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Factors Affecting Entrepreneurs' Performance at the Bottom of the Pyramid: A Frugal Innovation Approach

ABSTRACT

Bottom of the Pyramid (BoP) population is commonly seen as a segment in need of aid or donations to survive. On one hand, this customer segment has been viewed as a way to expand the customer base with affordable products or services. On the other, BoP entrepreneurship has been perceived as a long-term mechanism to help vulnerable population get out of poverty. The present study makes use of a frugal innovation perspective and new product development theory to identify factors affecting the performance of BoP entrepreneurs. Results indicate that this segment can start entrepreneurial ventures with a social purpose despite all sorts of limitations. They follow processes similar to those commonly carried out by startups and larger companies when developing new products or services. Also, they excel at defining value propositions that match market needs.

Keywords: Base of the Pyramid – BoP Entrepreneurship – Frugal Innovation – New Product Development – Latin America

1. INTRODUCTION

Around 4 billion people worldwide live on an income below 5 US dollars per day (Rangan, Chu, & Petkoski, 2011; The World Bank, 2018). This marginalized or vulnerable group is characterized as an uncertain, informal or rural segment (Esposito, Kapoor, & Goyal, 2012) with a low-level income (Hart 2005; London & Hart 2004) and is commonly called the Bottom or Base of the Pyramid – BoP (Prahalad & Hart, 2002).

Previous research has focused on organizations that see the BoP segment as a market of potential consumers, seeking to maximize profits by selling products to this population (Hart, 2005; London, 2007). Another argument considers impoverished people as alternative producers, where the segment is described to include both buyers and sellers (Prahalad & Hart, 2002; Karnani, 2007). This way, they are seen as active subjects contributing to the socio-economic development of countries and no longer considered vulnerable groups living by means of aid or donations (London & Hart, 2011). In this sense, the importance of entrepreneurship in the BoP population is apparent because it represents a way to alleviate poverty. However, there is still limited knowl-

edge about how grassroots level entrepreneurs use frugal creativity to build innovative products and services while surviving their context of scarcity. To fill this gap, the present study aims to investigate the BoP population's entrepreneurial activity in search of insights on how this segment conceptualizes, develops, and diffuses innovations to achieve market success as suggested by Hossain (2020). The study is also aimed at researching the factors affecting their performance within the context of difficulties they face.

Although BoP entrepreneurs are commonly little or non-educated individuals with limited resources, their desire to meet customers' needs, combined with an entrepreneurial mindset, inspire them to find new and innovative ways to develop new products and services to satisfy local and foreign market demands (Hossain, 2017). In other words, they excel at offering solutions to the marketplace by integrating into their thinking a conception aligned with the Frugal Innovation (FI) perspective. For the present study, we adopt the FI definition of Hossain, Simula, & Halme (2016: 133), stated as follows: "Frugal innovation is 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 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". In alignment with this view, we posit that entrepreneurship and FI concepts help explain how BoP entrepreneurs innovate and overcome the difficulties in their entrepreneurial endeavors.

Using the theoretical lens of FI, this work seeks to answer the following research questions: (1) What are the key characteristics defining the profile of BoP entrepreneurs? (2) How do BoP entrepreneurs apply the FI approach for the development of new products and services? We chose to answer these questions by using data collected from the BoP entrepreneurial population, found in impoverished cities and towns within the Bolivian context. Answering these questions is relevant to get novel insights about the BoP entrepreneurs' profile, the process followed when developing frugal innovative solutions, and the factors affecting the performance of entrepreneurs operating in conditions of vulnerability.

The contribution of the study is threefold. First, it contributes to the entrepreneurship literature as it gives a more complete picture about the profile of BoP entrepreneurs. Second, it provides a conceptual framework that helps explain how BoP entrepreneurs succeed in developing and offering frugal innovative products and services to the market. Third, it adds to the emerging interest of scholars about the factors that enable BoP entrepreneurs to develop new products and services within an environment characterized by scarcity. This study is an important advancement for the BoP entrepreneurship and FI literature as it provides a theoretical model that explains the performance of BoP entrepreneurs when offering frugal innovative solutions to consumers.

This paper is structured as follows: the theoretical framework section reviews relevant literature regarding BoP entrepreneurship, frugal innovation, and new product development. The methodology section describes the study context, the data collection process, the variables of interest and the method employed for the data analysis. By performing a qualitative analysis, the results section presents the profile of BoP entrepreneurs, the characterization of FIs offered by them, and the factors affecting their performance. Discussion and implications sections are then presented, followed by the limitations of the study as well as suggestions for further research.

2. THEORETICAL FRAMEWORK

This section makes a discussion of the extant literature related to the Bottom of the Pyramid (BoP) entrepreneurship, grass-

roots frugal innovation, and new product development (NPD) concepts as a measure of performance. A theoretical framework is proposed, aimed at clarifying the relationship between the entrepreneur's performance and its influencing factors.

2.1. BoP entrepreneurship

Previous research stresses that BoP populations can be characterized by socio-economic status, through which a collective of approximately 4 billion people is grouped. It includes two segments: subsistence and low income, the former living on conditions with less than \$3 per day, and the latter with less than \$5 per day (Rangan *et al.*, 2011). Both of these segments are usually considered as marginalized or vulnerable groups (Hart, 2005; London & Hart, 2004; Prahalad & Hammond, 2002) that experience difficulty of low-level income, unemployment, and educational matters (Subhan & Khattak, 2016).

Vulnerable people are seen as those in need of aid and charity to survive (Rahman, Amran, Ahmad, & Taghizadeh, 2013). Among other institutions, scholars, NGOs, and governments have been addressing their needs from different approaches around the world. Foreign aid, microfinance, social entrepreneurship, base of the pyramid initiatives, and property rights have been part of the main action plans (Davidsson & Honig, 2003; Peredo & Chrisman, 2006). Although these actors have had positive implications for poverty reduction, their effects have not been as expected (Alvarez, Barney, & Newman, 2015). This situation leaves BoP entrepreneurship and innovation as a seldom considered possible solution to address socioeconomic problems (Bruton, Ahlstrom, & Si, 2015).

