



# Social manufacturing: When the maker movement meets interfirm production networks

Markko Hamalainen\*, Jesse Karjalainen

*School of Science, Aalto University, P.O. Box 11000, Aalto FI-00076, Finland*

## KEYWORDS

Social manufacturing;  
Sharing economy;  
Maker movement;  
3-D printing;  
Cloud manufacturing

**Abstract** New business models harnessing the power of individuals have already revolutionized service industries and digital content production. In this study, we investigate whether a similar phenomenon is taking place in manufacturing industries. We start by conceptually defining two distinct forms of firm-individual collaboration in manufacturing industries: (1) social cloud manufacturing, in which firms outsource manufacturing to individuals, and (2) social platform manufacturing, in which firms provide manufacturing services to individuals. We then empirically investigate the nature of firm-individual collaboration within these forms, focusing on the role of individuals. We find that the individuals are often makers who view their participation primarily as a hobby and are driven mainly by nonmonetary benefits, that the design process often involves both parties, and that the two forms of collaboration exploit different enabling technologies. Our findings suggest that firms working with individuals can potentially reap multiple benefits, including fresh ideas, broader design support, and quick delivery times. This article contributes to an improved understanding of how firms can build potentially disruptive business models in manufacturing industries by leveraging individuals, thereby adding to the emerging stream of literature on social manufacturing.

© 2017 Kelley School of Business, Indiana University. Published by Elsevier Inc. All rights reserved.

## 1. Changing business models in service industries and in content production

Rapid technological development in information and communications technologies, especially in

relation to social media applications (Kaplan & Haenlein, 2010; Kietzmann, Hermkens, McCarthy, & Silvestre, 2011), has resulted in new business models that emphasize cooperation between firms and individuals. Service production has already been revolutionized by the use of diffuse private agents. Well-known examples are Uber and Airbnb (Zervas, Proserpio, & Byers, in press). The same is true for digital content production in the vein of YouTube and Wikipedia (Benkler, 2006; Bruns,

\* Corresponding author

E-mail addresses: [markko.hamalainen@aalto.fi](mailto:markko.hamalainen@aalto.fi) (M. Hamalainen), [jesse.karjalainen@aalto.fi](mailto:jesse.karjalainen@aalto.fi) (J. Karjalainen)

2008). This sharing economy trend is disrupting established industries around the world. Beyond the content production, transportation, and lodging industries, many others have been affected, such as household work (Isaac, 2015), consumer goods recycling (Arsel & Dobscha, 2011), and personal financing (Kuppuswamy & Bayus, 2015).

We are just beginning to understand the sharing economy (Cheng, 2016). Some scholars see individuals as its central actors (e.g., Belk, 2014); others emphasize the roles of companies and governments (e.g., Laamanen, Pferrer, Rong, & Van de Ven, 2016). While the term sharing economy might evoke ideas of individuals sharing their excess resources with or without compensation, what is perhaps more central to the concept is collaboration between participants.

But what about firm-individual cooperation in manufacturing industries? In his book on 'produsage'—that is, user-led content creation—Axel Bruns (2008, p. 389) stated: "As von Hippel [2005] points out, clearly 'production and diffusion of physical products involves activities with significant economies of scale,' and a direct translation of produsage to the physical realm is therefore unlikely." In this article, we look at the current situation in manufacturing to find out if this view is still accurate. We begin with a brief review of recent research in this area.

## 2. Previous research: Social manufacturing and value creation by individuals

The term *social manufacturing* captures the phenomenon of shared participation between firms and individuals in the production of physical goods. However, there is no established definition of how exactly this sharing might happen. When this term appeared in a *BusinessWire* (2011) release, it referred to the use of in-house social media applications for managing distributed manufacturing. The following year, Paul Markillie's (2012) article in *The Economist* gave the term a more individual-oriented meaning: "A new industry is emerging. It might be called social manufacturing . . . much of what is coming will empower small and medium-sized firms and individual entrepreneurs." Markillie's definition was less firm centric than that in *BusinessWire*, allowing for the possibility that personal fabrication might be re-entering the manufacturing scene, which has been dominated by companies since the industrial revolution. These firm-centric and individual-centric views could be termed 'institutional' and 'diffuse,' respectively.

In the practitioner-oriented context, the term social manufacturing has tended to follow Markillie's view of diffuse individual agency, whereas academic scholars in operations management research have taken a more firm centric or institutional view (e.g., Cao & Jiang, 2012; Jiang, Ding, & Leng, 2016; Shang et al., 2013). They, too, have recognized the importance of individuals, but more as consumers than as producers, since their focus is on social manufacturing as an advanced form of mass customization. We try to strike a balance between the different views on social manufacturing by seeing it as significant cooperation between established firms and independently operating individuals.

Looking more broadly beyond just the manufacturing field, the idea of independent individuals working cooperatively with organizations is a little-researched area. Even scholars who have focused on the importance of individuals in value creation have not accorded them full agency, instead tending to perceive individuals as filling assisting roles, either as creative employees (e.g., Lepak, Smith, & Taylor, 2007) or as sophisticated consumers (e.g., Prahalad & Ramaswamy, 2004). Even stakeholder theory (Freeman, 1984), which is appreciated for its pluralism, fails to depart from firm-centric thinking. A recent article by Tantalo and Priem (2016, p. 314) identified the "key unanswered questions" in stakeholder theory research: "How can firms create different types of value for different stakeholders?" (Parmar et al., 2010, p. 432) and "How [can firms] create value simultaneously for multiple stakeholders?" (Freeman, Harrison, & Wicks, 2007, p. 53). Another topic that stakeholder theory has not yet addressed is what value creation actually means to different stakeholders (Harrison & Wicks, 2013).

To shed light on this under-researched area, we set out to study how the social manufacturing phenomenon is unfolding in the current manufacturing scene. More particularly, we wanted to know why now and what for: That is, what might be the present factors facilitating this phenomenon, and what are the motivational drivers for the participants, both firms and individuals?

## 3. Methods

Because firm-individual cooperation in manufacturing industries remains a little-researched area, our approach to data collection and analysis is qualitative (Patton, 1990). A case study such as this one is particularly suited for creating a general understanding of a larger phenomenon by focusing on specific situations (Eisenhardt, 1989; Yin, 2013).

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات