An unusual empirical pattern in an indigenous setting: cooperative entrepreneurship among Brazil nut (Bertholletia excelsa) harvesters

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Abstract: The rainforest, as a symbol of life and diversity, is currently under the spotlight; its conservation is a challenge. Although for centuries indigenous people developed sustainable activities within that environment, there is concern today about how to develop viable activities that lead to productive entrepreneurship whilst preserving natural capital. This article investigates best practices of entrepreneurs who cooperate in an organisation, leading to sustainable development. Their experience may inspire others to draw new perspectives.

Keywords: Peru; cooperative entrepreneurship; rainforest; micro-enterprise; Brazil nuts; harvesting; gold dredging; mining.


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1 Introduction

Pedro is an entrepreneur, in that he is a self-employed harvester of nuts; but he does not own his means of production since he harvests within a nature reserve where the trees are owned by the state. Lacking economies of scale, he does not export; yet, the nuts he sells are consumed around the world. He is among the indigenous entrepreneurs in Peru who co-operate under the wing of a non-profit organisation that does the required marketing so that his harvest can be enjoyed overseas.

The Peruvian Ministry of the Environment restricts entry of unauthorised persons into the Tambopata Reserve; but, after months of various efforts, we obtained authorisation to enter, to watch and to interview harvesters engaged in this unique form of entrepreneurship. The purpose of this paper is to examine this symbiotic entrepreneurship. We call it symbiotic because harvesters could not export without the non-profit organisation, and the latter would have no raison d’etre without the harvesters.

Entrepreneurship research has long focused on the individual. Cantillon (1755) referred to the entrepreneur as the individual who worked for himself. Smith (1937) held that the individual’s need for satisfaction led to wealth. In contrast, trade in pre-contact Peru was traditionally conducted between groups rather than between individuals (Dana, 1988). Peredo (2008) emphasised the collective organisation of communities in Peruvian highlands. Some locals of the highlands have moved to the area of Madre de Dios. Among these people, some make a living searching for and finding gold; others have specialised in the harvest of wild Brazil nuts (Bertholletia excelsa).

Tambopata is one of the three provinces of Madre de Dios, the other two being Manu and Tahuamanu. Tambopata’s resources – including gold and rubber – attracted settlers who colonised the area in the 19th century, with the first rubber boom. This article shall focus on entrepreneurship in Tambopata National Reserve, which is three hours by canoe from Puerto Maldonado, established in 1902 as the provincial capital. In the Tambopata National Reserve, descendants of indigenous inhabitants of the sierra highland area – including Cuzco – who shifted here at the beginning of the 20th century have specialised in the harvest of one of the Amazon’s eminent non-timber forest products (NTFP), namely the Brazil nut locally known as castaña in Perú and Bolivia. Whilst self-employed, these people co-operate under the wing of a non-profit organisation, namely Asociación de Castañeros de la Reserva Nacional Tambopata – the Association of the Brazil Nut Harvesters from the Reserve of Tambopata – known by the acronym ASCART. As underlined by Vallejos (2005, p.2), ASCART is “a small but influential local Brazil nut producers’ association – on the path to long-term sustainability, with management and leadership training, business development support, and a key role in the decision-making processes”. Individually lacking economies of scale, cooperation helps them increase competitiveness. Their story is not widely known in the entrepreneurship literature.

The objective of this article is to fill in this gap, and in doing so discuss sustainable entrepreneurship and good governance, in a place that deserves attention regarding its resources – particularly for the indigenous people living there. Harvesting is done by indigenous entrepreneurs opting into the global economy as per Anderson et al. (2006) and Peredo et al. (2004) – on their own terms. It is not a socialist operation. Yet, individuals do not own the trees. Entrepreneurs work as a community (Peredo and Chrisman, 2006).
Our article will show how organisation is important here in terms of development and resource management. As noted by Dana and Dana (2007, p.89):

“A cooperative is an autonomous association of persons who join forces to meet their common needs by means of a jointly owned enterprise. A cooperative may thus be described as a vehicle for collective entrepreneurship in which individual skills are integrated into a group, and that group’s collective ability to innovate becomes greater than the sum of its parts. Collective entrepreneurship can offer a cooperative the opportunity to tap into individual talents and to harness the energy of the community.”

According to our findings below and referring to the Dana and Dana (2007) definition, we view activities of ASCART as being those of a cooperative, although trees are owned by the state.

Peruvian cultures were traditionally collective (Dana, 1988), and empirical research (Dana, 1995) has proven that the identification of opportunity is a function of one’s cultural environment. Our research will aim to understand the motivations and perceptions of the Brazil nut harvesters of ASCART, linking ethnographic inquiry with entrepreneurship literature.