BoP people have been considered as a potential market because they are a large part of the global population. That is why organizations have directed attention to selling products to rural and semi-urban people at the BoP segment, with positive effects on the latter in their living conditions (Goyal, Sergi, & Jaiswal, 2016). Also, research has addressed the identification of success criteria for innovations by firms targeting BoP markets (Pervez, Maritz, & de Waal, 2013). Seeing BoP population as a target at the end of a business value chain is just one way of approaching their needs.

Hall, Matos, Sheehan & Silvestre (2012) maintain that vulnerable people should be seen as entrepreneurs in terms of their potential role for innovation. From this perspective, it becomes important to research in search of how entrepreneurial activity of the BoP population contributes to alleviating poverty and foster social and economic development (Rahman *et al.*, 2013) through job creation and better life quality (Ahlstrom, 2010; Du, Guariglia, & Newman, 2013; Ireland, Hitt, & Sirmon, 2003;

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Lu, Au, Peng, & Xu, 2013; Zahra, Sapienza, & Davidsson, 2006; Rahman, Amran, Ahmad, & Taghizadeh, 2015; Rahman *et al.*, 2013). In this sense, BoP entrepreneurship is particularly important for economic development in resource-constrained contexts as it is the case of Latin American countries.

The Global Entrepreneurship Monitor 2017-2018 index, measured by the Total early-stage Entrepreneurial Activity (TEA), provides evidence that Latin America has the highest rates of entrepreneurial activity in the world (18.5% on average), followed by African countries (13.7% on average) (Global Entrepreneurship Research Association, 2018). These numbers seem to reveal that people from less developed countries view entrepreneurship as one way of making a living while realizing their business ideas. When entering the entrepreneurship world, however, their impact on wealth creation and self-sustainability is relatively low, resulting in a gap between individual-level entrepreneurship and large-scale economic development

“Bottom of the Pyramid (BoP) entrepreneurs are capable of starting businesses with a social purpose regardless of all kinds of limitations. They see their ventures instrumental in supporting people living in similar disadvantage conditions.”

(Slade Shantz, Kistruck, & Zietsma, 2018; Peredo & McLean, 2006).

Previous studies have been oriented to study BoP entrepreneurs in terms of mechanisms supporting them, including governmental intervention to create a favorable environment (Ahmad, Ramayah, Wilson & Kummerow, 2010); help from private organizations (Rahman *et al.*, 2013); microfinance assistance (Chakrabarty & Bass, 2013; Singh & Dutt, 2015; Chliova, Brinckmann, & Rosenbusch, 2015; Bruton *et al.*, 2015); and inclusive business involvement in which BoP people become part of the value chain of large organizations (Reficco & Vernis, 2010; Hahn, 2009; London & Hart, 2011; Kolk & Van Tulder, 2010; Karnani, 2007). Although a generalized definition of BoP entrepreneurs may be difficult and even counterproductive because of all the possible characteristics they exhibit (Kolk, Rivera-Santos, & Rufin, 2014), the present study considers them as those who meet several criteria (see Table 1).

Table 1. What characterizes BoP entrepreneurship

Characteristics	Author and year of publication	I-P-O
1. Marginalized or vulnerable	Hart (2005); London & Hart (2004); Prahalad and Hammond (2002); Puente <i>et al.</i> (2017)	I
2. Limited resources	Gudz (1999); Chakrabarty and Bass (2013); Pisoni <i>et al.</i> , (2018)	I
3. Micro-business: informal operations and few assets or employees	Gudz (1999); Chakrabarty and Bass (2013)	I
4. Low level of innovation and few or non-specialized skills	Cervilla and Puente (2013)	I

Some authors point out that businesses from individuals under conditions of vulnerability can be identified by their informality, use of constrained resources and labor force, as well as micro and small business sizes (Gudz, 1999; Chakrabarty & Bass, 2013). Other authors report that BoP entrepreneurs have to deal with a lack of resources, information, training, support, and infrastructure (Muruganantham & Natarajan, 2015, Slade Shantz *et al.*, 2018; Roberts & Eesley, 2011; Rahman *et al.*, 2013; Webb, Bruton, Tihanyi, & Ireland, 2013) as constraints they face when performing in the entrepreneurship arena. Furthermore, Cervilla & Puente (2013) maintain that entrepreneurs running BoP businesses offer low-innovation products or services and exhibit few or non-specialized skills. This means that BoP entrepreneurs struggle to cope with the demands of an entrepreneurial venture as they develop their duties in frugal conditions. Despite these limitations, they can offer innovative products and services to the market.

Based on the previous discussion, we formulate the following proposition:

Proposition 1. BoP entrepreneurs exhibit capabilities that lead them to innovate, despite the frugal conditions in which they operate.

2.2. Grassroots Frugal Innovation

The frugal concept appeared in 2006 in frugal engineering within the automotive industry as a way of being more effective, maximizing the value of limited resources (Singh, Gupta, & Mondal, 2012). This initial conception became the basis for the current definitions of FI in the management field. Over the years, frugal innovation (FI) literature has gained important attention from scholars with the traditional market-based

approach on how multinational corporations meet the needs of resource-constrained populations (Zeschky, Widenmayer, & Gassmann, 2011). In this direction, FIs developed by firms

make use of characteristics as reported by the existing literature (see Table 2).

Table 2. What characterizes FIs

Characteristics	Author and year of publication	I-P-O
1. Use of locally embedded knowledge, skills, and experience	Jain and Verloop, (2012); Pisoni <i>et al.</i> (2018)	I
2. Recycling and reuse of pre-existing technologies / frugal assembly of pre-existing technologies	Pisoni <i>et al.</i> (2018); Hossain (2018); Gupta (2012)	I
3. Use of locally produced components	Pisoni <i>et al.</i> (2018); Hossain (2018); Gupta (2012)	I
4. Learning by doing capacity, by experimenting, trial and error	Pisoni <i>et al.</i> (2018)	I

Hossain *et al.* (2016) and Knorringa, Pesa, Leliveld, & van Beers (2016) differentiate BoP innovation and FI, arguing that the latter focuses on both the BoP market and the middle-income segment in emerging economies while the former only focuses on impoverished people. This means that FI perspective can make BoP entrepreneurs see the market potential in a more ample view. FIs from developed countries have had mainly a social orientation in the sense that products or services are offered in areas such as food, health, information and communication technology, water, and transportation (Rosca, Arnold, & Bendul, 2017; Rahman, Amran, Ahmad, & Taghizadeh, 2014; Desa & Koch, 2014). Ventures aligned with this orientation are usually promoted by multinational or local companies, NGOs or governmental organizations, leaving BoP entrepreneurs with a sense of dependency (Puente, Cervilla, Gonzalez, & Auletta, 2017).

