# Innovation, knowledge intensity and productivity in the Spanish services sector

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**ABSTRACT:**

This study aims to determine whether there are significant differences in the innovation process and its impact on the productivity of Spanish services firms, according to the level of knowledge intensity of the various sub-branches of services.

To this end, microdata from the Technological Innovation Panel (PITEC) for the Spanish economy during the period of 2008-2013 were used, and the Crépon, Duguet and Mairesse (CDM) structural model was applied. The model incorporates the decision of the firm to innovate or perform R&D, the amount of the innovative effort, the production of innovation considered as an output of the investment in R&D, and the impact of such innovation on the productivity of the firm. The use of panel data for services firms with this structural model contributes to the scarce literature regarding innovation and productivity in the services sector.

Following the classification of economic activities according their technology level prepared by Eurostat, we considered two subsamples, knowledge intensive service firms and less knowledge intensive service firms.

In the two subsamples, it was found that there are similarities in the determinants of innovation and its intensity, that the predicted value of R&D intensity has a positive effect on the output of the innovative process, and that the latter has a positive impact on productivity. In these last two stages of the model the differences between the subsamples are considerable. In addition, heterogeneous patterns were observed at every stage of the model regarding the regional location of the firms.

**KEYWORDS:** Innovation, knowledge intensity, productivity, services, CDM structural model, PITEC.