics of any cluster.

The sector pursues four different growth strategies, which have become evident in recent years: growth by acquisition of other companies, expansion of production sites, foreign capital investment through large groups – holdings - and acquisitions by investment funds (1).

Another of the conclusions drawn in the paper referred to above was that in the glazes, frits and ceramic colours segment, in the last decade there have been fewer takeovers in number, although they have been much more significant in financial terms.

This newly emerging situation may affect relations between companies, internal relations within companies, and may affect professionals in the sector, both in their situation within organisations and in their professional relations with peers. All of this may affect the classic image of our cluster, understood as a set of relations between current stakeholders, who have made innovation one of their cornerstones to achieve competitiveness on international markets (2).

"Firms in regional clusters exploit both specific local resources and external global knowledge, respectively, to strengthen their competitiveness, extending the influence of regional innovation systems (3). The academic literature has also pointed out how the circulation of specialist knowledge within the cluster seems to be bound by the specialisation of suppliers and actors" (4). Attention is also drawn to the negative, or at least limiting, effects that over-reliance on such communications can have on firms (5).

The knowledge dissemination factor is fundamental to creating a smooth flow of tacit and explicit knowledge. This process is aided by the use of a common language, culture, understanding, and by the personal relations of local workers who are implicitly motivated by the same goals (6).

There may be several factors that make some companies more dynamic and innovative than others. Indeed, territory (a determining factor in the configuration of a cluster) is cited as a factor to be accounted for when studying companies' innovative capability. Innovation is associated with national, regional and sectorial innovation systems, which in turn are based on:

- *Companies and people.*
- *R&D&I entities.*
- *Political institutions.*

The territory is the place where these stakeholders meet. One way of explaining this is through the Triple Helix Model on which business clusters are based and which defines the system of economic, political, institutional and socio-cultural actors located around a specific territory, which is not only the physical context where they are located but also implies the place where they organise themselves to use their abilities and exchange knowledge, resources, goods and services.

Among the aforementioned actors/resources, it is important to highlight the relational asset that manifests itself in the possibility of co-operation between companies, institutions and people located in the same territory. One of these variables is the exchange of information between people belonging to a cluster (7).

The aim of this study is to analyse the effect that business concentration can have on inter-professional relations in the cluster. More specifically, it studies whether "concentration" can affect their training and qualifications as well as knowledge exchange and dissemination.

EXPERIMENTAL

To conduct this study, a survey was carried out among members of the cluster (the majority of whom belong to the Ceramic Technicians' Association, ATC).

The following table (Table 1) provides details of the survey:

	2020	2023
Scope	Workers from ceramic sector firms in Castellón province	Workers from ceramic sector firms in Castellón province
Sampling technique	Convenience sampling	Convenience sampling
Data collection technique	Online questionnaire via Google Forms platform	Online questionnaire via Google Forms platform
Size of sample	140 workers from the ceramic sector in Castellón province	120 workers from the ceramic sector in Castellón province
Geographical scope of sample	Ceramic sector workers in Castellón province	Ceramic sector workers in Castellón province
Sampling error	7% ($p=q=0.5$, confidence level=95%)	9.13% ($p=q=0.5$, confidence level=95%)

Table 1 – Technical sheet for the research

The survey enabled replies to be broken down by:

- Age.
- Sex.
- Years' experience in the industry.
- Number of firms where the worker has been employed.
- Size of company.
- Whether it belongs to a business group.
- Sub-sector within the cluster.
- Degrees/qualifications.
- Work department.
- Job (in the organisation chart).
- Etc.

A Likert scale of 1-5 was used, where 1 represents total disagreement and 5 total agreement. All questions focused on analysing the perception held by professionals in the cluster regarding company concentration at two points in time during the process (2020 vs. 2023).

