

COMMUNITY-BASED ECOTOURISM IN THE MAMIRAUÁ RESERVE: EVALUATION OF PRODUCT QUALITY AND REFLECTIONS REGARDING THE ECONOMIC AND FINANCIAL FEASIBILITY OF THE ACTIVITY.

ECOTURISMO DE BASE COMUNITÁRIA NA RDS MAMIRAUÁ: AVALIAÇÃO DA QUALIDADE DO PRODUTO E REFLEXÕES ACERCA DA VIABILIDADE ECONÔMICO-FINANCEIRA DA ATIVIDADE.

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ABSTRACT

An ecotourism product should, among other things, offer a quality experience for the visitor and improve the quality of life of the one who is visited. This study evaluated the quality of community-based ecotourism at the Uakari Floating Lodge, and analyzed the economic and financial performance of the enterprise, generating reflections regarding the economic impact achieved and the intangible benefits associated with initiatives of this nature. The timeframe for the analysis was nine years (2002 to 2010). The evaluation of product quality was based upon the perceptions of the visitor and generally revealed high levels of quality. Moreover, a comparison with the competition yielded satisfactory results, indicating that the product can compete internationally on quality. From the perspective of financial return on investment, after a promising start, performance was not satisfactory over the nine-year period. An analysis has been conducted on the impact of two external factors and one internal factor, which have negatively impacted performance: the closure of the municipal airport for nine months, large exchange rate fluctuations and a pricing policy that could have been more conservative. Enterprises like the Uakari Lodge (located in remote areas with a differentiated management model) have certain vulnerabilities and this study reinforces the necessity of these initiatives to be better prepared for the risks inherent in this activity. Using simulations, it is possible to show that, if the municipal airport had not been closed or the Dollar had not suffered such a steep devaluation, financial viability would have been reached. Equally, the study shows that inappropriate adjustments in daily rates played a part in contributing to inadequate financial performance. On the other hand, when analyzing the initiative from a macro-economic point of view, it becomes evident that the activity established itself as an important economic alternative for the local communities and that the financial resources generated by the project had a strong multiplier effect. The analysis found that, for each R\$1.00 contributed by investors, R\$4.72 was generated in the regional economy. Equally, the wide variety of intangible environmental, social and economic benefits, validate the socio-environmental focus of the project and its contribution as a tool for the conservation of natural resources. Another point that merits attention relates to the existence of a consolidated system for monitoring results, which allows for the initiative to socialize lessons learned with academia, not-for-profit organizations and government. The findings of the study will contribute to more efficient planning for the transfer of management of the enterprise to the local communities.

KEY WORDS:

Ecotourism;

Community-based tourism;

Uakari Floating Lodge;

Mamirauá Sustainable Development Reserve;

Economic feasibility.

RESUMO

Um produto de ecoturismo deve, entre outros, oferecer qualidade de experiência para o visitante e melhoria de qualidade de vida para o visitado. Este estudo avaliou a qualidade do produto de ecoturismo de base comunitária Pousada Flutuante Uacari, bem como analisou o desempenho econômico-financeiro do empreendimento, gerando reflexões acerca do impacto econômico gerado e dos benefícios intangíveis associados a iniciativas desta natureza. O horizonte temporal contemplado na análise foi de 09 anos (2002 a 2010). A avaliação da qualidade do produto utilizou como base a percepção do visitante e revelou, em linhas gerais, níveis altos de qualidade. Ademais, a comparação com a concorrência mostrou resultados satisfatórios, indicando que o produto é competitivo internacionalmente no quesito qualidade. Do ponto de vista financeiro, sob a ótica de retorno financeiro no investimento, o desempenho depois de um começo promissor, não foi satisfatório no período de 09 anos. São analisados os impactos de dois fatores externos e um fator interno, que impactaram negativamente no desempenho: o fechamento do aeroporto municipal por 09 meses, a flutuação grande do câmbio e uma política de preços que poderia ter sido mais cautelosa. Empreendimentos como a Pousada Uacari (localizados em áreas remotas e com modelo de gestão diferenciado) tem suas vulnerabilidades e o estudo reforça para a necessidade destas iniciativas se prepararem melhor para os riscos inerentes à atividade. Através de simulações é possível mostrar que se o fechamento do aeroporto municipal não tivesse ocorrido ou se a desvalorização do dólar não tivesse sido tão acentuada, a viabilidade financeira teria sido alcançada. Igualmente, o estudo mostra que ajustes inapropriados no tarifário tiveram sua parcela de contribuição para este desempenho financeiro. Por outro lado, quando analisada a iniciativa por um viés macro-econômico, ficou evidente que a atividade se estabeleceu como uma importante alternativa econômica às comunidades locais e que movimentação econômica gerada pelo projeto teve um forte efeito multiplicador. A análise constatou que para cada R\$ 1,00 investido pelos financiadores, foi gerado R\$ 4,72 para a economia regional. Igualmente, a grande variedade de benefícios intangíveis de caráter ambiental, social e econômico comprova o enfoque socioambiental do projeto e a sua contribuição como ferramenta para a conservação dos recursos naturais. Outro ponto que merece destaque trata-se da existência de um consolidado sistema de monitoramento dos resultados, que permite que a iniciativa socialize as lições aprendidas com a academia, terceiro setor e governo. Os resultados encontrados no estudo contribuirão para se planejar com mais eficiência a transferência da gestão do empreendimento para as comunidades locais.

PALAVRAS-CHAVE:

Ecoturismo;

Amazônia,

Pousada Flutuante Uacari;

Reserva de Desenvolvimento
Sustentável Mamirauá;

Viabilidade econômico-financeira.

INTRODUCTION

In recent decades, community-based tourism (CBT) has been defended as one of the ways to develop tourist activities in a responsible manner, reconciling the conservation of natural resources with the socio-economic development of the destinations. The term is used widely in literature^{1, 2} and generally covers initiatives that promote an alternative model to conventional tourism, where the central concern with involving the communities is the mainstay of the activity itself.

Starting in the '90s, innumerable projects of this nature emerged which, in the majority of cases, were supported by the not-for-profit sector and run by donations from cooperation agencies. However, throughout this period, many studies identified problems that were apparently common to the majority of these initiatives, including: lack of monitoring and lack of quantification of real benefits for the communities (GOODWIN; SANTILI, 2009); lack of the most appropriate focus based on demand and insertion into the local tourism production chain (Epler Wood 1998); lack of a business plan and a clear view of potential threats for this kind of activity (CBI, 2009).

