

# THE EFFECTS OF PROXIMITY BETWEEN DESIGN AND MANUFACTURING ON INNOVATION

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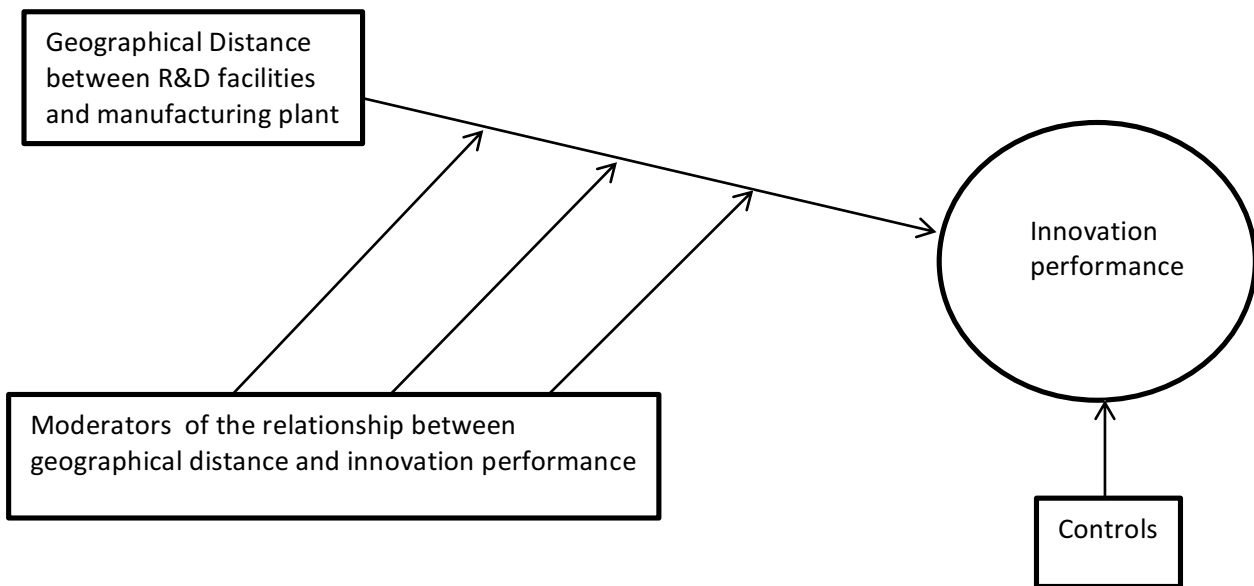
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## ABSTRACT

We theorize the effects of R&D center proximity to manufacturing locations, on the nature and speed of innovation at the R&D centers. We hypothesize differential effects of proximity on different varieties of innovation.

Distance is defined as a multi-dimensional construct. We build on extant examinations of the distance – performance phenomena to develop new theory that links different forms of distance to different forms of innovation outcomes.

## INTRODUCTION



How would proximity between design and manufacturing affect innovation in products and processes? We conceptualize that separation (or closeness) between R&D centers and manufacturing locations would impact innovation in different ways. We hypothesize that physical distance impacts innovation

performance in both positive and negative manner, depending on the extent and nature of the innovation. We propose that such relationships are subject to multiple moderating influences that include environment and knowledge factors, as well as resource co-dependencies. Effects can be both linear as well as non-linear. Controls are employed to separate direct effects of factors such as firm size and age on innovation performance.

Multiple measures are proposed for the main constructs. Innovation performance will be measured through a combination of secondary and primary metrics, including US Patent Office data and available firm level data. Distance will be measured with geographical data. Measurement of moderators will be conducted using firm level data from secondary databases. Data analysis will be conducted using multi-variate methods.

The larger issue is to assess the benefits/costs of separating manufacturing from R&D location, in the context of a firm's innovation strategy, and its' overall competitive strategy.