www.elsevier.com/locate/ijpe

Adoption of 3D-Printing Technologies in Manufacturing: An Empirical Analysis

Dara G. Schniederjans

PII: S0925-5273(16)30331-0
DOI: http://dx.doi.org/10.1016/j.ijpe.2016.11.008
Reference: PROECO6581

To appear in: *Intern. Journal of Production Economics*

Received date: 7 July 2016
Revised date: 21 October 2016
Accepted date: 12 November 2016

Cite this article as: Dara G. Schniederjans, Adoption of 3D-Printing Technologie in Manufacturing: An Empirical Analysis, *Intern. Journal of Productio Economics,* http://dx.doi.org/10.1016/j.ijpe.2016.11.008

Adoption of 3D-Printing Technologies in Manufacturing: An Empirical Analysis

Dara G. Schniederjans[1]

Department of Supply Chain Management, University of Rhode Island, Kingston, RI 02881, United States of America

schniederjans@uri.edu

Abstract

Current manufacturing literature discusses the potential for 3D-printing to optimize both operations and supply chain management performance. In addition various countries have invested heavily in encouraging the adoption and use of 3D-printing in manufacturing. Despite this, very little current literature exists on addressing the question: what impacts 3D-printing adoption? Through the use of diffusion of innovations theory and unified theory of acceptance and use of technology, this study addresses three research inquiries. 1. Does top-management adoption category impact 3D-printing speed of actual adoption as well as speed of potential adoption in manufacturing? 2. What are the main drivers of intention-to-adopt 3D-printing in manufacturing from the perception of top-management on the innovation? And 3. Does top-management perceptions differ based on adoption category in the context of 3D-printing adoption? Survey analysis was used to examine these questions with 270 top-management representatives from manufacturing firms across the United States. The results provide evidence that top-management adoption category impacts potential speed of adoption. In addition the results provide conflicting evidence on the role of complexity and effort expectancy in intention-to-adopt 3D-printing. Post-hoc moderation analyses suggest innate individual characteristics of top-management play a role in the impact of these perceptions on intention-to adopt 3D-printing.

Keywords: 3D-printing technologies; innovation management; manufacturing strategy

[1] Phone: 401-874-4372