2 The setting

Madre de Dios contains the largest area of virgin rainforests in Peru, and the region is known for containing the highest concentration of gold in the country. Forestry exploitation, agriculture, extractive activities such as formal and informal gold mining, extraction of hydrocarbons, and hydro-electric energy production are generating much money there.

Tambopata, at the heart of the forest, is a place where productive entrepreneurship is of first importance with regard to sustainability, to encounter the needs of the present without compromising the ability of the future generation to meet their needs. Tambopata is a land of rainforest with much diversity and various reports document the richness of this region. The region holds world records for biodiversity in butterflies and birds, and retains intact populations of threatened Amazonian species. Erwin (1985, pp.2–6) noted, “The reserved zone lies at the juncture of the rivers Tambopata and La Torre, 290 metres high, approximately 100 air kilometres from the Andes... The diversity of forest types in and around the Reserved Zone is, in part, a likely cause for the extraordinary richness of the fauna”.

In contrast, gold mining is a serious problem in Madre de Dios, as reported by the newspaper El Comercio on 31 July 2012: companies are often linked with scandals and money laundering. Moreover, the manipulation of mercury for extraction can lead to biological and social catastrophe. As underlined in a report by the Royal Swedish Academy of Sciences about mercury pollution, results show that the exposure to mercury caused by small-scale gold mining represents direct environmental and health threats. These threats affect both the ecosystem and the people living not only in the gold-dredging area, but more importantly downstream at the Andean drainage basin outlet (Maurice-Bourgoin et al., 1999). A document we viewed, used by the Sociedad Peruana de Derecho Ambiental (SPDA), underlined that for every 16,000 kg of gold produced in the area each year, approximately 67,000 kg of mercury is dumped in the rivers of Madre de Dios.
As stressed by Vilela (2010), in order to better understand the complexity of our current challenges, we need to look at the whole situation through a multidisciplinary lens, and she elaborated that the Earth Charter offers an integrated perspective and a reference tool that recognises that economic development, environmental protection, human rights and peace are closely interrelated, and therefore it reminds us that in order to address one of these dimensions, one requires a vision of the whole. In this sense we aim to provide in this article a multidisciplinary view to support our entrepreneurial reflection.

3 Historical context

Though trade of Brazil nuts from the Brazilian Amazon dates back to the 17th century, it was not before the late 1920s that nuts were exported from the adjacent northern Bolivian Amazon (Centro de Información y Documentación de Bolivia, 1979). Kalliola and Flores (2011, p.3) stressed that:

“The Ese’Eja people living in Madre de Dios are considered to be among the first to use Brazil nut seeds as food, but commercial Brazil nut extraction did not begin in the region until after the ‘rubber’ boom of the early 20th century (1930–1940). In Peru the current Brazil nut collection areas cover an area of 2,500,000 hectares, and are mainly located in the region of Madre de Dios that borders with Brazil and Bolivia.”

During the land reform of Velasco in 1969, concessions were divided among Brazil nut harvesters: large Brazil-nut concessions of 10,000 ha were divided into ten parts, distributing them to small producers. New concessions after the land reform were typically about 800 ha. The growth in the number of concession owners resulted in a web of family business owned concessions (Porro et al., 2010). This fact helps to explain the division of Brazil nut concessions in Peru, and why it is such a family business. We can observe that without an institutional framework supporting this activity, collection of Brazil nuts has stayed in a lower stage of development in Peru compared to Brazil and Bolivia where firms were organised to invest, process and commercialise large volumes.

Brazil was the main producer and exporter of Brazil nuts up until the 1990s, but its production levels have now decreased. The Brazil nut tree is currently considered vulnerable in Brazil according to the International Union for Conservation of Nature (IUCN) that produces a list of threatened species. According to Porro et al. (2010), road construction, a sequence of economic cycles involving cattle ranching, mining, logging and slash-and-burn agriculture, high wealth and land concentration and the deforestation have decreased Brazil nut production in Brazil.

These observations help us to understand that however different reports and works underline the sustainable character of Brazil nut collection (Duchelle, 2009) it has to seek a way to be able to provide an income all year long, in order to reduce other less sustainable activities in the region. Moreover, much of the nut processing in Peru is done by hand, whilst in Brazil and Bolivia more industrialised processes prevail. Kalliola and Flores (2011, p.7) emphasise:

“Peru’s share of Brazil nut production is less than one tenth of Brazil’s and Bolivia’s combined. The main importer of Peruvian Brazil nuts is the United
States, with its share growing from 49% to 80% between 1997 and 2007. However, the free on board (FOB) price paid by US importers is not as attractive as that of others… making it strategically important for Peru to maintain a diversity of export destinations.”