Therefore, it is not surprising that Mitchell and Muckosy (2008) have identified an average occupancy rate of only 5% for community establishments. Mielke (2011), upon evaluating

the activities of CBT in Brazil³, also found problems with market access and identified a lack of monitoring systems in these enterprises, making the results difficult to control and evaluate. In the Mamirauá Sustainable Development Reserve in the Brazilian Amazon, the Uakari Floating Lodge is one of the pioneering projects of this genre in Brazil. The enterprise has been in full⁴ operation since 2002 and utilizes a model of shared management between the Mamirauá Institute for Sustainable Development (MISD) and the communities in the Mamirauá Reserve.

In order to support the decision to invest in the Uakari Floating Lodge, a business plan was developed, as well as a strategy for introducing the enterprise into the market. Moreover, indicators were pre-established to monitor the socio-economic, environmental, and market performance of the initiative over the years.

However, the fact that the enterprise took these important pre-steps does not mean that the entire business would not face mishaps. Initiatives like the Uakari Floating Lodge – located in remote areas and with a differentiated management model - are sensitive to risk factors, both external⁵ and internal. Among the most significant external factors that the enterprise lived through were the interruption in flight access to the municipality and exchange rate fluctuations. The problem of access – which occurred during a time of significant growth for the enterprise – was caused

¹ A form of tourism that local communities have substantial involvement in and control over. Ecotourism's development and management, and a major proportion of the benefits remain within the community (DENMAN, 2001).

² Tourism initiatives that are owned by one or more communities, or run as a joint venture with the private sector with equitable community participation, as a means of using natural resources in a sustainable manner to improve their standard of living in an economic and viable way (Department of Tourism Botswana)

³ Those who received support from the Ministério do Turismo (Tourism Ministry) through the support bid for CBT.

⁴ From 1999 to 2001, the enterprise was functioning as a 'soft opening', responding to spontaneous demand.

⁵ External factors usually affect demand, and as such, the enterprise does not have the capacity to intervene.

by the closure of the Tefé ⁶ municipal airport, resulting in a significant decrease in demand and thus compromising the enterprise's cash flow. The exchange rate, with its large fluctuations, was also a significant risk factor since it resulted in an overvaluation of the Brazilian Real – turning Brazil into an expensive international long distance destination – and negatively impacting demand for the enterprise. Equally, managerial decisions were made that adjusted the price of the product in inopportune moments, creating risks of an internal nature.

The purpose of this study is to share lessons learned and to contribute to the discussion regarding the performance of CBT initiatives. This document evaluates the results of the Uakari Floating Lodge during the period between 2002 and 2010, by analyzing the quality of the product (from the perspective of the visitor) and by measuring the economic and financial performance of the enterprise. Moreover, the evaluation attempts to measure the impact of certain risk factors on initiatives of this nature, as well as to generate reflections regarding intangible benefits associated with enterprises with similar characteristics.

MATERIAL AND METHODS

Evaluation of product quality (point of view of the ecotourist)

In order to evaluate the quality of ecotourism services, data was analyzed from the period 2002 to 2011, collected using a questionnaire that is filled out by guests of the enterprise and which includes multiple choice and open-ended

questions. The principal indicators evaluated were: food, transportation, lodging, activities, guides, information availability, cleanliness and an overall evaluation of the visit. The visitors qualified the services mentioned using a scale of 1 through 5, where: 1 is terrible; 2 is normal; 3 is good; 4 is very good and 5 is excellent.

The questionnaire also collects qualitative information, using a space reserved for suggestions, criticisms and/or complaints. To analyze this information, the comments from the period 2009 to 2011 were grouped and categorized according to operating sector.

With the objective of comparing the quality of the services offered by the Uakari Floating Lodge to other competing initiatives in the ecotourism market (Pan-Amazon and Pantanal), queries were made to the site tripadvisor.com. [Tripadvisor.com](http://tripadvisor.com) is a site that helps visitors searching for information about travelling. It is the largest site of its genre in the world, with more than 60 million hits per month ⁷. On this site, visitors can make independent and voluntary evaluations ⁸ of the destinations they have visited and participate in discussion forums. With these evaluations, the destinations receive a grading that allows interested travelers to make comparisons between the places they want to visit.

[Tripadvisor](http://tripadvisor.com) is a very highly used tool and is useful for not only visitors themselves but for the managers of the enterprises evaluated, since an evaluation written after a trip has been taken tends to have more details than an evaluation done

⁶ The garbage dump located near the airport was putting airplane takeoffs and landings at risk due to the presence of vultures. So, for security reasons, the airport was closed for nine months.

⁷ For more information about the site: www.tripadvisor.com/pages/about_us.html.

⁸ Visitors evaluate the following criteria: price, cleanliness, services, location, rooms and sleep quality.

while the guest is at the destination. Tripadvisor is not an exact measurement since evaluations are made by only some visitors, but the advantage is that it allows for comparison with other enterprises. Criticisms have been made regarding the trustworthiness of some evaluations⁹, but in the case of Uakari Floating Lodge, no evaluations have been identified as suspect.

Economic and financial performance

Data from the period 2002 through 2010 were analyzed to evaluate the economic and financial performance of the ecotourism activity with two distinct focuses. The first aims to determine if the commercial enterprise is viable from a financial point of view. This study uses investment analysis techniques and shows what the return on investment is, compared to the return offered by the market. In this study, the techniques used were the NPV (Net Present Value)¹⁰ and the IRR (Internal Rate of Return)¹¹.

In the financial analysis, two scenarios were considered

- a) partial investment: does not include investments coming from donations (external to the enterprise's cash flow);
- b) full investment: includes total resources invested in the enterprise (internal and external).

⁹ There are accusations in the tourist trade that some enterprises influence guests to make positive evaluations, thus diminishing their spontaneity. There are also accusations of false evaluations done with the intent to harm other enterprises.

¹⁰ The NPV considers the value of money over time and aims to verify if the cash balance will be profitable when brought to current values. This technique identifies the minimal return that a project should obtain so that its market value does not change (BORDEAUX-RÉGO, 2008).

¹¹ The IRR measures the proportional return by the business in a determined period of time (monthly or annually). Therefore, an individual investor can compare the resulting IRR of a project with the rate of return offered by other market investments in order to decide to accept or refuse a project. (BORDEAUX-RÉGO, 2008)

With the objective of knowing the level of impact of several factors (two external and one internal) on the financial performance of the Uakari Floating Lodge during the period, the following three simulations were conducted. They were related to two external factors and one internal, all of which are important for sales performance.