Other studies stress an advocate for BoP people to get out of poverty in terms of enabling them to become suppliers, producers, and employees as they commonly exhibit a lack of education and resources (Habib & Zurawicki, 2010). This way, they may be in a better position to avoid encountering a high hurdle when trying to enter the entrepreneurial world alone. Evidence indicates that BoP entrepreneurs do show capabilities to start and run businesses on their own within a context characterized by scarcity.

As in the case of larger businesses, BoP entrepreneurs find ways of serving the marketplace with less complex and affordable solutions regardless of their limitations, in line with the FI perspective. The extant literature reports a variety of successful FIs from developed and developing countries, including the Mitticool refrigerator; the Jayaashree sanitary napkin; and the Ksheera milking machine (Hossain, 2017; Rosca *et al.*, 2017; Zeng & Williamson, 2007; Pisoni, Michelini, & Martignoni 2018),

amongst others. This seems to be possible as BoP entrepreneurs commonly exhibit an innate capacity to provide effective solutions by using available resources that solve their everyday problems (Gupta, 2012). By doing so, frugal products and services are a result of their improvisation and processes based on their knowledge, skills, and experiences (Gupta, 2012; Jain & Verloop, 2012).

Nowadays, business opportunities for BoP entrepreneurs are apparent because of the increasing demands of FIs, not only from less privileged people but also from consumers in developed countries as they are gradually becoming poorer (Hossain, 2017). The ultimate assertion seems to become even worse as the COVID pandemic will force many companies to close or shrink their operations in the upcoming years (Chang, 2020). Under this situation, studying how BoP entrepreneurs create market-driven solutions, regardless of their limitations, has become more important. Accordingly, the following proposition is formulated:

Proposition 2. In the case of BoP entrepreneurs, FI characteristics are crucial in the process of developing products and services for meeting the requirements of a larger customer base.

2.3. New product development as a measure of performance

In a business context, measures of success can be defined in financial and non-financial terms (Rahman *et al.*, 2013). Financial, market and organizational performance are typical outcomes for firms (Welsh, Kaciak, & Shamah, 2017). Financial performance indicators normally include profitability, return on investment, sales growth, and survival (Chandler & Hanks, 1993; Gupta & Govindarajan, 1984). Non-financial indicators

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regularly embrace intangible measures related to satisfaction, efficiency, market development, entrepreneurial culture, among others (Sapienza, 1989; Sapienza, 1992). Hossain (2018) proposes other outputs such as local entrepreneurship, new sources of revenue, forms of employment, better utilization of resources, and affordable products, as a better approach for measuring success in a BoP context.

Also, new product development (NPD) has been used as a measure of organizational performance, mainly when examining the effects of capabilities, strategies, or firm orientation (Yildirmaz, Öner, & Herrmann, 2018; Mu, 2016, Mu, Thomas, Peng, & Di Benedetto, 2016; Yang, L., 2012). Research in this direction has been mainly conducted in the context of large firms, which may not be completely applicable for smaller firms (Ledwith & O'Dwyer, 2009), or even less appropriate for individual entrepreneurs. As Cooper (2019) point out, failure rate of new products, launched in any industry, has reached around 40%. Although this percentage seems to be relatively high, this rate becomes the norm or even higher in a context characterized by scarcity (Kumar, Yakhlef, & Nordin, 2019). That is why innovators, dealing with limited resources, are commonly involved in a continuous learning process when trying to develop new products or services.

In his seminal work, Schumpeter (1934) proposes five innovation dimensions, including (1) The introduction of new products, not existing before; (2) The introduction of new ways of production; (3) The opening of new market areas; (4) The discovery of new sources of raw materials; and (5) The change of industrial organization into industrial efficiency. Schumpeter's dimensions are certainly a great contribution for measuring performance; however, they are better applicable for larger firms because of their organizational capabilities, especially when opening new markets and achieving industrial efficiency. For businesses, run by individual entrepreneurs, it is highly important to consider the specificities of the innovation dimensions as a way of defining a measure of performance, especially in the context of resource constraints.

Cooper (2019) suggests seven drivers for characterizing a successful realization of an individual project associated with new product development (see Table 3). By following these drivers, we consider tasks 3, 4 and 5 as key characteristics in the process of developing new products, while we took activities 1 and 2 for measuring performance as an outcome of NPD.

Table 3. Performance criteria associated to NPD

Success drivers of individual new-product projects	I-P-O
1. Differentiated product with an attractive value proposition	O
2. Market-driven and customer-focused solution	O
3. Pre-development work and assessment related to the technical, market or financial aspects of the business	P
4. Early product definition	P
5. Iterative development based on trials and customer feedback for a market fit	P
6. Global design and international market targeting	Not applicable
7. Design and proficient execution of a marketing plan for launching.	Not applicable

Adapted from Cooper (2019)

Bearing in mind that entrepreneurs following a frugal approach usually aim to resolve local problems and they often exhibit a lack of formal education, it is understandable that criteria 6 and 7, suggested by Cooper (2019), may not be rightly applicable for the present study. According to the above discussion, we formulate the following proposition:

Proposition 3. Entrepreneurs from a BoP context have a local market orientation and launch their products from a frugal perspective.