The decision to harvest the Brazil nut is communal, allowing some members to harvest Brazil nuts from their reserved area. The majority of Brazil nut harvesters are urban dwellers, mainly from Puerto Maldonado, who come to work in the forest only during the harvest period, living in rudimentary camps in the woods.

As suggested by Stoian (2005a, p.90), “The livelihoods of the rural gatherers are mainly based on agricultural and extractive activities, in some cases combined with daily labor.” Stoian (2005a, p.87) also noted, “The recent Brazil nut boom has provided increasing employment and income opportunities in both rural and urban areas...” ASCART’s members have now the possibility to seek economies of scale through new means of commercialisation.

The economy of households in remote communities show a strong dependency on income derived from NTFPs, which may contribute up to 90% of total cash income and we understand the need of the members of ASCART to seek economies of scale through new means of commercialisation that at the same time enhance the perceived quality of Brazil nuts from Peru. Furthermore, as underlined by one of our informers, namely Vilma Zegarra, this perceived quality was just based on appearance: the nuts are exactly the same, but the hand process means that sometimes a small amount of brown membrane remains. However less clean they are considered to be by the international market, these concerns are purely cosmetic.

4 Methodology

This article is the result of ethnographic research in Peru, conducted during multiple sojourns. The initial period of residency was from September 2008 until June 2009; this was followed by a period of intense research during December 2009 and January 2010. The final phase of research took place from August 2010 to January 2011. The National Service of Natural Protected Areas (SERANP) strictly controls entrance to Tambopata National Reserve (see Figure 1). A formal application was made to the Ministerio de Agricultura Instituto Nacional de Recursos Naturales (INRENA) for a scientific investigation in Tambopata National Reserve, as it was required to have permission (acuerdo de Investigacion en la area Protegida de Tambopata) to research within the reserve.

Our field study was conducted during the harvesting period of Brazil nuts, known as zafra3, which takes place during the rainy season. Torrential downpours mark the period from January to April, during this season the nuts fall and are collected.

According to the Central Reserve Bank of Peru informality in Peru is present at different levels, taking the indicators at face value, in Peru 60% of production is done informally, 40% of the labour force work is self-employed in informal micro-enterprises, and even counting those that work for larger firms only 20% of the labour force contribute to a formal pension plan (Loayza, 2007). This point suggests that we have to interpret with caution statistics about the Peruvian economy, reinforcing our position in favour of a qualitative study.
5 Related literature

Schumpeter (1934) spoke of creative destruction in the context of entrepreneurship. Baumol (1990) helps us distinguish:

1. entrepreneurship that provides a sustainable outcome not only for the entrepreneur but for all the community
2. entrepreneurship that is not producing an added value
3. entrepreneurship that has a negative side effect (e.g., mining).

In this light, the impact of gold mining activities in Madre de Dios could be regarded as unproductive, leading to destructive entrepreneurship.

Alvarez and Naughton-Treves (2003) stressed that gold dredging activities further the construction of roads, which in turn are a factor of deforestation. Indeed, specialists underlined that higher rates of deforestation during 1986–1991 were due to rapid clearing of forest areas for cultivation and cattle ranching under state-sponsored agricultural incentives. We observed that the areas along the roads contain the largest deforested areas. Riverside farms today have more land in both crops and forest than do roadside farms where pasture and successive growth predominate. In 2011, the Continental Bridge on the river Madre de Dios was inaugurated, opening the Inter-oceanic Highway that aimed to strengthen integration between Peru and Brazil, linking regional Amazonian ports to the Pacific coast.

As underlined by Duchelle (2009) in her work comparing Brazil nut harvesting in Bolivia, Brazil and Peru, the combined ecological and economic characteristics of Brazil nuts make it a species with the potential to promote forest conservation while contributing to rural livelihoods. She stresses the effectiveness of community-based forest management for promoting conservation and development in the tropics.
6 Our research findings

6.1 Demographic context

At the muggy heart of the Amazonian forest, the city of Puerto Maldonado is the centre of economic activity for the region. According to the most recent national statistics\(^4\) (at the time of writing in 2013) the region of Madre de Dios had 127,639 inhabitants, and most immigration was from Cuzco, Lima and Puno. This region has one of the most rapidly expanding populations in Peru. The population in the area of Tambopata National Reserve and the buffer zone of the National Reserve is estimated to be close to 12,000, including the villagers of Nueva América: families who migrated from the southern Andes. They are approximately 21 families (119 inhabitants) settled in three streams nearby the National Reserve of Tambopata (Reserva Nacional Tamopata: RNTAMB).