- Simulation 1 (external factor): What would the financial performance of the enterprise have been if the Tefé airport had not closed in 2006¹²?
- Simulation 2 (external factor): What would the financial performance of the enterprise have been if the devaluation of the Dollar had been less pronounced?¹³
- Simulation 3 (internal factor): What would the financial performance of the enterprise have been if more care had been taken with the pricing policy of the enterprise¹⁴?

The second focus measures the contribution of the enterprise to the economic well-being of the region under consideration. The analysis is carried out from the standpoint of society as a whole (region or country) and not just from the point of view of the owner of the infrastructure, as is done in a financial analysis (European Commission, 2003). The analysis is drawn from a source that considers all costs and benefits over time in order to obtain the net effects on the economy as a whole, adjusting for distortions and social and environmental externalities (Harb et al 2007).

¹² The airport closed two different times between 2006 and 2007 (for a total of nine months).

¹³ 75% of demand for the enterprise is international (COELHO; OZORIO, 2010), and therefore, sensitive to exchange rate variation. The long-distance domestic market is also affected since Brazilians are travelling more abroad.

¹⁴ The impact of price variations was considered to identify their level of influence (managerial decisions) on the financial performance of the enterprise.

In order to calculate economic feasibility, the economic IRR (economic internal rate of return) and economic NPV (economic net present value) ¹⁵ were used. Additionally, the economic impact generated by the initiative in the regional economy was measured, as were the intangible benefits of the project.

RESULTS AND DISCUSSION

Evaluation of product quality

Monitoring product quality through services provided is an essential element in the management of an ecotourism operation, with the key objective to understand the opinion of the visitor who uses these services. Figures 1, 2 and 3 reveal quantitative information regarding the perception of ecotourists about the services of the Uakari Floating Lodge. Scores above the green line (>4) represent high levels of quality.

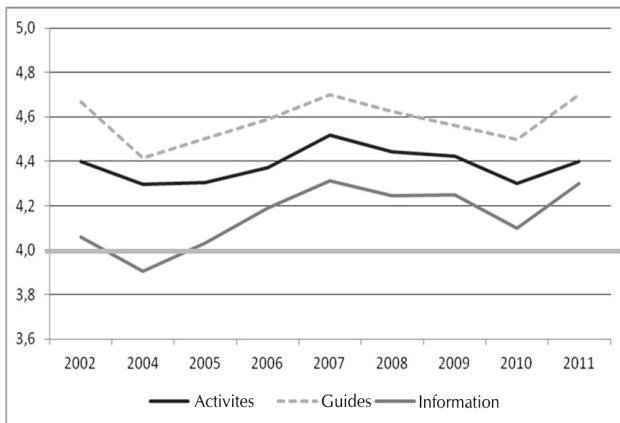


Figure 1 - Visitor satisfaction related to the indicators: activities, guides and information.

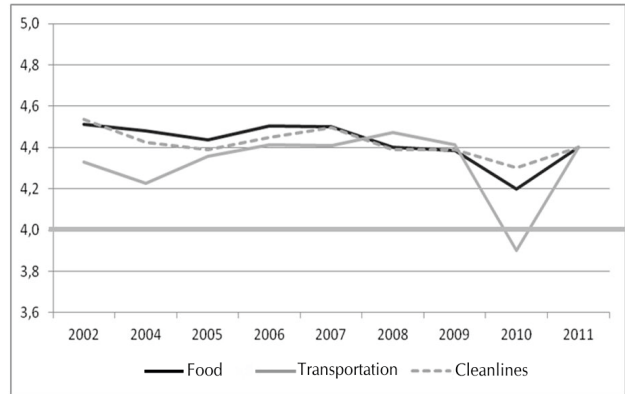


Figure 2 - Visitor satisfaction related to the indicators: food, transportation and cleanliness.

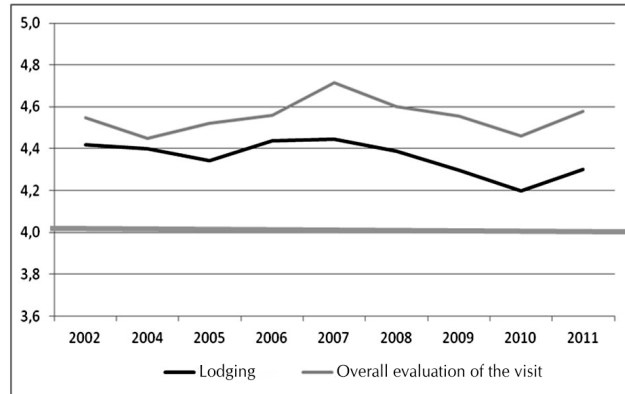


Figure 3 - Visitor satisfaction related to the indicators: lodging and overall evaluation of the visit.

In general terms, the analyses suggest high levels of visitor satisfaction (Figures 1, 2 and 3), considering that nearly all items evaluated were always graded above 4 (very good) over the years, with the exception of the items *information* (3.9 in 2004) and *transportation* (3.9 in 2010) ¹⁶.

¹⁵ These indicators were calculated using the same cash flows from the company; however, transfers made to Reserve communities for the purchase of products, payment of services and surpluses, and resources transferred to support research were not considered as costs to the enterprise.

¹⁶ The reduction in the evaluation for transportation in 2010 is related to the period of extreme drought during this year. The low level of water seriously limited access to the ecotourism area, where the round trip Tefé – Lodge –Tefé, which under normal conditions takes 1 hour and 30 minutes, increased to 2 hours and 30 minutes. Moreover, visitors needed to leave the boat and walk for 20 minutes on a makeshift trail (OZORIO et al., 2012).

However, even though the general results indicate high product quality, the graphs reveal a drop in the level of satisfaction over the period 2008 to 2010 in nearly all of the items analyzed. This decline can be explained in the following way:

The closure of the airport between 2006 and 2007 led to a significant drop in revenue for the enterprise¹⁷, which compromised cash flow and created financial restrictions, preventing the completion of maintenance projects and other necessary investments in 2007 and 2008 (OZORIO; JANÉR, 2012). This scenario resulted in a cumulative effect of problems related to the deterioration of infrastructure, which in turn contributed to the visitor having a reduced perception of quality. It is interesting to note that a pronounced reduction in the item *lodging* supports this argument, along with the information in the qualitative analyses (Table 1 and Figure 4).