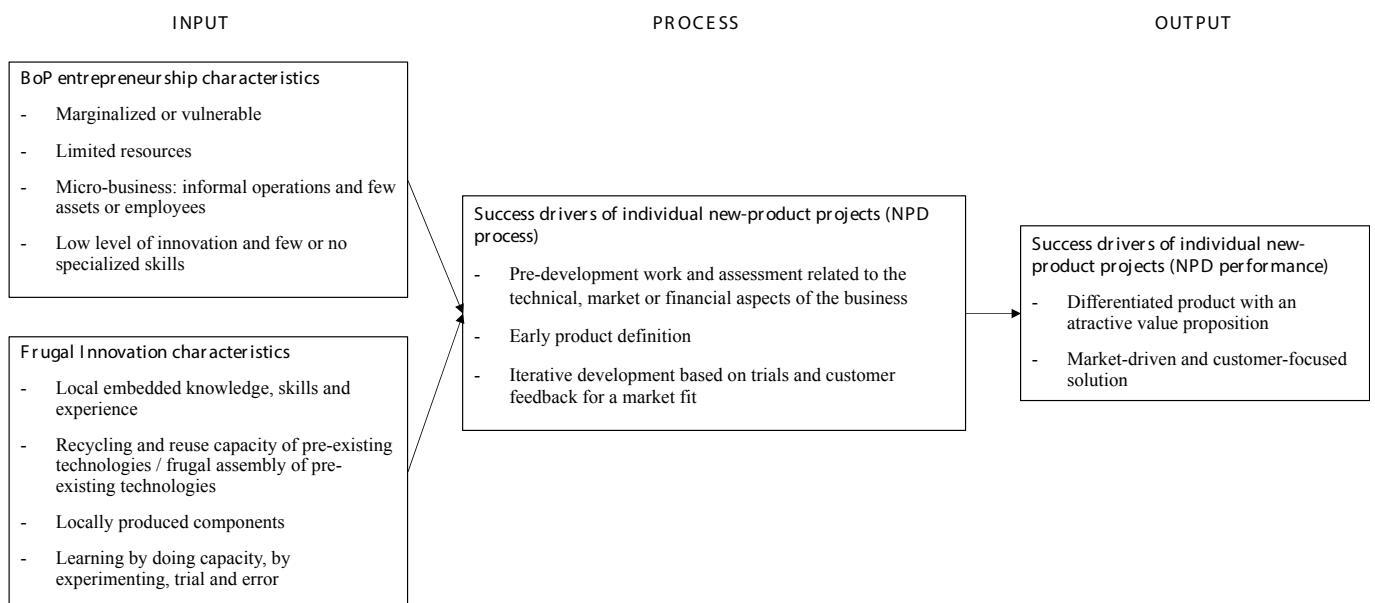
2.4. Theoretical model

The present study builds on the concepts of BoP entrepreneurship and FI, stressing the need for a conceptual framework that helps explain how BoP entrepreneurs succeed in developing and offering products and services to the market. In order to understand how BoP entrepreneurs develop frugal innovations, we propose a theoretical model, based on the Input-Process-Output Model (I-P-O) of McGrath (1964). The *Input* (I) block refers to attributes that characterize the profile of BoP

entrepreneurs and frugal innovations. The *Process* (P) block describes the NPD criteria related to the development of products and services offered by BoP entrepreneurs. The *Output* (O) block refers to the performance of BoP entrepreneurs in terms

of the value proposition of their ventures and customer-based solutions (see Fig. 1).

Fig. 1. Conceptual Model, based on Input-Process-Output Model (I-P-O) (McGrath, 1964).



3. METHODOLOGY

The present study aims at examining how BoP entrepreneurs develop frugal innovations under a context characterized by scarcity. It is also intended to determine the factors affecting their performance. The study was tackled by analyzing the responses to open-ended questions raised to entrepreneurs from the BoP Bolivian context. Bolivia was considered for this study as around 36% of the country's population living in rural areas remains in extreme poverty; one of the highest rates of vulnerable population in Latin America (United Nations Development Program, 2013). Furthermore, Bolivia shows high levels of entrepreneurial activity as the GEM's study reveals that the Total early-stage Entrepreneurial Activity (TEA) has reached 27,4% (Querejazu, Zavaleta, & Mendizabal, 2015), higher than the regional average.

3.1. Sample and data collection

Data were collected from a sample of 74 Bolivian entrepreneurs. According to the selected criteria, twelve interviewees met the requirements to be considered as BoP entrepreneurs in the study.

Two main criteria were defined for choosing the location for the interviews: (1) cities/towns of Bolivia with the highest population of BoP entrepreneurs; and, (2) cities/towns where the research team has local partners, committed to giving support in the data collection task. The selected cities/towns were as follows: Santa Cruz, La Paz, Cochabamba, San Jose de Chiquitos, Batallas, and Tarija. The data gathering was performed in four non-consecutive weeks, during several months from December 2017 to December 2018.

As a first step, a literature review on BoP entrepreneurship, Frugal Innovation and NPD, was conducted to identify the variables of interest to be considered in the theoretical framework (Eisenhardt, 1989). Then, a multiple case study and thematic analysis were performed for identifying possible patterns in the dataset as recommended by Braun & Clarke (2006). To avoid potential risks or errors related to qualitative research, we followed the strategies suggested by Brink, (1993) (see Table 4).

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Table 4. Strategies followed to avoid qualitative research risks

Potential Risk	Strategy
(1) The researcher:	Interviewers were trained researchers and diverse in terms of language, fluent in Spanish and English, and country of origin: Bolivia, Colombia, Ecuador, Belgium. Interviews were recorded and further transcribed.
(2) Participants:	Participants were informed about the purpose and scope of the study.
(3) Situation or social context:	Data collection was performed through face-to-face interviews.
(4) Method of data collection and analysis:	Criteria were defined to choose participants (BoP entrepreneurs).

Open-ended questions were developed, and interviews were conducted by the research team, audio-recorded and transcribed for further analysis. The average length of the interviews was 51 minutes.

Within the qualitative analysis process, relevant quotes as "first-order concepts" were identified among responses to have a general notion of the phenomenon (Gioia, Corley, & Hamilton, 2013). By using the Atlas.ti software package (version

8.4.4), we organized the first-order concepts into second order ones (theory-centric themes). Following a thematic analysis process, the corresponding themes were split into the most relevant characteristics of FI and NPD as factors affecting entrepreneurs' performance. Finally, second order themes were aggregated into dimensions of the Input – Process – Output model (McGrath, 1964) as presented in Table 5.

Table 5. Sample quotes and data structure

Quote	First order concept	Second order theme	Aggregate dimension (I-P-O)
" (...) I see myself as being entrepreneur, as I do not like to depend on anyone. I prefer to be a generator of employment instead of asking someone to give me a job position".	Sense of independency, self-confidence and conviction of being entrepreneur	Entrepreneur's self-notion	I
"I wanted to start my own business to make a contribution to employment and to support helpless people and desperate women (...) I am myself a single mother."	Empathy and social purpose orientation	Purpose-oriented entrepreneur	I
"Observing the problem that sausages are usually poorly made and a healthier alternative does not exist, we take advantage of these issues make them become favorable conditions for developing Tarix enterprise's products."	Analysis of competition to develop a better product	Sensemaking	I

“We have seen our grandparents’ practices as well as of our loved ones regarding the elements used both in cooking and in the prevention or relief of health issues.”	Use of ancestral knowledge for product development	Use of locally embedded knowledge, skills and experience	I
“A person from my acquaintances sold us a machine already old, at a very low price and we used it in our production line”.	Reuse of old and outdated machinery	Recycling and reuse of pre-existing technologies / frugal assembly of pre-existing technologies	I
“Our product is based on two herbs, Lavender and Rosemary, that grow well in the ecosystem nearby Tarija”.	Use of local natural materials for product development	Use of locally produced components	I
“We always try new flavors in our bread and ask people to try. Whether people respond positively, we keep on producing it to enlarge our market participation.”	Product experimentation to obtain market feedback	Learning by doing capacity, by experimenting, trial and error / Iterative development based on trials and customer feedback for a market fit	I
“What I did first was to analyze competitors. I studied their weaknesses with the idea of improving my product.”	Previous work on competitor analysis	Pre-development work	P
“In producing new garments, we often use personal savings and income from previous sales for financing purposes.”	Previous sales financing	Bootstrapping ability	P
“With the training and access to infrastructure offered by a local government, we have been able to better operate our enterprises.”	Access to a training program	Receiving social support	Triggering factor
“Mom, I like your business project as your product is great. You just need more confidence in yourself”	Support from family to stay in business	Receiving social support	Triggering factor
“We continuously ask the major and other local authorities to give us the possibility of having a specific location for selling our products.”	Lack of sales channels	Limited access to resources and infrastructure	Impeding factor
“Our value proposition is to offer healthy bread, without adding chemical compositions (e.g., bromate). It is made with natural yeast as to allow bread to rise naturally (...) We always wear uniforms as distinctive feature of our enterprise; action that attracts consumers’ attention.”	Statement of a value proposition and a differentiated product	Differentiated product with an attractive value proposition	O
“The introduction of new herbs into the market is usually the result of suggestions from customers through their comments about the beneficial effects on health. Afterwards, we begin doing research to verify whether such benefits are real. When being so, we start the process toward making herbal products.”	Gathering of proposals and suggestions of customers	Market-driven and customer-focused solution	O

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4. RESULTS

The findings are organized by following the Input – Process – Output (I-P-O) conceptual model, as suggested by McGrath, 1964 (see Fig. 1). We considered the input component in terms of the BoP entrepreneur's profile and the most relevant characteristics of Frugal Innovation (see Table 1 and 2). The process component relates to the factors affecting the entrepreneur's performance, while the output block embraces aspects associated with the entrepreneur's performance. In addition, we included triggering and impeding factors in the I-P-O model to have a better understanding of their effect on the entrepreneurs' performance.

4.1. BoP entrepreneur's profile

BoP entrepreneurs were selected by following four criteria, based on the extant literature (*i.e.*, they come from a marginalized or vulnerable segment; possess limited resources; create micro-businesses with informal operations and few assets or employees; and, develop low-level innovation). Results indicate that BoP entrepreneurs also exhibit other individual characteristics, including self-notion, purpose orientation and sensemaking.

4.1.1. Self-notion

Interviewed entrepreneurs exhibit a self-notion of being an entrepreneur, mainly led by a sense of independence and self-efficacy (Zhao, Seibert, & Hills, 2005). On one side, low levels of entrepreneurial competencies, usually found in necessity-driven entrepreneurship, lead vulnerable entrepreneurs to start a venture because of their social deprivation (Nakhata, 2007). In this light, our results show that, despite their limitations, they consider themselves entrepreneurs by choice and not by necessity. This belief seems to motivate them to have a better performance. As a sample quote shows, BoP entrepreneurs are usually motivated by the need for independence:

Q1: “ (...) I see myself as being an entrepreneur, as I do not like to depend on anyone. I prefer to be a generator of employment instead of asking someone to give me a job position”

4.1.2. Purpose orientation

The findings suggest that BoP entrepreneurs are highly motivated by a social purpose beyond getting rid of poverty. As Yitshaki & Kropp (2016) stress, purpose refers to compassion or empathy toward others. Interviewed entrepreneurs stated that their purpose was primarily associated with a social commit-

ment to help other vulnerable groups. They also appreciate the idea of preserving ancestral knowledge as well as rejecting the possibility of migrating to urban regions, amongst others. As the following quote indicates, BoP entrepreneurs, stress their purpose of hiring people in a similar situation of vulnerability:

Q2: “I wanted to start my own business to make a contribution to employment and to support helpless people and desperate women (...) I am myself a single mother.”

4.1.3. Sensemaking

Sensemaking plays a significant role when translating ideas into entrepreneurial ventures. It motivates entrepreneurs toward being open to new ideas and finding gaps in the market, it helps them leverage opportunities to solve problems and evaluate future steps to exploit an idea and take actions to materialize it (Hoyte, Noke, Mosey, & Marlow, 2019).

The following quote indicates that BoP entrepreneurs are able to identify deficiencies in existing products; thereupon, they end up with an innovation in terms of the creation of new markets or offering improved and good-enough products or services (Christensen, Raynor, & McDonald, 2015). Moreover, when developing a product, they realize that previous key steps are required to market it cleverly, a common practice of successful larger companies (Cooper, 1988; Cooper, 2018):

Q3: “Observing the problem that sausages are usually poorly made and that a healthier alternative does not exist, we take advantage of these issues and make them become favorable inputs for developing Tarix enterprise's products.”