The presence of gold dredging is visible throughout the city of Puerto Maldonado: buyers, kiosk sellers or shops selling mining material punctuate the streets around the market (see Figure 2). Sources at the SPDA indicated to us that a main battle will be to best orientate the development of this area to make the most of this environment.

Figure 2 Streets of Puerto Maldonado lined with gold traders (see online version for colours)

Note: Gold shop

\(\text{Source: Photographed for this article by Rafael Pérez Risco}\)

This very resource-rich area of rainforest has attracted people from a variety of backgrounds. The original indigenous people of the region were joined by migrants from the Sierra (Andes highlands) and later people from Lima and from abroad. Communities in the area are heterogeneous in nature; this is due to their different cultural backgrounds. Two distinct population groups tend not to mingle:
1 the mining concessioners, members of the association of artisanal gold dredgers of Malinowsky River
2 the Brazil nut harvesters.

The Peruvian Amazonian Research Institute (IIAP) suggests that as much as 40% of the area is suitable or modestly suitable for Brazil nut extraction (IIAP, 2002). Most of the harvesting concessions are in the National Reserve of Tambopata and in the Bahuaja Sonene National Park (PNBS). We can note that there are 1,138 concessions for ‘other products of the forest’ (including Brazil nuts). In 2000, 27,000 people (38% of the population) in Madre de Dios depended directly on Brazil nuts for their livelihoods. This included administrative workers, as well as harvesters, splitters, shellers, hauliers and traders (Collinson et al., 2000).

The streets buzz with motorcycle taxis, the popular transport in the city. As a result of migrations, the market place reflects a mix of Amazonian rainforest and Andes cultures. We see parallels here with observations of Dana and Dana (2008, p.530):

“They understand that transportation costs can be absorbed by buyers overseas, and they do not let their firms be limited by the size of the internal market. The local market has grown considerably with the decline of widespread poverty. People are aware of credit schemes such as the Social Entrepreneurship Programme of the Inter-American Bank, providing funds to those who do not have access to loans on regular market terms.”

6.2 Economic context

The three main economic sectors here are extraction, transformation and services. Most of these (formal) activities are concentrated in the region of Tambopata. Activities in parallel economy in Madre de Dios greatly resemble of those observed by Dana (2011) in Bolivia. Here we refer to the informal economic sector (not only in mining and forestry but also with street vending, barter or unrecorded cash sales). The internal economic sector is also present with subsistence agriculture, hunting and fishing; however covert economic sector seems to have a lower importance.

Specifically, the activities developed in the region are: slash-and-burn agriculture, cattle ranching (mainly extensive), highly pollutant gold mining (mainly illegal), timber harvesting (formal and informal) and subsistence hunting and fishing. As well, the Hevea brasiliensis commonly known as shiringa is harvested for rubber production, but today it is very marginal due to high production cost compared to international markets. Also agriculture is present in the form of native crops: yucca, corn, bananas (see Figure 3), beans and lemon, plus rice (introduced by Japanese immigrants in 1908), as well as a small amount of soy.

The harvesters who collect Brazil nuts are located mostly in the north-east area of Madre de Dios. Inside Tambopata National Reserve and Bahuaja-Sonene National Park there are 99 concessions of Brazil nuts; 86 are inside Tambopata National Reserve and 13 are inside the Park (Ministerio del Ambiente, servicio Nacional de areas naturales protegidas por el Estado, 2010).

The large size of the informal sector in Peru, mostly characterised in this area by gold extraction and timber extraction, is threatening traditional values and activities by being for some inhabitants the only mean of development offered to them, according to the testimonies collected during our research. This leads us to wonder how Brazil nut activity
An unusual empirical pattern in an indigenous setting

Figure 3  Banana vendors (see online version for colours)

Source: Photographed for this article by Rafael Pérez Risco

Furthermore, due to the presence of extraction activities most of the prices of common goods, as fruits for example, have shown an increase that in the same time had increased the precariousness of the traditional farmers and communities of the area. Following the example of the fruits we can note that in the central market of Puerto Maldonado the price of one kilo of fruit is close to the double than in Lima. This context leads the people living around the city to seek higher income to conserve the same life level.

6.3 Tambopata reserve

The history of this reserve starts during the 1970s when Dr. Max Gunther purchased three hectares of riverfront property (Erwin, 1985). Beginning in 2000, forestry concessions and protected areas were consolidated in Madre de Dios with the development of the Forestry Law and formalisation of Tambopata National Reserve and Bahuaja Sonene National Park. Prior to the Forestry Law of 2000, forest policies were limited and unregulated timber activity was the norm (Chavez, 2009). The law’s implementation in 2002 established long-term concessions for timber, Brazil nuts, agriculture and livestock, and other productive zone (as for clean gold-bearing, commercial fishing, protection of swamps and watering areas – which required forestry management plans (IIAP, 2001).