Furthermore, from 2009 to 2010 there was an adjustment in rates for the Uakari Floating Lodge¹⁸ that, taken together with the lack of improvements in infrastructure, impacted the level of visitor satisfaction. However, other factors that are related to the results of this period cannot be discarded, such as: abrupt transitions in the enterprise’s management and insufficient investment in training. With the objective to better understand visitors’ opinions, a qualitative analysis was conducted. Table 1 displays comments that appeared with a frequency equal to or more than 5 times in each of the years analyzed (2009, 2010 and 2011), and divides them into operational sectors.

Table 1 - Categorization of most frequent comments in the years 2009, 2010 and 2011.

	2009	2010	2011
Cleanliness	Cleaner bathrooms (≤10) Flies in the restaurant were a problem. (≤10)	Empty the bathroom wastebaskets (≤5) Change bath and face towels more frequently (≤5)	
Guides / Information	Guides need better English skills (> 10) More communication of research projects (≤10) Improvements to slide show (≤10)	I would have found it much more interesting if the Guides spoke better English(> 10) We would have liked to hear more about particular aspects of nature. (≤5)	Local guides should speak English (> 10)
Infrastructure / Equipment	Bathrooms need refurbishing (> 10) Investment in upkeep and repairs in the lodges (> 10) Rooms need more maintenance (> 10) Ceiling needs to be refurbished (> 10)	Put a ceiling fan in the dining room (≤5) Rooms need better maintenance (≤5)	Reading light in the rooms (≤10) Fans in the dining hall and in the rooms (≤10) Make binoculars available (≤10) Hot water in the bathroom (≤10)
Activities	Get up earlier to see the animals coming out (≤10) More time in the community to participate more in the life of the local people (≤10) Organize evening activities better (≤10) Move the research presentation to the evening (≤10) Include more physical activities in the packages (> 10) More variety in activities (> 10)		
Commercialization / Marketing	Offer to organize flights to the city of Tefé(≤10) Include on the website reservation page a list of what tourists should bring (≤10) Improve website information on how to get to Tefé(≤10) Improve Lodge checkout times (≤10)		
Food	It would be nice to have eggs for breakfast. (≤10) Offer a wider variety of food (≤10)		
Minimal impact	Provide soaps and shampoos that do not damage the environment. (≤10)		

¹⁷For more details, see the chapter on economic and financial performance.

¹⁸See the chapter on economic and financial performance.

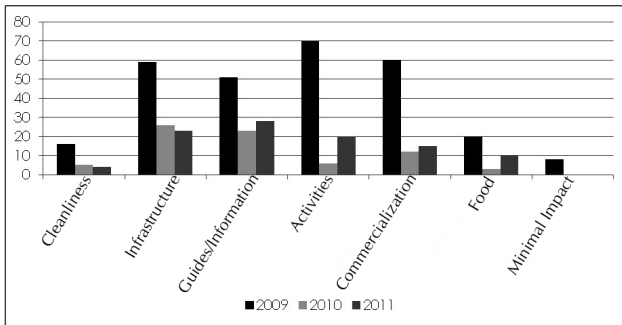


Figure 4 - Total number of comments per sector by year.

It should be noted that the most frequent complaints made by guests in 2009 were related to upkeep of the infrastructure, the fact that the guides do not speak English and the lack of variety of activities. In this year, there were also a lot of comments regarding the commercialization of the enterprise. In 2010 and 2011, the frequency of these complaints diminished significantly, but these operational sectors continue to be the most critical (especially English and infrastructure), as can be seen in Figure 4.

In general, considering the entire period analyzed (2002 to 2011), the quantitative analysis graphs (Figures 1, 2 and 3) reveal high levels of service quality. However, the analysis made it possible to identify a reduction trend in these levels between 2008 and 2010, but starting in 2011 they returned to a pattern of growth.

On the other hand, the qualitative analysis (Table 1) revealed the most critical items in the operation for the years 2009, 2010 and 2011 and also showed a return to improvement in the quality of the product. However, it is necessary

to continue monitoring in the years that follow so that the management of the enterprise can certify that this return to growth is being established as a trend.

Competitive analysis

The exercise of evaluating the quality of an ecotourism product should also take into account competition in the marketplace. The number of ecotourism enterprises in the Pan-Amazon region has grown significantly in the last 10 years, a fact that requires that the managers of these enterprises be aware of the strength of competition.

Table 2 presents information extracted from the tripadvisor.com site and shows the ranking of Uakari Floating Lodge in relation to 16 potential competitors in the Pan-Amazon and the Pantanal regions. The results show that the performance of the enterprise has been satisfactory from the point of the view of visitors, since the rating is 9.6, sharing fourth rank with three other enterprises. It is worth noting that the analysis includes enterprises with distinct identities, including: businesses, shared management, (not-for-profit sector and communities) and integrated community management. The jungle hotels Napo Wildlife Centre (Ecuador), Albergue Chalalán (Bolivia), Kapawi (Ecuador) and Yachana Lodge (Ecuador) – which have management models similar to that of Uakari Floating Lodge – achieved third, fourth and seventh place rankings, respectively.

Economic and financial performance

Table 3 presents the economic and financial performance indicators of the enterprise for the period 2002 through 2010.

Table 2 - Ranking of the Uakari Floating Lodge and its competitors from the travel site TRIP Advisor. September 2011.

Ranking	Ec lodge	Overall Average	No. of Evaluations	Location
1	Barranco alto	10	60	Southern Pantanal
2	Embiara lodge	9.9	19	Southern Pantanal
3	Napo wildlife Centre	9.8	80	Ecuadorian Amazon
4	Chalalan	9.6	27	Bolivian Amazon
4	Cristalino	9.6	16	Brazilian Amazon
4	Pacaya Samiria	9.6	18	Peruvian Amazon
4	Uakari Lodge	9.6	23	Brazilian Amazon
5	Anavilhanas	9.5	98	Brazilian Amazon
6	Pousada Aguapé	9.3	13	Southern Pantanal
7	Kapawi	9.1	26	Ecuadorian Amazon
7	Yachana lodge	9.1	19	Ecuadorian Amazon
8	Juma lodge	8.9	30	Brazilian Amazon
9	La Selva	8.8	44	Ecuadorian Amazon
10	Fazenda San Francisco	8.7	8	Southern Pantanal
11	Ariaú	8	85	Brazilian Amazon
12	Araras lodge	7.9	27	Northern Pantanal
13	Amazon ecolodge	7.3	51	Brazilian Amazon

Table 3 - Economic and financial performance metrics of the enterprise from 2002 through 2010

