



Customer participation and new product performance: Towards the understanding of the mechanisms and key contingencies

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ABSTRACT

In a study of 243 firms of varying sizes across 14 different industries, we investigate the effect of customer participation on new product development performance. We confirm that overall customer participation is positively related to new product development performance and that the effect is mediated by innovativeness. We also demonstrate that these effects are contingent upon absorptive capacity of the firm in question such that firms with high absorptive capacity stand to gain more from engaging their customers in new product development than firms with low absorptive capacity, especially at the later stages of the NPD process. The results are robust to alternative estimation techniques, measures employed to operationalize key concepts, and the industrial makeup of the sample. Post hoc analyses provide non-trivial managerial implications for the decision makers at the firm level.

1. Introduction

Extant research has acknowledged that to ensure new product success, customer participation in the new product development (NPD) process is essential (Chang and Taylor, 2016). In fact, the overall idea has run the gamut from a low-key, early insistence on “listening to the voice of the customer” in search of unmet customer needs and solutions (see, e.g., Griffin and Hauser, 1993), all the way to embracing customer input in all stages of the NPD process. This evolution is reflected in a plethora of concepts, such as crowdsourcing and open innovation, that have truly blossomed over the last decade (e.g., Chesbrough and Crowther, 2006; Enkel et al., 2009; Poetz and Schreier, 2012; Afuah and Tucci, 2012; Cui and Wu, 2016). Recently, customer participation itself has been considered “the extent to which the customer is involved in the manufacturer’s NPD process” (Fang et al., 2008, p. 91) thus postulating it as an integral part of the NPD sequence. Essentially, customer participation is the integration of customers into firm activities where they share needs- and solution-related inputs into the firm’s NPD processes that the firm may lack internally (Nambisan, 2002; Poetz and Schreier, 2012; Chang and Taylor, 2016). This entails customer involvement in various NPD activities such as ideation, resource inputs, knowledge exchange, and co-development (Fang, 2008; Chang and Taylor, 2016).

While many studies enthusiastically proclaim the benefits of involving customers into the NPD process to achieve greater success via reduction of costs (Auh et al., 2007), decision making improvement (Griffin and Hauser, 1993), increased complementary knowledge and resources (Coviello and Joseph, 2012), and enhanced new product innovativeness (Fang, 2008), a small number of studies suggest that there may be negative aspects to integrating customers into the NPD process. Previous research suggests that customer participation may lead to inefficient NPD processes and lower NPD performance (Chang and Taylor, 2016). Potential reasons for this may be that customers can sometimes be a limited source of innovation because they lack creative ideas (Christensen, 1997), are unable to clearly articulate latent needs (Franke et al., 2013), and increase the complexity for the focal firm trying to manage internal and external knowledge for NPD (Hoyer et al., 2010; Chang and Taylor, 2016).

This research contends that customer participation’s effectiveness in regard to NPD performance and commercializing innovative new products is contingent on the absorptive capacity (ACAP) of the firm. ACAP is a dynamic capability that can help utilize the firm’s knowledge structure to acquire, transform, assimilate and exploit external knowledge and apply it to commercial ends (Zahra and George, 2002; Cohen and Levinthal, 1990; Flatten et al., 2011). Key components to enhancing the success of customer participation include the ability of the firm

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to successfully acquire external knowledge and the ability of a firm's existing systems and capabilities to identify, assimilate and exploit external know-how (Huang and Rice, 2009; Foss et al., 2011). ACAP assists the firm in identifying more marketable external ideas, filtering through information, redefining and reclassifying problems, and using domain specific knowledge to implement new product solutions (Chandy et al., 2006; West et al., 2014; Cohen and Levinthal, 1990; Zahra and George, 2002; Robertson et al., 2012). Furthermore, ACAP assists firms in transforming ideas into more novel and usable forms that build upon current firm processes and capabilities (Cohen and Levinthal, 1994; Lane et al., 2006), thus projecting a greater fit to current and future customers. Substantively, we suggest that ACAP is a key contingency to enhance customer participation's impact on NPD performance and innovative new products.

Our principal contribution is the acknowledgment of a key contingency affecting the effectiveness of customer participation in the NPD process. Specifically, we suggest that the ability of new customers to positively affect NPD performance depends on the ACAP of the focal firm (Cohen and Levinthal, 1990). We suggest that when the focal firm has greater levels of ACAP, its ability to source valuable input from customers engaged in the NPD process is far more developed, which manifests in better performance. That is, the direct effect of customer involvement on performance should be higher when firms have a well-developed ACAP. In the same vein, the relationship between customer involvement and new product innovativeness should be affected by the focal firm's ACAP. This makes ACAP a key concept in understanding the relationship (both direct and indirect) between customer participation in NPD and performance.