RESULTS AND DISCUSSION

The following table presents an overall summary of the results obtained in both periods:

BLOCK I – TRANSFER OF KNOWLEDGE		
Item: Does the concentration process ...	Mean 2020	Mean 2023
1.1 Encourage a climate of information exchange between professionals from the same company?	3.85	3.73
1.2 Encourage the occurrence of informal contacts between professionals from the cluster?	3.74	3.63
1.3 Help technical knowledge to be exchanged between professionals from different companies?	3.51	3.56
1.4 Enable professionals to be more mobile between companies?	3.89	3.65
1.5 Generally speaking, is the ceramic cluster more open to knowledge transfer?	3.29	3.36
Overall score for block	3.65	3.58

BLOCK II – WORKER TRAINING		
Item: Does the concentration process ...	Mean 2020	Mean 2023
2.1 Favour the qualification of professionals?	3.87	3.80
2.2 Encourage job positions to be more specific	3.71	3.68
2.3 Increase in-house training inside companies?	3.59	3.71
2.4 Favour opportunities for placements or internships for new graduates?	3.73	3.78
2.5 Favour external training requested by professionals?	3.62	3.67
Overall score for block	3.7	3.73

BLOCK III – INTER-COMPANY RELATIONS		
Item: Does the concentration process ...	Mean 2020	Mean 2023
3.1 Favour innovation?	3.36	3.11
3.2 Enable collaboration with suppliers to develop new solutions?	3.61	3.61
3.3 Increase interest in participating in knowledge forums (trade fairs, congresses...)?	3.66	3.55
3.4 Improve collaboration between companies in the search of solutions to problems?	3.54	3.38
3.5 Encourage better remuneration?	2.89	2.92
Overall score for block	3.41	3.32

Table 2 – Mean scores Blocks I, II, III

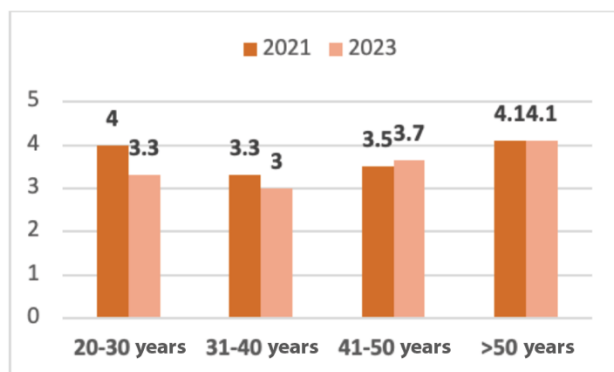
In general, the mean scores are not particularly high (given the sample size) in any of the three blocks, as none of them reach 4.0. The highest level of overall agreement is achieved for the questions in the second block referring to training, while the lowest degree of agreement is found in the third block dealing with relations between companies.

In this case, several ANOVA analyses were carried out in order to detect significant differences in perceptions about the concentration process in the ceramic sector in Castellón province. The variables *sex*, *number of companies in which the person has worked* and *number of training courses taken per year* did not reveal significant differences in any of the blocks analysed.

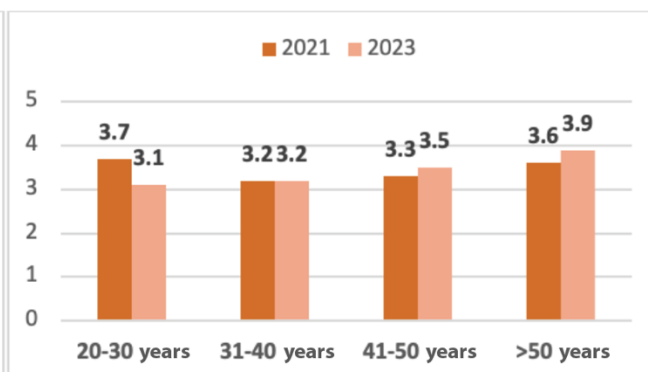
Some of the results are presented below and may help for a final analysis:

Age: Respondents were segmented by age, with the results shown in Graphs 1,2,3,4.

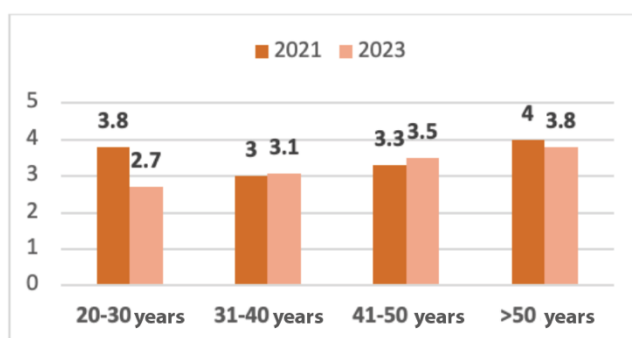
It can be seen that as the age of the respondents increases, the scores returned are higher, except in the youngest segment, which displays results similar to those from the oldest workers, except in the case of “*company concentration favours external training requested by professionals*”.