Scenario	2002 – 2010	Visitors	Revenue	NPV	IRR	NPVE	IRRE
Real	a) With partial investment	5,578	R\$ 5,208,265	R\$ (177,860)	-1%	R\$ 757,705	33%
	b) With full investment	5,578	R\$ 5,208,265	R\$ (522,859)	NA	R\$ 412,706	20%
Simulation 1	Without airport closure and with partial investment	7,615	R\$ 7,414,921	R\$ 602,972	22%	-	-
	Without airport closure and with full investment	7,615	R\$ 7,414,921	R\$ 257,972	14%	-	-
Simulation 2	Dollar at R\$2.3 with partial investment	5,578	R\$ 5,923,508	R\$ 221,903	15%	-	-
	Dólar at R\$2.3 with full investment	5,578	R\$ 5,923,508	R\$ (123,093)	5%	-	-
Simulation 3	With partial investment	5,578	R\$ 5,432,428	R\$ (20,259)	7%	-	-
	With full investment	5,578	R\$ 5,432,428	R\$ (365,259)	-12%	-	-

Financial evaluation

With respect to the context of table 3, the analysis with partial investment shows a negative NPV of R\$ 177,860.00 and an IRR of -1%. These values indicate that, from a purely financial point of view, the investment was not profitable during the period analyzed (9 years), or in other words, a longer timeframe would be necessary for this activity to become viable.

Regarding the simulations – in which the objective was to measure the impact of the risk factors on the financial performance of the enterprise – the results were interesting. Simulation 1 suggests that if the Tefé airport had not been closed in 2006, the enterprise would have been financially viable, either with partial investment (NPV R\$ 602,972 and IRR 22%) or with full investment (NPV R\$ 257,972 and IRR 14%).

Figure 5 compares the traffic at the Manaus and Tefé airports and clearly shows the reduction in traffic in the city of Tefé during 2006 and 2007, due to the closure of its airport. This directly impacted tourist demand for the Mamirauá Reserve as can be seen in Figure 6, which compares growth in demand for jungle hotels in the state of Amazonas with the increase in the number of ecotourists in Mamirauá.

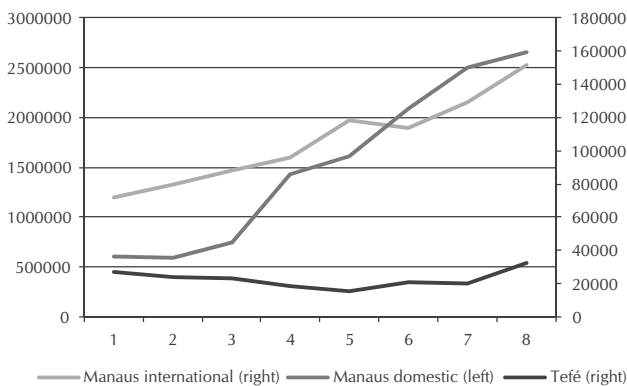


Figure 5 - Airport Traffic in Manaus and Tefé. Source: INFRAERO (2010)

The flow of visitors, which had been growing at an average annual rate of 27% in the period of 2001 to 2005, fell by 24% in 2006, and continued to be unstable until 2010. This situation negatively impacted “word of mouth marketing” (especially among travel operators) that existed regarding access to the Mamirauá Sustainable Development Reserve, creating uncertainty among tourism operators (COELHO; OZORIO, 2010).

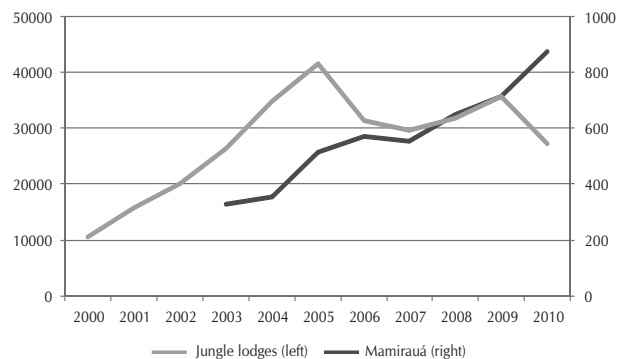


Figure 6 - Demand for hotels in the Amazon Jungle and in Mamirauá. Source: Amazonastur and MISD.

Table 4 suggests that, if the mishap with the airport had not happened, Mamirauá would have reached or arrived very close to the number of 1000 visitors (per year) in 2008. This conclusion makes sense since Mamirauá was experiencing a period of continuous growth until 2005, greater than the average for jungle hotels in the Amazon. Therefore, while the simulation uses growth rates that are more modest than the real growth rates for the jungle hotels in the state of Amazonas, it is clear that the Uakari Floating Lodge would have reached 1000 visitors per year.

This decline in demand resulted in a 30% reduction in revenue for the initiative in 2006, and since recovery was slow, this resulted in a reduced capacity for the enterprise to make investments and maintain the facility in the years that followed (OZORIO; JANÉR, 2012).

Table 4 - Growth of demand without airport closure (simulation).
Source: Amazonastur and MSDI.

Simulation	2006	2007	2008	2009	2010
Jungle hotels (real growth)	11%	-3%	18%	10%	22%
Mamirauá (simulated growth)	15%	-5%	10%	10%	10%
Mamirauá simulated number of visitors	555	906	997	1097	1200

Regarding the simulation related to exchange rate variation (devaluation of the Dollar), the results reveal that if the Dollar had remained stable at R\$ 2.30 during the period between 2005 and 2010, the Uakari Floating Lodge would have been financially viable, with a NPV of R\$ 221,903 and an IRR of 15% in the partial investment scenario. In the case of full investment, the NPV would have been negative (R\$ -123,093) and the IRR would have fallen to 5%, showing that the enterprise would not have been viable during the time period analyzed.

Even though there was an international economic crisis, the Brazilian economy remained strong, which made Brazil an expensive destination (overvaluation of the Real), and combined with less confidence and lower purchasing power of foreign tourists, international influx into the country remained stagnant during the period of 2005 to 2009 (JANÉR, 2011).

Table 5 - Variation of average annual exchange rate in the period 2002-2010. Source: Central Bank

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Average annual exchange rate (USD\$/R\$)	2.97	3.12	2.93	2.44	1.16	1.91	1.79	1.92	1.74
Variation (in %)	-	5%	-6%	-17%	-11%	-12%	-6%	7%	5%

The third analyzed simulation is related to the pricing policy adopted by the management of the enterprise. The objective was to identify what would have happened if the rate alterations had not been as pronounced as they were from 2005 to 2006 and from 2009 to 2010 (see Table 6). This simulation resulted in a negative NPV of 20,259 and an IRR of 7%.

