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Can frugal go global? Diffusion patterns of frugal innovations

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A B S T R A C T

The diffusion of frugal innovation has been an uncharted territory so far. The purpose of this study is to shed light on this topic and to explore the different diffusion patterns. While practitioners have shown growing interest in scaling up frugal innovations, the extant academic literature on the diffusion topic is scarce. In this article, we identify four main diffusion patterns of frugal innovations. We label these diffusion patterns as local diffusion, proximity diffusion, distance diffusion, and global diffusion. Both proximity diffusion and distance diffusion take place predominantly in the countries where the socio-economic context is quite similar. In rare cases, frugal innovation can diffuse globally and find its ways into developed markets.

1. Introduction

Over the past several years both academics' and practitioners' interest in frugal and reverse innovations has proliferated [69]. While consensus is yet to be reached, most authors would agree that frugal innovation refers to products, services or combination of them that are affordable, sustainable, easy-to-use, and have been innovated under the resource scarcity. In general, frugal innovations are developed in and for low-income market contexts and are seen to differ from innovations in developed markets. Frugal innovation comprises innovative mixtures of available knowledge and technologies to solve urgent local problems [37]. Frugal innovations are highly related with reverse innovations. The latter ones refer to those frugal innovations that migrate to wealthier markets [16].

Frugal innovations are part of the change witnessed in recent years as innovation loci and foci are changing because low-income emerging markets are increasingly becoming new sources of innovation [29]. Traditionally, the growth wave was based mainly on innovations focusing on developed markets [22] but emerging markets have started to receive growing interest due to their growth potential and business opportunities. Many frugal innovations have emerged as disruptive for mainstream innovations [42,21]. Frugal innovations are in a formidable position to disrupt their incumbents [42].

Alongside this shift, market terminologies are in flux. Several overlapping terms such as 'emerging markets,' 'developing countries,' and 'poor countries' are often used interchangeably as are their counterparts i.e., 'industrialized countries,' 'developed countries,' and 'rich countries' [14]. We use the term low-income markets in this paper to stress that there are different markets even within one country. For instance, in any developing country there are some wealthy people, who are still part of the economy of that country. The highest upper class, however, is not typically interested in affordable solutions but luxury items, as money is not an issue for them. On the other hand, there are large groups of low-income customers in developed countries, who are looking for affordable products and services. These individuals form the low-income market in developed countries. By developed markets, we refer to the larger part of the total market in developed countries, comprising the middle and upper classes. Following the parameters set by Prahalad [36] and Hammond et al. [19]; we understand the low-income markets as being formed by individuals earning less than 5€ per day, adjusted for purchasing parity.

Although frugal innovation is becoming a topical phenomenon, academic studies of its many facets remain scarce. One of the

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uncharted topic is the diffusion of frugal innovation in different geographic regions and socio-economic contexts. The purpose of this paper is to explore the potential diffusion patterns of frugal innovations. To accomplish the objective we selected four cases, which exemplify different diffusion patterns. Using four cases is a common approach as a well-established research method in various studies (e.g., [11].

The remainder of the paper is organized as follows. The next section provides insights on the concepts of frugal innovation and reverse innovation and their diffusion. We then explain the cases, and discuss the cross-case analysis of four frugal innovation cases. The paper concludes with a discussion on the diffusion of frugal innovations and draws conclusions for future research.

2. Frugal innovation and reverse innovation and their diffusion

Insights on frugal innovation and reverse innovation in the extant literature are nascent. More importantly, the knowledge on their diffusion patterns in various geographical regions is devoid of discussion. Along with highlighting frugal innovation and reverse innovation, we briefly discuss their diffusion patterns as follows.

2.1. Frugal innovation

As the academic research on frugal innovation is in its early stage, definitions are also in flux. Affordability, low-cost manufacturing, low-cost materials as well as design focusing on basic functionality and minimal feature sets are key aspects typically connected to frugal innovation [13,48]. Frugal innovation stems from resource scarcity: employing limited resources to meet the needs of low-income consumers [47]. It is based on the consideration of turning resource constraints – financial, material, or institutional – into advantages [71]. Frugal innovations can comprise product, service, process, and business model [48].