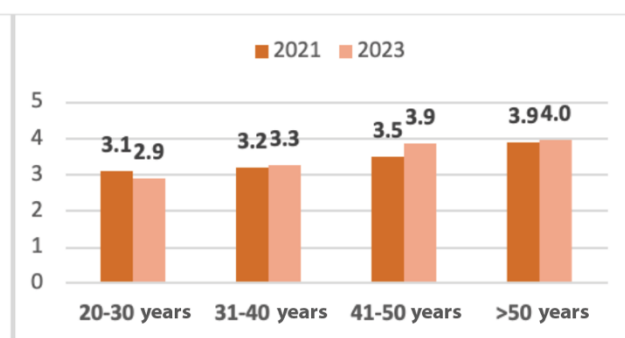
Graph 1 – ANOVA age. "Company concentration favours the qualification of professionals".



Graph 2 – ANOVA age. "Company concentration increases in-house training in companies".



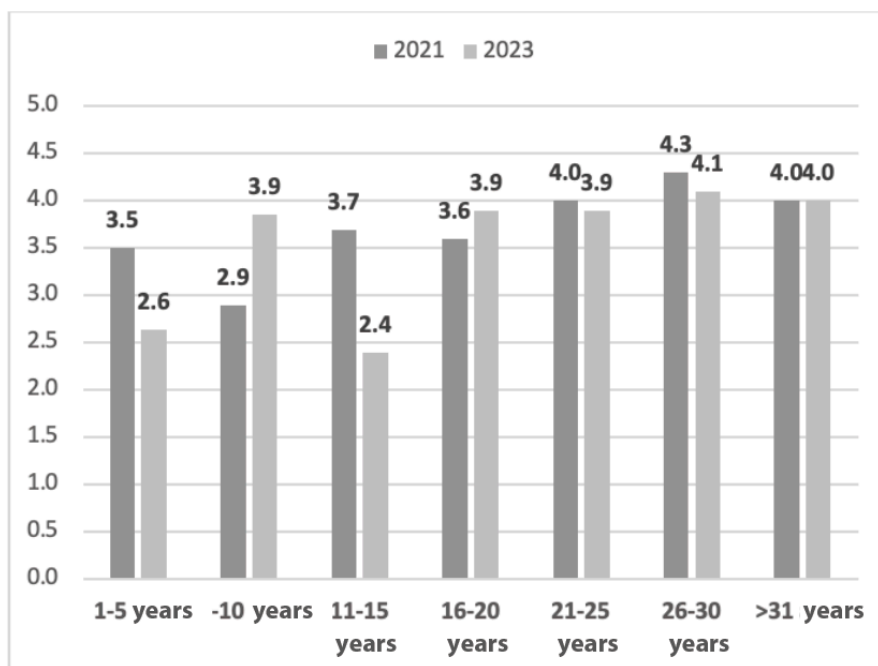
Graph 3 - ANOVA age "Company concentration increases interest in participating in knowledge forums (trade fairs, congresses...)"



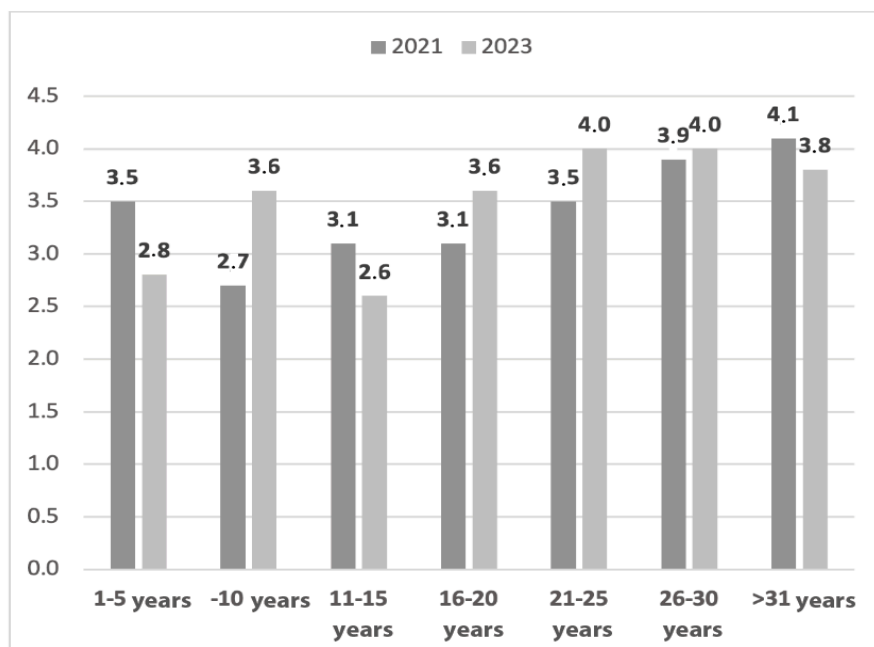
Graph 4 - ANOVA age. "Company concentration favours external training requested by professionals".

Years of experience: On this occasion, it was segmented by years of employment in the cluster (Graphs 5,6,7,8).

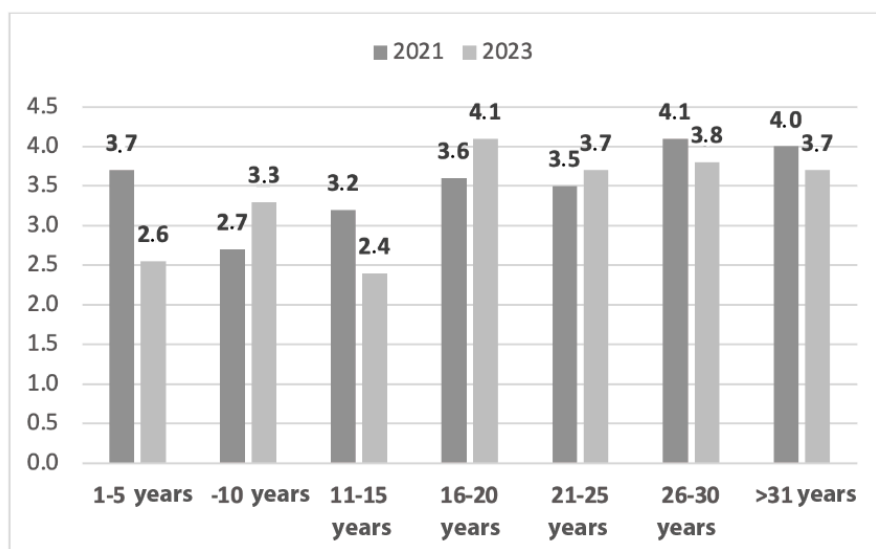
The same pattern can be observed as above, except in the last one (Graph 8) referring to "concentration favours informal contacts between professionals in the cluster", where the scores from the 11-15 years group are lower, and these are people who have a consolidated presence in the cluster.



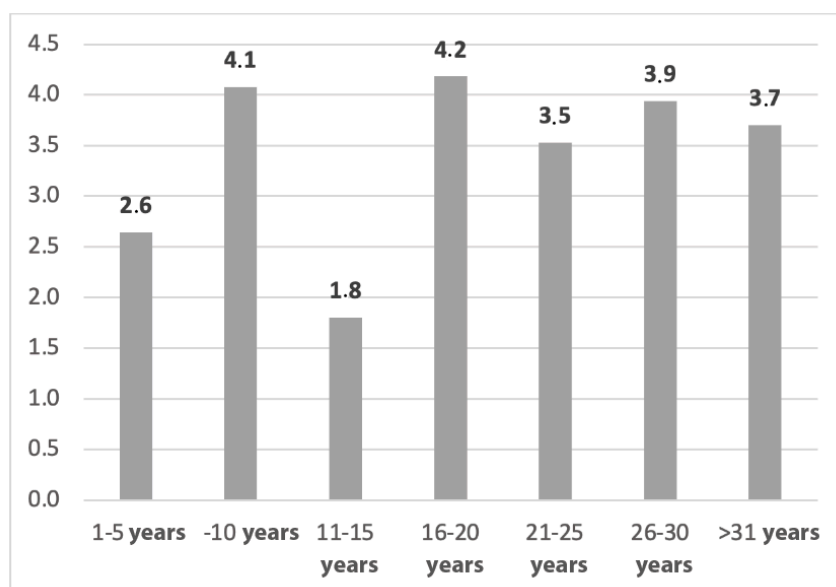
Graph 5 - ANOVA years of experience. "Company concentration favours the qualification of professionals".