Table 6 - Annual variation of average price in the period 2002 - 2010. Source: OZORIO and JANÉR, 2012.

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Price (in USD\$)	360	360	350	355	485	540	590	590	750
Variation (in %)	-	0%	3%	1%	37%	11%	9%	0%	27%

A pricing policy is critical when the exchange rate fluctuates a lot. If the price increases had been more gradual, the results would have been more satisfactory. There is evidence that the visitor thought that the prices were high during the years when the rates were significantly increased.

Therefore, from a financial perspective, considering the Uakari Floating Lodge strictly as a commercial enterprise (which expects profitability and a return on investment), the results suggest that the initiative was not financially viable in the period analyzed (9 years). The evaluation indicates that the enterprise needs a longer timeframe to be viable, or in other words, it would be viable in the long term. This reality related to the timeframe for return on investment has also been identified in other remotely located ecotourism enterprises with differentiated management models (community companies, community-company joint ventures). Harb et al 2007, when evaluating the financial performance of Albergue Chalalán, located in the Bolivian Amazon, used 25 years as a timeframe (1999 to 2024), and projections (estimates) were made between 2008 and 2024. In another study

carried out by the community company Mapajo de Ecoturismo Indígena (Mapajo Indigenous Ecotourism, Panama), Diaz et al. used an analysis timeframe of 15 years in their methodology.

The simulations carried out in this study contributed to clarifying the level of impact that certain risk factors (external and internal) represent for small businesses like the Uakari Floating Lodge. Through the simulation, it became clear that the temporary aerial access limitation (closure of the airport for nine months) constituted the largest impact factor for the feasibility of the initiative, and that this happened at a time when Brazil was becoming expensive due to the continued devaluation of the Dollar. The combination of these two factors presented a tough financial test for the enterprise, which had to deal with a significant reduction in its financial reserve. This limited the capacity of the company to invest in improvements, impacting the quality of the product to a certain extent. This reduction in demand and financial reserve led management of the enterprise to increase rates, which proved to be incompatible with the circumstances of the moment (level of product quality, market situation), therefore making it more difficult to reposition the initiative in the marketplace.

Economic evaluation

In order to determine the contribution of the Uakari Floating Lodge to the economic well-being of the community in which it is located, it is equally important to analyze the performance of the initiative from an economic perspective. The economic evaluation resulted in a NPVE of R\$757,705 and an IRRE of 33% for the scenario of partial investment, and when full investment was considered, economic NPV became R\$ 412,706

and economic IRR 20%. This shows that the project was efficient from an economic point of view and that the financing provided by the investors had a positive impact on the local economy. Calculations show that the resources transferred to the local economy¹⁹ represent approximately 35% of the total costs of the enterprise. This is evidence of the initiative's social nature.

Estimate of the regional economic activity

The launching of an enterprise like the Uakari Floating Lodge generates economic activity that goes beyond the borders of the region where the enterprise is located. In addition to generating revenue for the communities in the Mamirauá Sector, the initiative stimulates the economies of the municipalities surrounding the enterprise and contributes to generating economic benefits on a regional scale, especially for tourism intermediaries (travel agencies and operators) and airline companies. In order to estimate the economic impact of the enterprise, estimates were made regarding the benefits transferred to the individual participants of the Mamirauá ecotourism production chain.

Communities of the Mamirauá Reserve

The direct economic benefits of ecotourism activities for the communities are generated through services provided, sales of products and the distribution of surpluses. However, in reality the total is actually greater since certain things like handmade crafts, tips for employees and laundry expenses are not included on the books.

¹⁹ This is considered the Mamirauá Sector, Mamirauá Reserve. The Mamirauá Reserve is politically divided into sectors.

In an attempt to arrive at a figure for total direct revenue generated in the Mamirauá Sector, estimates were used for those items not on the books. Regarding sales of handmade crafts in the communities, the estimates were made with data from 2002 to 2005 (VASCONCELOS, 2007).

In this period, it was found that each ecotourist spent on average 15 Reais (R\$ 15) on purchases of handmade crafts. Therefore, it is estimated that, during the period analyzed, the revenue generated from handmade crafts in the Mamirauá Sector was around R\$ 80,000. Using data related to tips and laundry over a period of one year, values were projected for subsequent years. Thus, it is estimated that the revenue coming from these items would be approximately R\$ 112,000.

Table 8 combines both the direct measurable economic benefits and the estimate of those not formally accounted for. It is worth noting the significant increase in the number of families benefiting over the years. In 2009, for example, approximately 81 families benefited directly from ecotourism activities. It is estimated that, by the year 2010, the project had generated a total of R\$ 1,532,917 for the communities in the Mamirauá Sector.

An important impact of the revenue generated from ecotourism is related to family cash flow throughout the year. The local communities inhabit a floodplain area and depend on this environment for fishing, family farming, hunting and wood extraction. In the floodplain environment of the Solimões region, there is a variation in the water level that can be as much as 12 meters between the seasons of flood and drought, creating fluctuations in the monetary inflows that come from traditional economic activities. Therefore, ecotourism helps by providing these families with income when

their other activities are being affected by the seasonal effect.

It is important to note that ecotourism was not designed as a substitute for traditional activities like fishing and agriculture, but as an extra source of income (additional and alternative) for the local population (PERALTA, 2002). In order to achieve this while distributing the economic benefits generated as widely as possible, the Uakari Floating Lodge admits workers through a rotation system²⁰. As such, the workers are organized into an association, which serves as the legal entity contracted by the enterprise (PERALTA, 2005).

According to PERALTA (2005), during the period from 1998 to 2005, average family purchasing power increased nearly 148% in one of the sampled communities that is directly involved in the CBT project. According to the researcher, of the total household income generated in this community in 2005, nearly 55% is related to ecotourism, principally through services provided.

Table 7 compares average family income generated by ecotourism activities with GDP per capita in the closest city (Alvarães, AM). Considering that income from ecotourism is partial, since the workers are only involved about 10 days per month, it can be concluded that the results are satisfactory related to income generation.

Table 7 - Comparison of income resulting from ecotourism with per capita GDP in Alvarães. Source: MSDI and IBGE

Comparison of income	2008	2009	2010
Average family income (on the books) resulting from ecotourism	R\$ 2,840	R\$ 2,136	R\$ 2,570
GDP per capita Alvarães	R\$ 3,697	R\$ 3,944	ND

²⁰ working an average of 10 days per month

However, it is necessary to take care that these communities do not become dependent on the activity. In 2008, Peralta pointed out that, although the activity had not been envisioned as a substitute for other traditional economic activities, with the increase in income generated through ecotourism activities, the opportunity cost of agricultural activities increased. As a result, there was a decrease in the production of flour for family consumption on the part of younger families.