In line with previous research, our results show that customer participation does indeed impact NPD performance directly and indirectly through new product innovativeness. In support of our principal contribution, the results also show that ACAP is a key contingency for firms seeking to enhance NPD efforts through customer participation. ACAP is shown to be a contingency for customer participation's impact on both NPD performance, defined here as "the degree to which a new product is perceived to have achieved its market share, sales growth, customer use, and profit objectives" (Atuahene-Gima and Ko, 2001, p. 58), and new product innovativeness.¹

The paper proceeds as follows. In the next section, we provide a brief overview of the customer participation literature and formulate testable hypotheses that formalize its proposed direct, mediated, and moderated effects on new product performance. This is followed by the description of our empirical strategy including data sources, measures, and methods. A section on results provides evidence in support of our hypotheses, followed by a battery of robustness checks and a separate post-hoc analysis section to provide additional insights for decision makers. The paper concludes with a discussion of our results, their implications for scholars and practitioners, identifies important limitations, and makes suggestions for future research.

2. Literature review and hypotheses development

2.1. Customer participation in new product development

Researchers argue that developing new products solely with internal knowledge is no longer enough to retain or strengthen competitive positions (Joshi and Sharma, 2004). As such, the emergent open innovation approach integrates external resources and stakeholders into a firm's innovation processes (Gassmann and Enkel, 2004). Laursen and

¹ While previous customer participation literature has utilized primary data and subjective performance measures to examine relationships (see Table 1 for overview of customer participation research), we understand that primary data presents a limitation to this study in the form of potential common method bias and subjectivity in regard to performance. We discuss these issues further in the method and limitations sections of the paper.

Salter (2006) show that 66% of UK manufacturing firms in their sample indicated that customers and clients were a source of knowledge or information in their innovation processes (Foss et al., 2011). This tactic of integrating end users in various stages of the development process – as practiced by P&G, Unilever, and other firms both small and large – can be described as customer participation (Fang et al., 2012). Fang et al. (2008, p. 91) define customer participation as "the extent [italics added] to which the customer is involved in the manufacturer's NPD process." This definition aligns with the progressive user-involvement in NPD ideology (Von Hippel, 2005; Schulze and Hoegl, 2008) as opposed to the arm's length market orientation ideology of simply "listening in" to the customer (Urban and Hauser, 2004). Customer participation in NPD is the degree to which customers and firms create new product value through ongoing interactions (Blazevic and Lievens, 2008). In contrast to market orientation, customer participation goes beyond simply collecting and disseminating information gathered from and about customers, then developing offerings around those customer needs (Atuahene-Gima and Ko, 2001). Instead, customer participation is closer to a partnership in which customers are integrated into some or all NPD activities, including product design, business evaluation, team formation, and concept screening (Fang et al., 2008). Research suggests that products generated through customer participation will more closely meet customer needs than products generated solely internally (Hoyer et al., 2010). Importantly, customer participation has been found to positively impact NPD performance across multiple NPD stages (Chang and Taylor, 2016; Troy et al., 2008). During ideation, customers are an abundant source of new product ideas (Von Hippel, 1978) since they provide first hand solutions to the actual problems they face (Yli-Renko and Janakiraman, 2008). In the development stage, customers can provide greater access to important resources and contacts (Coviello and Joseph, 2012). Customers also serve as effective testing outlets during product testing and launch stages (Griffin and Hauser, 1993). In essence, customer participation in NPD may help create products that are less easily imitable, solve customer needs, and decrease costs.

Additionally, customer participation has been suggested to impact the innovativeness of new products, which we deem an important mediating factor between customer participation and NPD performance. Customers bring in external knowledge and are not susceptible to organizational inertia and oftentimes provide 'outside-the-box' thinking (Yli-Renko and Janakiraman, 2008), thus their ideas should be more innovative (Chang and Taylor, 2016). Conversely, employee ideas may be less innovative as they are more likely to rely on the firm's resource base and improvement of current product lines to avoid product cannibalization (Chandy and Tellis, 1998). This is essential as highly innovative products can provide a firm with a differentiated market position that less innovative products cannot, thus enabling higher product performance (Kleinschmidt and Cooper, 1991; Rubera and Kirca, 2012). Past literature has shown that innovative products can be sold successfully based primarily on technological advantages and uniqueness from competitive offerings (Avlonitis and Salavou, 2007). Thus, we posit that product innovativeness may be a mechanism through which customer participation positively impacts product performance. When firms become overly embedded in their processes, they fail to meet changing market demands (Atuahene-Gima and Ko, 2001) that could be met by integrating customers into NPD (Coviello and Joseph, 2012). Substantively, customer co-development will lead to differentiated product attributes and increased product innovativeness, thereby enhancing NPD performance. An overview of the previous literature on the relationships between customer participation, NPD performance, and innovativeness can be seen in Table 1. As a foundation to our study, we postulate the following as baseline hypotheses:

H1. Customer participation in NPD is positively related to NPD performance.

H2. New product innovativeness mediates the relationship between

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