Graph 6 - ANOVA years of experience. "Company concentration increases in-house training in companies".



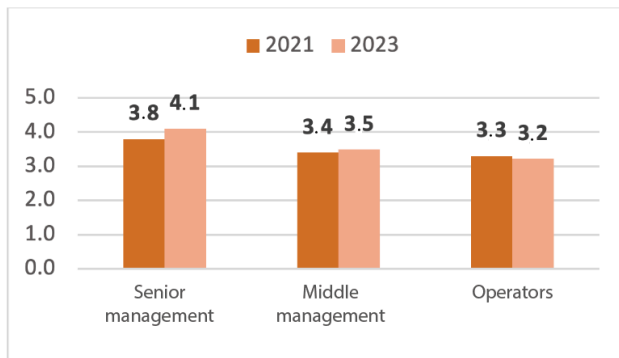
Graph 7 - ANOVA years of experience. "Company concentration increases interest in participating in knowledge forums (trade fairs, congresses...)".



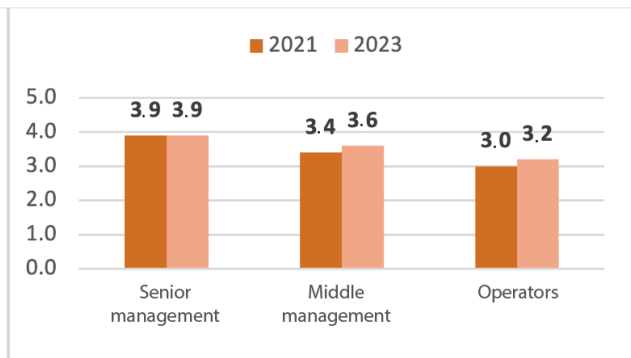
Graph 8 - ANOVA years of experience. "Company concentration favours informal contacts between professionals in the cluster".

Job position: On this occasion, it was segmented by job position or role in the organisation (Graphs 9, 10, 11).

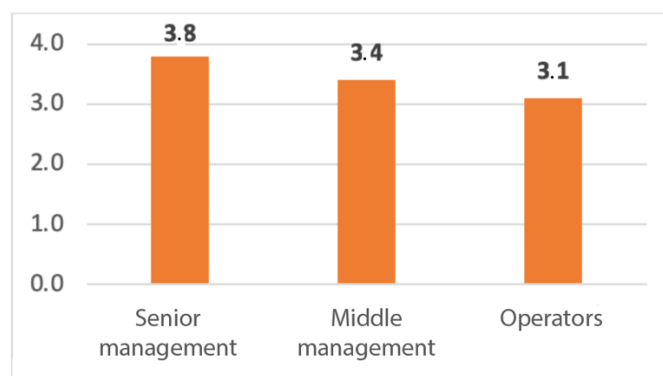
In all cases, a less favourable opinion of the connection between business concentration and the question tends to be seen, with Management always showing a more favourable opinion and Operators a less favourable attitude, in the sense that company concentration does not favour (or favours comparatively less) the issues asked. The lowest score is given precisely to the statement "company concentration increases interest in participating in knowledge forums", although in all cases the scores are very similar.



Graph 9 – ANOVA job position held.
"Company concentration increases in-house training in firms".



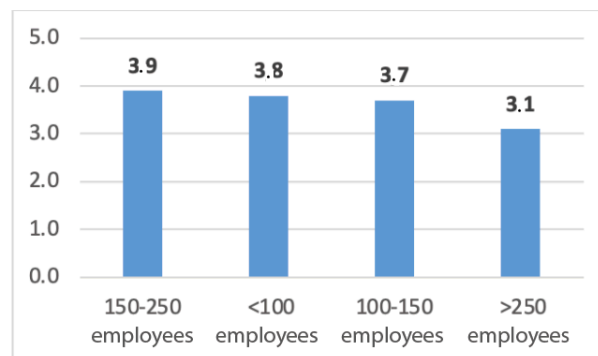
Graph 10 – ANOVA job position held.
"Company concentration favours external training requested by professionals".