4.2. Frugal innovation characteristics in BoP entrepreneurs

As results show, BoP entrepreneurs consider key features when realizing frugal innovations, including Use of locally embedded knowledge, skills and experience; recycling and reuse of pre-existing technologies / frugal assembly of pre-existing technologies; use of locally produced components; and, learning by doing capacity, by experimenting, trial and error (Pisoni *et al.*, 2018).

4.2.1. Use of locally embedded knowledge, skills and experience

BoP entrepreneurs make use of local knowledge and practices in their businesses, which is the case of the production of dairy and llama meat, traditional clothing, and the like. The following

quote reveals that the entrepreneur's ancestor practices have considerable influence on how natural products are made:

Q4: *"We have seen our grandparents' and relatives' practices regarding special elements used both in cooking and in the prevention or relief of health issues."*

4.2.2. Recycling and reuse of pre-existing technologies / frugal assembly of pre-existing technologies

Our findings indicate that BoP entrepreneurs elaborate products using available technologies (i.e. second-hand machines) or, otherwise, by hand, as illustrated by the following quote:

Q5: *"A person from my acquaintances sold us an already old machine, at a very low price and we used it in our production line"*

4.2.3. Use of locally produced components

The interviews with BoP entrepreneurs revealed their awareness of the importance of making creative use of natural resources. Some examples include local herbs, volcanic ash, and llama meat, giving them a competitive advantage as described in the following quote:

Q6: *"Our product is based on two herbs, Lavender and Rosemary, that grow well in the ecosystem nearby Tarija"*

4.2.4. Learning by doing capability, by experimenting, trial and error and customer feedback

Results indicate that BoP entrepreneurs commonly shows learning by doing capability when developing new products or making adjustments in their business models (e.g. using alternative distribution channels) for a market fit, as described in the following quote:

Q7: *"We always test new flavors in our bread and ask people to try. Whenever people respond positively, we keep on producing it to enlarge our market base."*

4.3. Factors affecting entrepreneurs' performance

As indicated, we associate performance with the concept of new product development (NPD). The interviewees' answers revealed that BoP entrepreneurs deploy a series of actions related to the development of successful new products, including

Pre-development work and assessment related to the market or financial aspects of the business; early product definition; and, iterative development based on trials and customer feedback (Cooper, 2019). Besides these tasks, they follow a bootstrapping approach as a common practice to solve the issue of not being subject to credit lines (Lee & Drever, 2014).

4.3.1. Pre-development work and assessment related to the technical, market or financial aspects of a business

Results show that BoP entrepreneurs "do their homework" in the sense that they take the necessary time before launching a new product or service, regardless of their need for earning a living. They make preliminary research about market behavior, analyze product components and competitors, develop minimum viable products (MVPs), and conduct market testing. By analyzing their main competitors' products and recognizing possible improvements, they mitigate risks of failure when introducing their products into the market, as the following quote illustrates:

Q8: *"What I did first was to analyze competitors. I studied their weaknesses with the aim of improving my product."*

4.3.2. Bootstrapping

Banking industries in developing economies often lack financial services for BoP segments. BoP entrepreneurs do not see this inconvenience as an insurmountable barrier, and they move forward by using bootstrapping in their entrepreneurial ventures, as mentioned in the sample quote below:

Q9: *"In producing new garments, we often use personal savings and income from previous sales for financing purposes."*

4.4. Triggering factors

Our findings reveal that access to education leads BoP entrepreneurs to better performance. Also, having institutional support related to technical and business training is helpful in their entrepreneurial endeavors, as described in the following quote:

Q10: *"With the training and access to infrastructure offered by a local government, we have been able to better operate our enterprises."*

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In addition, support from family and friends has been influential in starting new businesses (Arregle, Batjargal, Hitt, Webb, Miller, & Tsui, 2015; Leyden, Link, & Siegel, 2014). Our findings show that emotional support encourages BoP entrepreneurs to take action toward realizing their dreams and ideas despite their limitations and failure of previous business experience. The following quote goes in this direction:

Q11: "(...) and my daughter told me: Mom, I like your business project as your product is great. You just need more confidence in yourself"

4.5. Impeding factors

Limited access to infrastructure, distribution channels and lack of proper legislation for entrepreneurship are some of the difficulties that BoP entrepreneurs face when trying to achieve business success. Our findings reveal that inappropriate production facilities and the lack of roads are some of the inconveniences that place barriers in letting them move their businesses forward, as illustrated by the following quote:

Q12: "We continuously ask the major and other local authorities to give us the possibility of having a specific location for selling our products."

It is also the problem of cumbersome paperwork for obtaining the necessary permits for operation, the existence of "black markets", and the lack of knowledge about the procedures required for formalizing a business.

4.6. Entrepreneur's Performance

We considered performance in terms of new product development (NPD). Two criteria for successful NPD were drawn from the extant literature (Cooper, 2019). Our findings show that BoP entrepreneurs find their way in developing differentiated products with an attractive value proposition for customer-focused and market-driven solutions.

4.6.1. Differentiated product with an attractive value proposition

One of the challenges that BoP entrepreneurs face is to conceive products and services with the idea of differentiating themselves from competitors regardless of the simplicity and frugal approach followed. Do-

ing so, their products are designed to meet users' needs by offering unique characteristics compared to competitors or by addressing unattended problems, as indicated by the following quote:

Q13: "Our value proposition is to offer healthy bread, without adding chemical compositions (e.g. bromate). It is made with natural yeast to allow the bread to rise naturally (...) We always wear uniforms as a distinctive feature of our enterprise; an action that attracts consumers' attention."

4.6.2. Market-driven and customer-focused solution

Getting a clear understanding of the needs and wants of consumers is a key driver when introducing a new product into the marketplace; ignoring this market orientation may result in product acceptance failure (Cooper, 2019). Our findings suggest that BoP entrepreneurs are also capable to feel the market, gathering ideas to produce or adapt their products and validating their value propositions, as described in the following quote:

Q14: "The introduction of new herbs into the market is usually the result of suggestions from customers through their comments about their beneficial effects on health. Afterwards, we start researching to verify whether such benefits are real. If so, we start the process toward making herbal products."