Today, according to the business plan of ASCART, the Tambopata and Tahuamanu zone contains around 1.8 million of hectares and approximately 477,000 Brazil nut trees.

The delimitation of the reserved zone took place after the activity of Brazil nuts in the region. Verbal accounts from Brazil nut harvesters indicate that the first concessions in
the zone of the National Reserve of Tambopata and the National Park Bahuaja Sonene date from around 1975, before the National Sanctuary Pampas del Health of 1983 and the reserved zone of Tambopata Candamo.

The Reserve of Tambopata was created in 2000 in order to conserve the diversity and the presence of spring water facing forestry and extraction activities. As the population of Brazil nuts trees relies on a fragile ecological equilibrium the creation of the reserve was an opportunity for Brazil nut harvesting.

Vilela (2010) underlined the necessity to integrate all the stakeholders in the decision and management process. She emphasised the connection between the economic development and the natural and social systems. This supports Duchelle (2009).

6.4 Harvesting activity

Brazil nuts are a naturally available produce. The Brazil nut trees in Peru are owned by the state, which may provide concessions to individuals with the exclusive right to harvest the nuts in a given area (Peruvian Law of Forestry and Wildlife, 2002, No. 27308, updated in 2008). Harvesting is seasonal and ASCART harvesters, within Tambopata National Reserve, have a symbiotic activity with nature. The balance is fragile, because the Brazil nut tree is an androgynous species, dependent on the presence of a high population of bee colonies in order to have nuts. Trees do not have flowers all year long; therefore, the ecosystem needs other species to maintain the bee population. Deforestation is a direct threat to this. Kalliola and Flores (2011) stressed that the protection of the species only is not enough because the viability of its populations relies on an intricate set of ecological interactions.

Most Brazil nut concessions in unprotected areas to the north. The economic reality is such that in the unprotected Brazil nut concessions other activities take place, including forestry or palm fruit harvesting. Brazil nut activity represents 67% of annual income for Brazil nut harvesters (Collinson et al., 2000).

Brazil nut activity presents various levers for the empowerment of women. As underlined by a report from USAID, in each of the two main Brazil Nut Associations of Madre de Dios, a woman has taken a leadership role and served as a role model of sustainable practices for others. For the Brazil nut harvesters of the Tambopata Reserve, Vilma Zegarra has been trying to obtain for ASCART the first organic certificate awarded in the region by the Swiss-based Institute of Market Ecology, in German Institut für Marktwirtschaft (IMO). While harvesting is typically a task carried out by men, the shelling of nuts is traditionally an activity reserved for women.

6.5 Production and process

Brazil nuts harvesters employ additional gatherers for the zafra. People doing the zafra are called zafberos and also barrickers; these are typically recent male immigrants to the region as well as local people living in the nearby areas.

Brazil nut production requires no fertilising nor chemical products. After ripening for ten to 13 months on the tree they naturally fall. Brazil nut harvesting requires an expert local knowledge, specifically for the localisation of the trees in the dense vegetation of the protected Tambopata Reserve. Each Brazil nut tree is mark with a number and mapped to know its position (see Figure 4).
An unusual empirical pattern in an indigenous setting

Figure 4  Brazil nut tree N°66 (see online version for colours)

Source: Photographed for this article by Rafael Pérez Risco

The logistics of harvesting are complex. Each year paths to trees must be cleared with machetes as *zafreros* arrive with their tools (see Figure 5). This stage can be dangerous as numerous venomous insects and snakes are living in the Reserve of Tampobata.

Figure 5  Brazil nut harvester’s tools (see online version for colours)

Source: Photographed for this article by Rafael Pérez Risco
The next phase is to collect the Brazil nut fruits and open them in order to harvest the seeds. Vilma Zegarra’s concession has approximately 700 Brazil nut trees; the harvest and transport to Puerto Maldonado takes from January to March. Each tree gives more or less 6 kg according to Vilma Zegarra. Harvesting is a difficult and dangerous work; Brazil nut fruits (see Figure 6) frequently fall from the giant Brazil nut trees, and an impact to head is potentially fatal.

**Figure 6**  Brazil nuts (see online version for colours)

During the harvest, the Brazil nut harvesters use the resources of flora and fauna, both to feed on and in the process of harvesting the nuts. During the *zafra* they live in a camp made from wood and palm leaves, allowing them to stay for several weeks. Other Brazil nut harvesters use temporary camps. In the Tambopata National Reserve the camps do not have any electricity and running water (see Figure 7). Brazil nut harvesters bring with them the food (see Figure 8) and goods they will need during the *zafra*.