Graph 11 – ANOVA job position held.
"Company concentration increases interest in participating in knowledge forums".

Size of company: On this occasion, it was segmented by size of the company where the person works in the cluster (Graph 12).

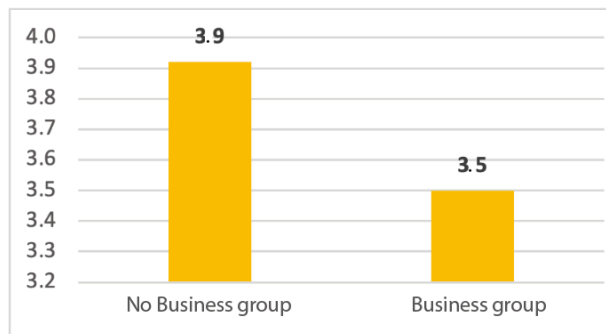
In the factor that was found to be significant, a decreasing pattern can be seen as company size increases for the statement *"company concentration increases in-house training"*.



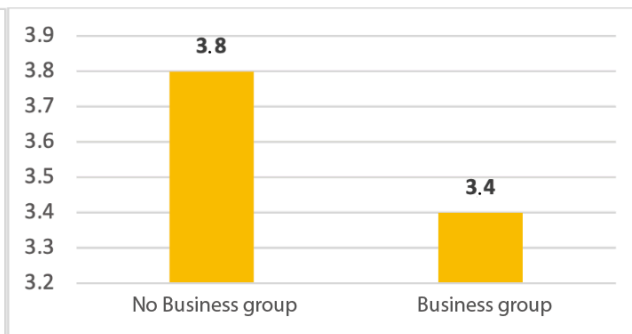
Graph 12 – ANOVA size of company.
"Company concentration increases in-house training in firms".

Member of a business group: On this occasion, it was segmented according to whether or not they belong to a business group in the cluster (Graphs 13,14).

It can be seen that people belonging to a Business Group have a lower opinion about questions referring to the possibilities of in-house or external training.



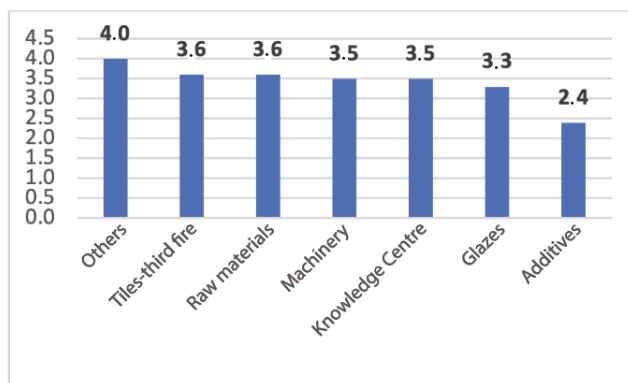
Graph 13 - ANOVA business group.
"Company concentration increases in-house training in firms".



Graph 14 - ANOVA business group.
"Company concentration favours external training requested by professionals".

Business sub-sector: On this occasion, it was segmented by the sub-sector where they work (Graph 15).

In factors that were found to be significant, similar scores were observed in all sub-sectors except for that of "additives", which is lower for the statement "company concentration helps technical knowledge to be exchanged between professionals from different companies"; the lowest score came from the glazes subsector - this gives an idea of where there is more knowledge it is sought to preserve.



Graph 15 – ANOVA business sector.
"Company concentration helps to ensure that technical knowledge is exchanged between professionals from different companies".

CONCLUSIONS

Regardless of the comments made on each block of figures, in which the results obtained are analysed, a series of more general conclusions are presented below.