Table 8 - Estimate of income generated for communities through services, sale of products (fish and fruit), surpluses, tips and laundry services.

Year	Economic Benefits	Families	Average annual income from ecotourism per family ¹
1998	R\$ 1,672.61	17	R\$ 98.39
1999	R\$ 17,207.03	29	R\$ 593.35
2000	R\$ 20,936.95	33	R\$ 634.45
2001	R\$ 20,144.63	27	R\$ 746.10
2002	R\$ 68,868.00	25	R\$ 2,754.72
2003	R\$ 99,277.85	31	R\$ 3,202.51
2004	R\$ 184,479.59	34	R\$ 5,425.87
2005	R\$ 129,856.41	40	R\$ 3,246.41
2006	R\$ 104,241.66	42	R\$ 2,481.94
2007	R\$ 121,465.00	40	R\$ 3,036.63
2008	R\$ 204,455.55	72	R\$ 2,839.66
2009	R\$ 173,020.85	81	R\$ 2,136.06
2010	R\$ 195,290.48	76	R\$ 2,569.61
Total direct benefits (on the books)	R\$ 1,340.916		
Total direct benefits (not on the books - estimate)	R\$ 192,000		
Total	R\$ 1,532,917		

¹Does not represent total family income, but only income coming from ecotourism.

Municipalities of Alvarães and Uarini

During the period of 2002 to 2010, the Uakari Floating Lodge's activities generated average direct economic activity of approximately R\$ 33,000 per

year in the municipality of Alvarães ²¹, through the purchase of fish, agricultural products and rendering of services. At the same time, the municipality of Uarini ²² received an average annual amount of R\$ 17,200 through the payment of municipal service taxes (ISS).

Municipality of Tefé

Tefé is a key municipality for the region and it is where part of the services and suppliers used by the enterprise are concentrated. It has been calculated that the Uakari Floating Lodge generated for the city of Tefé approximately R\$ 2,560,000 between 2002 and 2010 through the purchase of food products, maintenance materials, fuel, salaries and other services. However, the total amount is greater since some visitors spend at least one night in the city of Tefé, spending money on hotels and restaurants in the municipality. If 10% of the visitors spent at least one night in Tefé and spent on average R\$ 150.00, the enterprise's estimated total annual economic activity (average) in the municipality would be approximately R\$ 293,000.

It is important to note that most of the ecotourists that visit the region come only to see the Mamirauá Reserve, which is due to the lack of alternative tourist activities in the municipality. As a result, each visitor spends less time in the region, and consequently, the average amount of money spent in the city is less.

²¹ The municipality of Alvarães is the closest to the enterprise (approximately 30 minutes by motorboat).

²² The enterprise is registered in the municipality of Uarini, Amazonas.

Mamirauá Institute Stores

Ecotourists that visit the Uakari Floating Lodge purchase products in the shops of Mamirauá Institute. It is estimated that each ecotourist spends R\$34.00 (based on information from 2011); therefore, the income generated by the stores through sales to ecotourists reached R\$ 190,000 in the period of 2002 to 2010.

Airline companies and travel operators

Access to the Tefé region requires an aerial connection from Manaus. Therefore, another sector that benefits from the existence of the enterprise is transportation. Considering that 90% of visitors arrive in Tefé by plane, it can be estimated that the average economic activity generated through the sale of tickets for the Manaus-Tefé-Manaus route is approximately R\$ 265,000 per year²³. The other 10% that arrive by boat spend on average R\$ 18,000 per year. It is important to note that this additional trip (Manaus-Tefé-Manaus) results in the majority of these visitors staying a night in Manaus, and therefore, spending money on taxis, hotels and food. However, these amounts will not be estimated in this study.

Another sector that benefits from the Uakari Floating Lodge is that of the tourism intermediaries (travel agencies and operators). It has been calculated that they receive an average of R\$ 37,000 per year through the payment of commissions. This amount does not include an estimate of the income generated by additional services that these operators offer to visitors of the Uakari Floating Lodge (flights, hotels, transfers, tours in Manaus, etc.).

Considerations regarding economic impact

Based on this study, it is possible to measure the economic impact that an initiative of this nature has on the regional economy. The analysis conducted indicates that for each R\$1.00 invested in the Uakari Floating Lodge, this ecotourism initiative generates regional economic activity of at least R\$ 4.72 (see Table 9). These results demonstrate the multiplier effect that an enterprise of this nature has and how the benefits have regional reach.

Table 9 - Relationship of investment to economic activity generated until 2010.

Total of investments in the Uakari Floating Lodge	R\$ 1.776.238,54	For each R\$ 1.00 invested the ecotourism generated...
Income generated in the Reserve	R\$ 1.160.574	R\$ 0,93
Income generated in the MISD store	R\$ 190,000	R\$ 0.11
Income generated in surrounding municipalities	R\$ 3,347,951	R\$ 1.88
Income generated by airline companies and agencies	R\$ 2,690,647	R\$ 1.51
Federal taxes, charges, and bank fees	R\$ 474,542	R\$ 0.27
Total economic activity generated	R\$ 8,363,714	R\$ 4.72

It is important to note that the external resources invested in the startup of the initiative came from international cooperation organizations and from the Brazilian government itself. From the beginning, it was understood that the objective of this investment was to foment an economic alternative. Thus, the analysis proves that, from an economic point of view, the invested resources obtained a significant return for the local society.

Furthermore, it should be noted that this analysis only deals with quantifiable economic benefits. There is also a series of other benefits that are more complex to measure but that need to be considered in projects with a socio-environmental focus, since they too generate important intangible benefits.

²³ A total of R\$ 2,367,000 from 2002 through 2010

Intangible benefits

Since it was established, the Uakari Floating Lodge has positioned itself as a unique enterprise, where traditional commercial logic carries lower weight than its other objectives. Therefore, when an evaluation of the results of a project of this nature is carried out, it is fundamental to consider the universe of benefits generated by the existence of the undertaking. There are techniques available that make it possible to assign an economic value to the socio-environmental benefits generated and thereby include them in the analysis of the feasibility of the project. This study does not quantify these externalities, but seeks to generate reflection regarding the reach of the impacts of an enterprise of this nature.