Fruit are opened with a machete (see Figure 9), after which the seeds are collected in big bags named *barricas*. At this stage the nuts are still inside a small wooden shell, which will be removed later (see Figure 10).

Each *barrica* weighs around 70 kg, and these are carried back to the camp using the bark of couratari trees (of the Lecythidaceae family of evergreens). In some concessions outside the tractors or cattle are used instead. The *barricas* are stockpiled until they are transported on the river by canoe to the City of Puerto Maldonado.

Brazil nut harvesters sell their Brazil nuts both shelled and not. Shelling is done either manually or using factory methods; in 2011 there were six factories in Puerto Maldonado that processed Brazil nuts. Nuts are classified according to their size as per three categories: Brazil nuts of the first category are sold shelled or unshelled. Brazil nuts of the second or third category are either too big or cut and thus do not match market
standards. The secondary category is destined to the oil market, and the third category to be ground, largely for the bakery market.

**Figure 7**  Kitchen on the right, bedroom and toilet (see online version for colours)

*Source:* Photographed for this article by Rafael Pérez Risco

**Figure 8**  Dinner time (see online version for colours)

*Source:* Photographed for this article by Rafael Pérez Risco
Brazil nut harvesting requires an investment from the owner of the concession to pay the *barriqueros* on a day-to-day basis. However, the entrepreneurs must wait to sell the Brazil nuts and be paid before having the return of their investment. The lack of credit is one of the bigger challenges for Brazil nut harvesters.
6.6 The market

Brazil nuts are sold in the international market as shelled nuts and also as a food ingredient in confectionery, pastry and health food preparation. Some nuts are mixed with other nuts and/or dried fruits and sold as snacks.

Brazil nuts represent 2% of the total market of comestible nuts. Within the nut market, the main export from Peru is Brazil nuts, which represent 80% of the country’s nut exports. Bolivia, Brazil and Peru represent 74.5% of the world’s export volume of Brazil nuts. Bolivia is the leading exporter of Brazil nuts. In 2007, exports from that country accounted for 49.2% of the total value of exports in the world market of nuts; three times more than Brazil and almost six times more than Peru.

While Brazil nuts bring different characteristics with respect to other nuts (natural production – do not use chemicals in their production) some companies generally mix Brazil nuts with other nuts, as the Brazil nut has no proper channel for promotion and distribution in the conventional nut market. The Peruvian market is concentrated; during the period 2000–2006, three companies produced more than half of the export volume of Brazil nuts. In 2006 the main exporters were El Bosque (21.6%), La Nuez (18.6%) and Candela Peru (13.8%).

There is a price variation over the year: the price decreases in April, again in July for Peru’s Independence Day and also at Christmas. In contrast, the price rises during the months of August and September, when there is a shortage. This is an incentive for importers that have adequate infrastructure to stock the Brazil nuts and anticipate the price increases. In 2005, the average price of Peruvian Brazil nuts exceeded that of the Brazilian product by 38%. The average export price increased at an annual rate of 6.3% in 2003–2007. Brazil nuts harvesters can sell their production to the intermediary, to transformation companies, and/or artisanal companies (see Figure 11).

Figure 11 Commercialisation (see online version for colours)
According to Collinson et al. (2000), lack of transparency occurs in both directions (harvesters and traders) transparency on the part of the companies towards the Brazil nut harvesters, and transparency of Brazil nuts harvesters towards the companies. These problems are a reflection of the fragile web of relationships that exists within the Brazil nuts trade. These authors underlined the misunderstanding from the Brazil nut harvesters for some services judged as unfair, robbery in the weight of the nuts, and differences yields obtained in processing plants (compared to those obtained in the family shelling units).

In the fair trade market there are two groups of Brazil nut harvesters, Asociación de Recolectores Orgánicos de la Nuez Amazónica del Perú (Organic Collectors of Amazon Nuts of Peru) founded in 2003 and known as RONAP and Asociación de Castañeros Orgánicos El Triunfo (ACOT), for whom the distribution chain is more integrated. These work for Comercio Alternativo de Productos No Tradicionales y Desarrollo para Latino América Perú (Alternative Trade of Non-Traditional Products and Development for Latin America – Peru) known as Candela Peru, the largest exporter to alternative markets: 42.2% of its sales are to the organic market, 12% to the fair trade market, Fairtrade Labelling Organisations International (FLO) and 45.8% to the conventional market. They also offer value-added products such as nut oil, and other products representing 16.2% of total sales. To ensure the supply chain, Candela Peru provides funding, training and technical assistance to Brazil nut harvesters to work according to the standards and requirements of the international market buyers. Processing companies then sell the production of 20 kilo bags, vacuum packed, to exporting companies. The largest exporting companies have vertically integrated processing for shelling and drying within the company, i.e., they have their own processing plant.

