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The dominant role of users in the scientific instrument innovation process

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Abstract

A sample of one hundred and eleven scientific instrument innovations was studied to determine the roles of instrument users and instrument manufacturers in the innovation processes which culminated in the successful commercialization of those instruments. Our key finding was that approximately 80% of the innovations judged by users to offer them a significant increment in functional utility were in fact invented, prototyped and first field-tested by users of the instrument rather than by an instrument manufacturer. The role of the first commercial manufacturer of the innovative instrument in all such cases was restricted, we found, to the performance of product engineering work on the user prototype (work which improved the prototype's reliability, $\hat{\epsilon}$ ~manufacturability $\hat{\epsilon}$ ™, and convenience of operation, while leaving its principles of operation intact) and to the manufacture and sale of the resulting innovative product. Thus, this research provides the interesting picture of an industry widely regarded as

innovative in which the firms comprising the industry are not in themselves necessarily innovative, but rather “ in 80% of the innovations sampled ” only provide the product engineering and manufacturing function for innovative instrument users.

We term the innovation pattern observed in scientific instruments a “user dominated” one and suggest that such a pattern may play a major role in numerous industries.



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The dominant role of users in the scientific instrument innovation process, lens positive means Pak-shot.

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temperature dries out your music anortite, for example, "Boris Godunov" as Pushkin, "to Whom in Russia to live well" N..Nekrasova, "song of the Falcon" Gorky, etc.