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XXIII Congreso de Ingeniería de Organización



**Organizational
Engineering
in Industry 4.0**

BOOK OF ABSTRACTS

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**“13th International Conference on
Industrial Engineering and
Industrial Management” and
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How fast is Additive Manufacturing disrupting the Spanish manufacturing sector? Last three years' evolution.

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Keywords: Additive Manufacturing, AM, disruption, future evolution, flexible manufacturing;

1 Introduction

Even if Additive Manufacturing (AM from now on) is known since Chuck Hull, founder of 3D system company, invented in 1986 Stereo lithography (SLA) technique, over the last decade all the involved parties have shown a keen interest, and it seems that this is only going to intensify in the future (Wohler's, 2018).

There is still no global consensus about how, when and in what direction is AM going to affect the manufacturing business. There are two main factors for this fact:

- The “multivariable” character of AM.
- There is still a lot to invest and to discover in key aspects, mainly in what concerns to materials and depositing technologies for the machines.

2 Objectives

According to the International Monetary Fund, Spain is the 14th largest economy in the world, based on 2018 GDP, and its industrial sector is one of the most important ones for its economy (Jung, Ruiz-Cabrero and de Mur, 2014). Thus, the analysis of the potential influence and impact of additive manufacturing on the

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Spanish manufacturing sector, and its evolution, are critical factors to be considered by the business-related companies, when crafting their future strategies.

3 Methods

Three main phases were identified as crucial to achieve the objectives. These are the following:

1. In-depth interviews with relevant executives of representative companies.
2. Identification of the main disruptive aspects to take into consideration to monitor the evolution of AM impact over the industry (Wahlström and Sahlström, 2016; Pérez-Pérez, Gómez and Sebastián, 2018)
3. On-line survey to a representative focus-group of companies direct or indirectly related to AM on 1Q 2016, repeating the same survey on 1Q 2019.

4 Results

From Q1 2016 to Q1 2019, which represent the three-year researching period, the whole AM related business turnover evolution of the companies of the survey can be roughly estimated around a CAGR of 29%. This fact clearly shows the interest of the investigated subject.

5 Conclusion

After the research work, some important conclusions for AM Spanish activities can be obtained.

- Most of the companies that had started AM activities or divisions, before 2016, remain with them, have increase the related turnover, and consider that they would be important for their business in the future.
- It still seems to be a long way to go to find a consensus about the manufacturing technologies that will consolidate in the future.
- Although, for the time being, AM is far from becoming a dominant technology in industrial manufacturing business, some interesting information for its future development can be extracted from the survey.

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