6.7 A collective organisation to support Brazil nut harvesting activity

In the context of the creation of a new legal frame for the management of protected areas in 2000 (that come along with the creation of the reserve) the Brazil nut harvesters from the reserve were allowed to apply for a right of concession (for Brazil nut harvesting). ASCART was created by a group of Brazil nut harvesters from Tambopata National Reserve who sought to find through the collective organisation new market outputs and in the same time this organisation enable them to keep the right to harvest Brazil nuts after the creation of the reserve.

Different elements directly affect Brazil nut activity: the growing power of the companies that buy Brazil nuts (see Figure 11), competition from Bolivia and Brazil, the lack of state support, and the creation in 2000 of Tambopata National Reserve to protect biodiversity and the spring water. ASCART was established on the 15th of September 2001 at this moment 65 members signed it and organised them to commercialise their Brazil nuts. Another important point for ASCART’s members was the idea of transmitting a legacy, in this sense the rainforest represents not only a capital, but living with is a philosophy opposed to the forestry and mining exploitation.

Dana (2006) underlined the determination of indigenous Aymará and Mapuche people in Chile who are collectively organised to carry on cultivating potatoes, coca leaf and doing other traditional crops. We can make a parallel between this illustration and ASCART’s resilient vision aiming to keep their heritage.
An unusual empirical pattern in an indigenous setting

6.8 Certification

ASCART is an independent autonomous grass-roots collective organisation of Brazil nut harvesters; their localisation inside de National Reserve give them a very special status. Others, including the Federacion Departamental de Productores de Castana de Madre de Dios – FEPROCAMD or the group Recolectores Orgánicos de Nuez Amazónica del Perú (RONAP) do not have the same constraints.

In Madre de Dios, with 32 members, ASCART was the first and only producers’ group in the region to achieve Forest Stewardship Council (FSC) certification for Brazil nuts in 2004 through the support of a Peruvian NGO, the Asociación para la Conservación de la Cuenca Amazónica (ACCA). The Forest Stewardship Council (FSC) standards for Brazil nuts in Madre de Dios were obtained through a cooperative effort between ACCA, the Asociación of Extractivistas de Castaña de Madre de Dios (ASECAMD), and Candela Perú (CP-CFV, 2005).

As underlined by Duchelle (2009), ASCART was the only Peruvian organisation to achieve the three certifications: organic, fair trade and the FSC (obligatory in Peru), the certification process would never have been possible without the collective organisation. Indeed, ASCART allow the Brazil nut harvesters to propose one single plan for the management of all the concessions, all harvesters were trained and lead for the common objective. Thanks to this process they have adopted better management practices; in Madre de Dios and Acre, where financial benefits of certification were lower or non-existent, we could observe that the Brazil nut harvesters were disenchanted with the certification process (Duchelle, 2009).

The example of ASCART illustrates this situation: certification has been abandoned, just keeping the FSC certification that is obligatory in Peru, as well as the good management practices learnt during the process. Duchelle (2009) underlined a good quality in the pre-harvest management and harvest process in Peru, mostly thanks to the obligatory FSC certification. The project of ASCART is very interesting in the sense that it is focusing on the ‘weak parts’ of the chain in those regions: the post-production with the shelling of the nuts and the commercialisation with the higher volumes brought by the group of harvesters and the new way of commercialisation offered by the products.

6.9 The challenge

Figure 12 presents the schedule in Tambopata National Reserve; it defines harvesting period and obligations for the harvesters.

As underlined by Gustavo Reyes, ASCART has many challenges; the organisation has to deal with the atomisation of the harvesting process, the geographic dispersion of the harvesters, the lack of infrastructure and solutions to stock the product waiting for better times to sell the crop, lack of commercialisation alternatives and the lack of adequate access to credit services. Furthermore these aspects are generating a business dependence of the harvesters with the market and a low negotiation power. To follow the objective of developing a competitive advantage for Brazil nut harvesters of Tambopata National Reserve, ASCART seek to improve processes from the harvest to commercialisation, improvement of infrastructure, secure commercialisation, find new markets, and develop employment – particularly for women.
6.10 The project

The different organisations presented above show some examples of developments within the production chain that have inspired ASCART. One important aspect of ASCART is their willingness to organise themselves independently. Compared to cooperatives in Nunavik (Dana, 2010), the potential of ASCART for the employment and development in the region is important. Working collectively to develop this sustainable activity, they bring us a unique example in this region.