The following conclusions can be drawn from the information, based on the data obtained:

- A significant number of professionals took part and the overall representativeness of the sample is very high.
- This is the case for both periods.
- Turning to the block of questions on the influence of the concentration process and comparing the two periods, the following may be observed (Table 3):
 - The general opinion on whether *"It favours knowledge transfer"* has an average score (not high), the same as for whether *"It favours worker training"*.
 - The opinion on whether *"It favours relations between companies"* scores even lower.
 - The lowest scores are for *"Generally speaking, the cluster is more open to knowledge transfer"* and *"It favours the external training requested by professionals"*.

Ítem	Mean 2020	Mean 2023
It encourages informal contacts between professionals from the cluster	3.74	3.63
It helps technical knowledge to be exchanged between professionals from different companies.	3.51	3.56
Generally speaking, the ceramic cluster is more open to knowledge transfer.	3.29	3.36
It favours external training requested by professionals.	3.62	3.67

Table 3 – Mean scores in both periods (maximum score 5)

- From the ANOVA of each variable, it can be concluded that the sector, in its concentration process, does not seem to favour (average score, not high) knowledge transfer among professionals in the sector or the external training requested by professionals.
- The most positive evaluations are presented within the segment of people marked as belonging to senior management, which decrease in those marked as middle management and operators.
- No differences are found as a result of gender, number of companies in which they have worked, or number of courses attended.

- This outcome indicates the existence of greater uncertainty among people who, due to their position in the company, have less access to information within the organisation, i.e., those who are younger and have fewer years of experience.
- Reading in the opposite direction:
 - A greater focus on knowledge within companies and its circulation “behind closed doors”, as well as a probable increase in in-house training.
- It should also be noted that these assessments are more negative in the tiles and glazes sector (i.e., those where the greatest concentration is taking place) than in that of the other stakeholders.
- If to that we add what has already been mentioned throughout this paper on the distribution by age/experience, uncertainty appears as the most prominent aspect to be taken into account by people in the cluster.

As aspects that would allow conclusions to be drawn more in line with reality and its trends, it is recommended:

- That the consultation be conducted again in 2026 when, foreseeably, the concentration process will have been consolidated.
- That associated confirmation variables be introduced, such as: courses actually taken (in-house and external training plans), presentation of papers, communications or lectures as concrete items of knowledge exchange, actual investments in R&D&I projects with knowledge centres.

ACKNOWLEDGEMENTS

The authors wish to thank, once again, all the professionals in the cluster for their participation in this type of study by responding to the questionnaires.

Thanks go particularly to the Ceramic Technicians' Association (ATC) for their indispensable support in the fieldwork, and for their interest in learning the views of the people in the cluster regarding their training needs.

REFERENCES

- [1] <https://www.xarxamodeleconomic.uji.es/agenda/conferencia-sobre-el-proces-dadquisicions-dempreses-en-el-cluster-ceramic-i-les-seues-consequencies/> También en conferencia en Club Calidad Cerámica y ATC.
- [2] Molina-Morales, Francesc Xavier. (2002). Industrial districts and innovation: the case of the Spanish ceramic tiles industry. *Entrepreneurship & Regional Development*, 14(4), 317–335.
- [3] Clusters and knowledge: Local buzz, global pipelines and the process of knowledge creation Harald Bathelt, Anders Malmberg & Peter Maskell
- [4] Albors Garigós, José: "El poder del clúster, la reestructuración de los regímenes tecnológicos de industrias maduras a través de innovaciones disruptivas". <https://www.mincotur.gob.es/Publicaciones/Publicacionesperiodicas/EconomiaIndustrial/RevistaEconomiaIndustrial/391/JOSE%20ALBORS.pdf>
- [5] Molina-Morales, F. X., & Martínez-Fernández, M. T. (2009b). Too much love in the neighborhood can hurt: How an excess of intensity and trust in relationships may produce negative effects on firms. *Strategic Management Journal*, 30(9), 1013–1023.
- [6] Molina-Morales, F Xavier, Martínez-Fernández, M. T., Ares-Vázquez, M. A., & Valmir Emil Hoffmann. (2008). *La estructura y naturaleza del capital social en las aglomeraciones territoriales de empresas: Una aplicación al sector cerámico español*. Fundación BBVA.
- [7] Molina-Morales, F Xavier. (2001). European industrial districts: Influence of geographic concentration on performance of the firm. *Journal of International Management*, 7(4), 277–294.