5. DISCUSSION AND IMPLICATIONS

5.1. Discussion

BoP segments are usually seen as consumers to which solutions are offered to meet their needs (Prahalad & Hart, 2002; Karnani, 2007). This way, enterprises exercise a top-down effort addressing not only the possibility of enlarging their market participation but also helping facilitate access to products and services. In contrast, the present study sees disadvantaged people from the view that they have the potential for becoming producers by realizing frugal innovations, a perspective favorable for their economic development and well-being.

As Schumpeter (1934) stresses, entrepreneurship and innovation represent two key forces for economic growth worldwide. In this respect, these two forces are harnessed by BoP populations as they enter the entrepreneurial world which, in turn, becomes a viable mechanism to exit poverty conditions and realize business ideas. Yet, BoP entrepre-

“Despite the challenges BoP entrepreneurs face, they see their entrepreneurial endeavors as market-driven businesses with solid value propositions rather than perceive them as a mechanism for subsistence.”

neurs commonly face low probabilities of success when running entrepreneurial ventures. This can be so because of the challenges and difficulties they experience in their endeavors as they operate in a frugal context characterized by a lack of adequate facilities, training and information, and a lower quality of life (Kolk & Van Tulder, 2006; Rahman, *et al.*, 2013). However, previous research provides evidence that these entrepreneurs exhibit abilities in finding the way of accomplishing FIs to succeed in businesses (Gupta, 2012).

By realizing FIs, we found that BoP entrepreneurs see their entrepreneurial endeavors as market-driven businesses with solid value propositions rather than as a mechanism for subsistence. Although a market orientation is in line with previous research, as it relates to successful NPD (Griffin & Hauser, 1996; Cooper, 2017; Cooper, 2019), this feature has not been explored within the frugal context setting.

Our findings suggest that BoP entrepreneurs start new businesses by choice and not by necessity, regardless of their vulnerable status or limitations in society. Further, our results reveal that these entrepreneurs empathize with their communities and other vulnerable groups. They see their ventures as instrumental in supporting people living in similar disadvantaged conditions. Moreover, BoP entrepreneurs seem to make sense of the market needs, segments, or competitors before bringing their products or services into reality, in line with previous studies (Davidsson, 2015).

Also, results indicate that some of the BoP entrepreneurs' personal characteristics are more accentuated than others. Although personal attributes such as the need for independence, need for achievement, self-confidence, amongst others, have been extensively studied (Davidsson, 1991; Wright, Hmieleski, Siegel, & Ensley, 2007; Verheul & van Mil, 2011), little has been investigated about some of these attributes in the case of the BoP population. As our findings reveal, the need for independence is a key motivation amongst disadvantaged people for entering the entrepreneurship world. This may explain why they see entrepreneurship as an effective means for realizing their dreams. Yet, it is reasonable to think that their struggle with basic necessities and limitations, commonly experienced in their lives, may push them to look for employment over starting a new business.

Moreover, results indicate that BoP entrepreneurs start their entrepreneurial ventures by keeping in mind a purpose orientation and social commitment. This means that they see their startups as an opportunity to support other vulnerable peers, as well as a way to discard the idea of moving from their com-

munities to urban regions and to preserve knowledge from their ancestors. In this respect, we posit that startups initiated with a purpose orientation and commitment to help others could be more likely to succeed in a business context. This can be so because of the possible impacts on social inclusion, vocation, role modelling and employment among disadvantaged groups (Slade Shantz *et al.*, 2018).

Regarding the process of developing products or services, our findings suggest that BoP entrepreneurs look for ways of developing innovative value propositions regardless of the limitations and cumbersome conditions faced in their communities. Previous studies indicate that BoP entrepreneurs pursue innovations with frugal characteristics by following a variety of processes (Cooper, 2019; Pisoni *et al.*, 2018). The use and applicability of each process depending on the value and requirements of products or services offered to the marketplace.

Despite the difficulties and scarcity of resources, BoP entrepreneurs excel at offering value propositions that fit well with the market needs by experimenting with locally available resources and technologies. Additionally, they exhibit self-motivation to be in a continued experimenting process by being open to feedback from clients. This way, they see it as an opportunity to adjust not only their products or services but also their business models, which makes them achieve better performance. Such behavior aligns with Lean Startup processes (Ries, E., 2011), in the sense that trial and error leads to innovation. This conducts BoP entrepreneurs into considering taking enough time to analyze market needs, experiment with minimum valuable products (MVPs), look for training about how to manage their businesses, among other preliminary activities before launching a product or service. By taking this approach, BoP entrepreneurs can gain better knowledge about their products or services as well as differentiation from competitors.

Further, results show that BoP entrepreneurs are capable to overcome the difficulties of not being subjects to a credit line from financial institutions. To keep on moving with their entrepreneurial ventures, they usually use bootstrapping as a means for financing their businesses. In fact, our findings show that none of the interviewed entrepreneurs had received financial support, which is an expected result as they usually do not have collateral to guarantee any loan from a bank.

Regarding institutional support, we found that access to education and training related to technical and business matters has a positive influence on the BoP entrepreneur's performance; a finding in alignment with previous studies (see *e.g.* Rahman *et al.*, 2013). Similarly, having access to shared production facili-

“BoP businesses initiated with a purpose orientation and commitment to help others are more likely to succeed in their context.”

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ties is very helpful for making them achieve business success. As stated by Bergman & McMullen (2020), makerspaces, fab labs, or shared production facilities have become important in fostering entrepreneurship and innovation in universities, corporations and communities. Also, social support from family and friends seems to be a key triggering factor strengthening BoP entrepreneurs' motivation in the pursuit of their dreams.

By contrast, our findings indicate that BoP entrepreneurs struggle to sell their products because they commonly experience a lack of distribution channels. As this is one of the biggest hurdles, they frequently look for informal channels; for example, the use of streets and places where selling products may not be effective alternatives.