Ecotourism activities in Mamirauá are possible because of the conserved natural resources in the area, primarily the abundant fauna and the lush landscapes of the floodplain. Over the 13 years that ecotourism activities have existed in the Mamirauá Sector, they have contributed to an increase in the populations of key species in the area (caimans, *pirarucus*, jaguars, monkeys, etc.); to the reduction of invasions due to the increased presence of surveillance in the region²⁴; and to the creation of norms and mechanisms to stimulate conservation of natural resources in the area.

There is evidence that ecotourism in Mamirauá is contributing to the dissemination of a culture of sustainability among visitors, the not-for-profit sector and the media, as shown in the spontaneous report by renowned environmental journalist, Eliane Brum, published in the magazine *Época*²⁵.

The initiative played an important role in attracting resources and as a showcase for the institution (Mamirauá Civil Society and MISD) during the implementation of the MSDR management plan and the establishment of the institution (MISD). For many years, the enterprise served as a kind of demonstration project of the economic alternatives implemented in the MSDR.

The positive results achieved by the Uakari Floating Lodge resulted in two important international awards. The first was granted by the renowned U.S. Magazine *Cond Nast Traveler*, which considered the Uakari Floating Lodge to be the best ecotourism destination in the world in 2003. In the same year, the *Smithsonian*, together with the United States Tour Operators Association (USTOA) bestowed an award for sustainable tourism on the initiative. These two awards, in addition to other coverage in the media, gave MISD and MSDR high national and international visibility.

The activity is synergistic with research being done in the area which, in addition to economic benefits for the participating projects, generates visibility for them (with the potential for raising capital).

The ecotourism activities developed in Mamirauá have a core concern for minimizing impacts on the environment. To achieve this objective, the enterprise has been developing methodologies for monitoring and mitigating environmental impacts that have the potential to be replicated in other ecotourism initiatives.

Throughout its 13 years of operation, the initiative has received more than 50 invitations to present at symposiums, conferences, technical meetings, and other national and international events (India, Germany, Columbia, Peru, England, Chile).

²⁴ The Uakari Floating Lodge provided financial support to the environmental protection and surveillance system in and around the ecotourism area in the Mamirauá SDR for approximately nine years.

²⁵ (<http://revistaepoca.globo.com/Revista/Epoca/0,,EMI238946-15230,00-SE+A+AMAZONIA+E+NOSSA+POR+QUE+NAO+CUIDAMOS+DELA.html>)

The Uakari Floating Lodge has held more than 80 professional development events (courses, workshops, training seminars) with more than 1,000 participants throughout its 13 year history. It has been estimated that the initiative has trained a total of 150 to 200 people from the region for some type of ecotourism work. Currently, various trained members of the community have multiplied the effect by training others who want to work in this field.

Approximately 70 professionals of other initiatives in the Brazilian Amazon have received some type of training or have participated in exchange programs with the team at the initiative. Since 2010, the initiative's calendar of events has included a training course for multipliers of Community-based Tourism, with the aim of communicating lessons learned in the most targeted fashion, thereby contributing to the development of initiatives in other regions in the Amazon.

The Uakari Floating Lodge functions as a laboratory for research in ecotourism and conservation, contributing to the production of technical-scientific information. Throughout its 14-year history, the initiative has participated in the publication of 13 scientific works, in addition to having completed more than 30 project submissions to scientific events. In addition, the enterprise has contributed to the development of post-graduate and specialization theses, undergraduate scientific research projects (PIBIC), as well as one Masters dissertation. Between articles in national and international journals, chapters in books, and books the initiative has already published in collaboration with other organizations, 13 scientific works have been produced, in addition to 30 project submissions to scientific events. Moreover, the initiative

has assisted in the development of theses for undergraduate and graduate degrees, scientific research projects (PIBIC), as well as dissertations for Masters degrees.

Due to the fact that CBT is relatively new in the country – and Mamirauá is among the pioneering initiatives – the generation of this kind of information is of great value to support interventions in other localities.

Another factor that demonstrates the relevance of the CBT in Mamirauá is the reference to the initiative in innumerable studies undertaken by undergraduate and graduate students, both within and outside of the country. Currently, community-based ecotourism in the Mamirauá SDR is disseminated and studied in various universities in Brazil, especially in courses related to the theme of tourism in natural environments and the public use of Conservation Units.

FINAL CONSIDERATIONS

Many CBT initiatives are conceptualized as projects but fail for not having been considered (sufficiently) as products. The Uakari Floating Lodge is a project that was planned as a product, which followed important steps in its implementation (business plan, commercialization strategy, monitoring system). The results revealed in this study indicate that the Uakari Floating Lodge product has quality, since it has succeeded in meeting the expectations of demand. However, businesses in the area of ecotourism are not immune to factors that are beyond the control of their managers. In the case of Uakari Floating Lodge, the “dual blow” (airport closure followed by strong valuation of the Real) had a serious impact on financial performance, which after a promising start, ended up being unsatisfactory in the period analyzed – even

though the direct and indirect economic benefits have not been overshadowed.

The impact that these risk factors can create for initiatives with characteristics like the Uakari Floating Lodge (remotely located and with a differentiated management model) emphasize the need for better preparation for dealing with times of crisis.

In this phase of difficulties, the socio-environmental nature of the enterprise and the configuration of its management model – that assume a linkage to a not-for-profit organization – was important for the continuation of the activity. It should be confirmed that, if the enterprise were strictly a traditional business or had an integrated community management structure, it would have been more difficult to maintain its operation during the crisis, either due to the opportunity cost (traditional business) or the financial difficulties (community management).

However, the episodes of rate adjustment reveal the necessity for a broader business vision in decision making, in order to make processes more agile and efficient. Although the financial results were not satisfactory for the nine years analyzed, the study revealed the existence of other positive and important results, among them: the economic multiplier effect in the region, the benefits to conservation in the area, the benefits to the image of MSDR and MISD, the professional qualification of a great number of people, as well as the diffusion of knowledge to other initiatives in the Amazon.

Moreover, due to the fact that the initiative has good historical data, it is possible to monitor its performance (environmental, socio-economic, financial and operational), and collaborate to share the lessons learned with academia, the not-

for-profit sector, the business community and government.

The future presents a big challenge to the initiative, that is, to move forward with transferring management to local communities. With the results revealed in this and other studies, it has been possible to identify and measure important bottlenecks and challenges for the enterprise, and information such as this will contribute to the planning to reach the goal of transferring management. These challenges include: strengthening associations, refinement of the spaces for decision making, improvement of employee managerial skills, development of English skills for local workers and involving them in the commercialization of the initiative. To achieve all of this, a transfer plan will be developed and implemented, with the objective of proceeding in the most efficient way.

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