ASCART’s members seek through the project to create regular income all year long and strengthen Brazil nut harvesters facing to the international market. The creation of a proper commercialisation channel by the integration of the production chain would be possible thanks to the construction of a process plant in Puerto Maldonado on the land bought by the association. Work already has begun. To develop their project each Brazil nut harvester, who could to do it (according to its production), gave one barrica (bag of 70 kg) each year since 2000 to the association in order to build a capital and buy the land necessary to construct the processing factory. Members of ASCART are already working on ideas to produce ice cream, candies, and also soap.

In Bolivia, findings of Stoian (2005a, 2005b) show a different situation: The Brazil nut industry is the single most important employer for peri-urban house-holds. In the 1998 sample, 30% of the house-holds had at least one person working in the shelling industry, with 18% represented by the female household head or the spouse, 7% by both male household head and the spouse, and 5% by the male household head. In recent years, male labourers have increasingly found their way into employment in beneficiadoras.

Different levels of benefits can be analysed. Indeed, Stoian (2005b) underlines that NTFP income is inversely proportional, and non-NTFP income is directly proportional to educational level. By improving revenues from Brazil nut activity and developing a process plant ASCART’s project presents income improvement opportunities for the less educated people of Puerto Maldonado. Also, ASCART members are encouraging any other Brazil nuts harvester from Tambopata to join the project: participate in the cooperative or give their nuts to be shelled. This inclusive vision is very propitious for the development of productive Brazil nut harvesting in the region. We can make a parallel
with Staber (2011) who stressed “at the micro level, knowledge creation and transfer involves transaction costs that limit the efficiency of joint learning”. He adds that “the creation of new knowledge requires the transfer of knowledge from external sources, and therefore much new knowledge is created interactively”. ASCART can play a key role in knowledge creation and transfer in Brazil nut activity between the harvesters of the region of Tambopata helping to share more easily and enforcing social capital.

7 Conclusions

Duchelle (2009) noted that the pre-harvesting and the harvest practices were better in Peru than in Bolivia or Brazil. As the shelled process is creating more value than selling unshelled nuts (Collinson et al., 2000), the choice to build a plant was essential to make Brazil nut activity more profitable. Collective organisation permitted to strengthen specific financial and organisational weaknesses of Brazil nut activity in Peru.

A group organisation facilitates access to credit for the harvesters, as pointed out by Collinson et al. (2000). Indeed for Brazil nut activity it is easier for an organisation to provide money by creating a treasury or applying for loans than the members individually.

As discussed by Zeuli and Radel (2005) and Zeuli and Deller (2007), cooperatives provide local employment and tend to have a long-term commitment to remain within a community, providing leadership and development. ASCART is an example of self-organisation that provides sustainable outputs in the international market with a long-term view. This cooperative is not only giving more security in the activity to the members of the association; it aims to develop employment and empower women through a sustainable activity. In other words the development and the success of ASCART is a good illustration of the idea given by Minniti and Lévesque (2008) who emphasise that entrepreneurship is generally recognised as a tool for economic development, suggesting that entrepreneurs are the micro-economic agents who link national institutions to economic performance at the macro-economic level and are in this sense a key element of economic dynamics.

The International Labour Organisation underlined strong resilience of cooperative during crisis and the significance of cooperatives for employment creation and decent work (Birchall and Ketilson, 2009). The value social entrepreneurs aim to create and amplify is social value beyond the positive externalities such as employment and income that profit-seeking ventures normally produce (Peredo, 2011).

The social benefits of the collective organisation include stability for the harvesters, opportunities of development for the community and sustainable development of Brazil nut harvest. The success of ASCART can serve as a model for other indigenous enterprises seeking to learn from best practices.

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An unusual empirical pattern in an indigenous setting


Notes

1 One version of this paper was presented at the Académie de l’Entrepreneuriat in Fribourg, and a shorter version of this paper won the best paper award at the 2013 Advances in Business-Related Scientific Research Conference (ABSRC) in Rome.

2 Source: Management plan for National Reserve of Tambopata and the National Park Bahuaja Sonene.

3 The term *zafra* in Latin America mostly means or refers to the harvest in sugarcane activity. The first *zafberos* (harvesters) in Peru can be traced to the period 1552 and 1562 when Cartavio first introduced sugarcane activity.


5 According to the SPDA.

6 Ley Forestal y de Fauna Silvestre No. 27308 y su reglamento aprobado mediante decreto DS.