In sum, despite the difficulties they mostly encounter in running their businesses, our findings suggest that BoP entrepreneurs are capable to build their value chain strategies to serve the market effectively.

5.2. Implications

The findings reported in this study have important implications for theory and practice.

5.2.1. Theoretical implications

One theoretical implication is in terms of what characterizes the profile of BoP entrepreneurs. According to the extant literature, this type of entrepreneur, coming from a disadvantaged population, create micro-businesses and develop low-level innovations with limited resources (Gudz, 1999). The findings confirm this characterization of BoP entrepreneurs and provide better insights into their entrepreneurial profile. Three additional personal characteristics were found to better delineate their profile; one is related to the self-notion of being an entrepreneur. This seems to be a strong feeling that makes them persevere with their dreams regardless of the difficulties they face in their endeavors.

Purpose orientation in entrepreneurial ventures is another profile characteristic we propose that affects the BoP business' performance. Specifically, they see entrepreneurship as a means of helping people in similar conditions of vulnerability. By doing so, they contribute to their communities by creating employment opportunities and avoiding migration from rural to urban regions. This is highly relevant in the context of Latin American countries where migration is one of the biggest social problems of this region. Many people in agricultural or pre-industrial societies, as is the case of developing economies,

migrate from rural to urban areas in search of higher probabilities of employment and better life conditions (Harris & Todaro, 1970; Burger, Morrison, Hendriks & Hoogerbrugge, 2020).

The findings also revealed that BoP entrepreneurs exhibit a sensemaking individual characteristic, which refers to their openness to new ideas and feedback from potential clients. This is a relevant attribute in their entrepreneurial profile as it leads them to successfully translate innovative ideas into venture creation (Hoyte *et al.*, 2019). It is also compatible with the Design Thinking approach (Plattner, Meinel, & Weinberg, 2009) in the sense that it makes entrepreneurs be tuned in to the consumers' needs and problems.

Another theoretical implication has to do with the factors affecting entrepreneurial performance, including frugal innovation and drivers of success in the NPD process. According to our input-process-output model, the findings suggest that BoP entrepreneurs follow a variety of mechanisms to develop products and services, aligned with the frugal innovation approach (Jain & Verloop, 2012; Gupta, 2012; Pansera & Sakar, 2016).

The extant literature stresses that failure in launching a new product is associated with a lack of preparation (Rankin & Mintu-Wimsatt, 2017). This happens because companies may primarily focus on designing and manufacturing new products and less on the hard work of getting ready for the market (Schneider & Hall, 2011). In contrast, our findings suggest that BoP entrepreneurs usually make diligent work, prior to finally launching a product to the marketplace. Once they have a clearer notion of what consumers expect from a product, they go to the final step to the market. In this line, the study implies that BoP entrepreneurs exhibit capabilities to offer differentiated products with a customer-validated value proposition. Such behavior has been reported in the existing literature with regard to the NPD process (Cooper, 2019); mainly studied for large companies, yet still little investigated within a BoP context.

5.2.2. Practical implications

As for the practical implications, on one hand, public policies should be oriented to motivate private and public organizations to offer training programs focused on strengthening soft skills in vulnerable populations. As stressed by Youth Business International (2019), soft skills could be described in terms of behavior, attitudes, personal qualities, or motives that enable people to achieve their goals. In this sense, entrepreneurs with a strong purpose and motivation could be more encouraged to persevere, seize business opportunities and perform well in their ventures. On the other hand, facilitating access to technical and financial training through public or private initiatives

could also help vulnerable entrepreneurs have better-quality products and services with a solid value proposition. In line with our findings, it is important to instill in them the development of competencies to become capable of defining a clearer purpose and value proposition on their ventures. By doing so, they could have more opportunities to succeed.

Another practical implication is the need for designing and offering financial products according to BoP entrepreneurs' demands. In a post-COVID pandemic scenario, businesses from vulnerable people are more likely to close operations given their difficulties in obtaining financial resources. To help them address this problem, public policy should be oriented to give incentives to the banking sector and other institutions so that they can offer support to BoP entrepreneurs in terms of loans with lower interest rates, seed capital, grants and any type of subsidy.

Also, public policies should address the availability of infrastructures such as coworking or maker spaces and shared production machines and equipment since this kind of support foster entrepreneurship and innovation (Bergman & McMullen, 2020). By having access to infrastructure, BoP entrepreneurs can take advantage of specialized facilities to develop better quality products and services to meet market expectations. This support is particularly important in the early stage of a business, in which the development of a customer base is crucial to make them economically sustainable. In addition, BoP entrepreneurs are prone to not having the required knowledge and infrastructure to comply with basic requirements to start a business such as facilities with the minimum operating standards, permits, brand and product registrations, regulatory approval, licenses, among others. In this sense, cooperation between private and public sectors is also important to facilitate BoP entrepreneurs' access to information, know-how, processes, and infrastructure to start and operate businesses.

In the same line, giving BoP entrepreneurs free or low-cost access to raw materials and equipment that larger companies would dispose of in their production processes is beneficial for realizing FIs. By having so, these entrepreneurs can offer products and services at low prices with acceptable quality both for their local communities and other socioeconomic segments. Companies, in return, can be benefited from having tax incentives and other forms of compensations. Alliances with public or private organizations for facilitating access to distribution channels are also valuable to ensure that BoP entrepreneurs' products or services reach the marketplace effectively. Also, open spaces such as fairs or ad-hoc markets can be helpful as they give them exposure and visibility. This aligns with the inclusive approach in the sense that the abovementioned support can empower local communities and create wealth as well as social and economic development (Pansera & Sarkar, 2016).

6. LIMITATIONS AND FUTURE RESEARCH AVENUES

The study has some limitations. The first is the fact that research was conducted only within the Bolivian context. In addition, the sample size is rather small, so the results of the study should not be generalized. As such, it is advisable to consider entrepreneurs from other countries to consolidate the findings. Also, further research should be conducted on a quantitative basis so that other statistical strategies can be performed to test the theoretical model proposed in this study. By doing so, the relationship between the dependent construct and its predictors can be analyzed by following a structural equation modelling approach.

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