Among the ambiguities in defining a frugal innovation is which aspects comprise frugality. For instance, Zeschky et al. [70] state that “the most complex technical and organizational capabilities are required for frugal innovation”, implying technological superiority of frugal innovation compared to alternatives in the market. Radjou et al. [38] describe frugal innovation as “an innovative fix: an improvised solution born from ingenuity and cleverness”. Unlike Zechsky et al. [70]; Radjou and Prabhu [37] by no means presume technological superiority for frugal innovation. According to them, frugal innovation is the ability to do more with less – to create significantly more value by minimizing the use of resources such as energy, capital, and time.

Our approach is closer to that of Radjou and Prabhu, since we define frugal innovation as *a resource scarce solution (i.e., product, service, process, or business model) that is designed and implemented despite financial, technological, material or other resource constraints, whereby the final outcome is significantly cheaper than competitive offerings (if available) and is good enough to meet the basic needs of customers who would otherwise remain un(der)served*.

There are over a dozen of concepts that overlap with the frugal innovation concept (see Refs. [31,45] including cost innovation [63], resource-constrained innovation [43], Shanzhai in Chinese [57], and Jugaad in Hindi [38]. All of these innovation concepts represent slightly different backgrounds but bear the similarity of affordability in frugal innovation. The concept of frugal innovation also shares some ideology of disruptive innovation, in the sense that they both are categories that do not include elements of supremacy. According to Christensen [9] (p.34), disruptive innovations are “products and services that are not as good as currently available products”. The term “disruptive” rests on the idea that these innovations can “disrupt” markets for existing solutions (products, technologies, business models).

Affordability is one of the main underlying factors affecting purchasing decisions relating to new solutions, especially in the context of low-income markets where a significant number of people live on an extremely limited income [36]. As Western multinational firms (MNCs) are encountering a downturn of revenues in their higher-end markets, they have begun to see the low-income customer base as a great opportunity for cost-efficient solutions [39,69]. Western MNCs are also facing fierce competition as firms originating from emerging markets or developing countries are increasingly offering affordable products and services with superior value at lower cost [5,28]. The rise of emerging economies as a new hub for innovation is prompting MNCs to learn more from their local counterparts in these countries [46]. Some frugal innovations have made or are about to make their way from low-income markets to wealthier markets. These innovations are labelled as reverse innovations and are discussed in the following section.

2.2. Reverse innovation

Reverse innovations imply low-cost innovations, which are first adopted in emerging economies and then ‘trickle up’ to developed countries [24,60,68]. Both micro- and macro-level issues are essential factors in both frugal and reverse innovations [49]. Western MNCs create successful innovations in the subsidiaries in developing countries and export these innovations to Western countries with new ways of competitive advantage [4]. Reverse diffusion is recognized as an approach for Western MNCs to boost their competitive position [10]. Zedtwitz et al. [68] found a range of ways innovation inflow into developed countries. In some circumstances, reverse innovations share great similarities with the disruptive innovation from emerging economies [22,20].

Typically, the modified and downgraded versions of innovations created for developed markets later diffuse to emerging markets or developing countries where buyers cannot afford to purchase the latest high-end versions [39,58]. Reverse innovation thereby challenges the common belief that developed countries are the hubs and origins of innovations, which then flow as stripped down versions to developing countries. This implies that developing countries are no longer merely recipients of innovations from developed countries. To understand reverse innovation and its scope we define it as follows: *Reverse innovation as a resource constrained solution (i.e., product, service, process, or business model) that has been introduced first, either successfully or not, in emerging markets or developing countries and then successfully transferred (with some modifications) to developed countries.*

Although few examples of reverse innovation do exist [55,23], the number of studies on reverse innovation in general remains limited in the extant literature [14]. While the concept sounds feasible, only a few firms have succeeded in reverse innovation, which arguably requires discarding the old organization structure and creating a new one, re-orienting product development and innovation methods, and providing the sales force with new settings [72].

As Europe struggles with recession and the USA experiences increasing levels of poverty, reverse innovation seems to be a valuable option to tackle problems in these developed countries [12]. The approach of Western MNCs such as General Electric (GE) and TATA Consultancy Services (TCS) is such that they initially use frugal innovations to address the needs of low-income consumers in emerging markets or developing countries. Thereafter, they seek to turn their frugal innovations into reverse innovations by bringing them to developed countries [57]. However, Rosca et al. [45] found