

PRIORITATION FOR GUIDED PROJECTS TO PROMOTE CHILEAN AGRICULTURAL EXPORTS, A WORLDWIDE AHP-INTERNET RESOURCE ALLOCATION APPLICATION

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Summary: *This resource allocation problem was resolved for a govern office (ProChile) dedicated to export promotion and final system has been applied twice a year since June, 1999.*

AHP model and evaluation process was performed by around ProChile's representatives located all around the world and expected benefits are currently in place.

Extensions are under development towards a fully Internet application, considering feedback from expected benefits versus real benefits as well as optimization packages for funds distribution.

1 Introduction

ProChile, with its Exports Promotion Department (EPD), was created in November of 1974 as a dependent organism of the International Economic Relationships Unit of the Chilean Ministry of External Relationships, and has as mission to support the development of the export process and the internationalization of Chilean companies, in accordance with the policy of international economy in use in the country, the international agreements subscribed by Chile and inside the World Organization Trading frame. This internationalization process is understood in a wide sense that includes the promotion of goods and services as well as the promotion of investments, business and commercial strategic alliances.

The objective of ProChile is to contribute to diversify and stimulate the exports of products and services - especially not traditional ones -, provide updated information to the exporter sector and support the contacts with potential foreign buyers. The institution provides the above guided by external markets knowledge, in order to capture the commercial opportunities that are presented to the national production, helping to organize the offer of the Sins between them and Medium Chilean Companies and their external projection.

In front of the new challenges that Chile's international insertion presents, ProChile has enlarged their objectives to support Chilean companies in their processes of internationalization, working to provide incentives to new companies, so that they can be incorporated in the world of international business and for those that have already made it, help to advance increasingly to more competitive positions in their markets.

To accomplish the above mentioned functions, ProChile acts through three lines of strategic action:

National exporter base amplification: it refers to the incorporation of new companies to the export process in a combined work of ProChile and the instruments of productive development, especially with the Corporation for Development of the Production, CORFO.

Consolidation of the exporter base, for which ProChile supports the exporters in the invigoration of their presence in the markets, the development of the commercialization channels and the accommodation

of the exportable offer, by means of technological innovations, improvement in the quality and design of its products and adaptation to the effective environmental norms.

Expand in depth the export base. Dedicated to those companies that have a good exporter positioning, but they require support in the detection of new opportunities guided to the promotion of industries or creation of strategic alliances.

For the implementation of the three previously described lines, Pro-Chile has generated three diverse program types for the support to the silvo-agricultural companies of exports;

- Programs of PROSPECTING that look for generation of market knowledge that would allow the beneficiaries to identify and to define client's necessities, segments of markets, commercialization channels, competition analysis, prices and entrance conditions; all that which allow to define with certainty the feasibility of market penetration and to profile a future strategy for it.
- Programs of PENETRATION that look for the development of strategies that allow the beneficiaries to introduce or commercially increase the volumes and values of export of specific products already prospected, in a way of supporting the development of the sector exports.
- Programs of PERMANENCY that look for generation of strategies that allow the beneficiaries to maintain or to consolidate already penetrated products, favoring the increase in the volumes and export values, as well as, the development of the process of internationalization for the sector companies.

To accomplish the previous objectives, ProChile counts with approximately 500 representatives, with commercial offices located along Chile and in main export destinations (detailed sites at the end of this paper).

The next figure shows ProChile's commercial offices located world wide.



Figure 1: Distribution of ProChile's Offices

Export have been grouped in two departments: one for export development of silvo-agricultural goods and services, which corresponds to the present work, and one for export development of other goods or services.

2. The Problem

On-line with its objectives, ProChile should administer the assignment of state funds for the execution of its exports development mission.

Funds are usually assigned twice a year and they should be distributed among diverse exporters by means of open competitions, notified via formal bids published in national press. In general, funds are defined by types of markets, being the silvo-agricultural market an unity in itself that handles specific funds for its projects.

In average, 2 funds assignment processes for silvo-agricultural projects are carried out per year, with around 10 million dollars to distribute in each occasion. These funds are subdivided among projects in prospecting, penetration or permanency stage.

Tradicionalmente, funds postulation process consisted in a proposal presentation reviewed by a traditional system of qualitative assessments, based on questionnaires with their corresponding ratings. Reviewers acted as appraisers officials located in Chile, as well as in office branches located world wide. Main limitations detected on this previous system were:

- Discretionary evaluation, without clear common parameters to all the appraisers.
- Difficulty of establishing minimum conditions for proposal presentations, often delivered with not well formulated or incomplete projects.
- Possibility for numeric manipulations for the given evaluations, which give a lack of credibility to the entire process.
- Decrease of the pattern resulting exports diversity

Indeed, the Silvo-Agricultural Exports Development Department (SED Department) had detected the following characteristic in statistical terms:

YEAR	# EXPORTER	# MARKET	# PRODUCTS	US\$MM EXPORTS.	% EXPORT ~ COPPER
1960-1974				941	30,14%
1975	200	50	500	1.590	45,38%
1989	3.465	121	1.478	8.190	50,23%
1990	4.100	129	2.300	8.580	54,33%
1991	5.384	143	3.275	9.048	59,49%
1992	5.453	155	3.433	10.125	61,09%
1993	5.469	151	3.507	9.416	64,71%
1994	5.834	151	3.621	11.645	63,38%
1995	5.840	167	3.647	16.454	59,77%
1996	5.839	168	3.890	15.404	60,56%
1997	5.841	166	3.771	16.923	61,5 %

Figure 2: Chilean Export Numbers for 1975 – 1997 (ProChile)

This figure shows Chile's export numbers, in terms of volume in millions of annual dollars, market coverage or destinations, number of exporters and products have not changed substantially in the last 8 years.

So in summary, the fundamental diversification objective for ProChile has not been accomplished in latest years.

3. Solution Strategy

The SED Department proceeded to review ProChile's objectives and to analyze the project bid and funds allocation processes. This way, it was agreed that the principles that should regulate the bid process were given by:

- To grant access to all interested exporters
- To promote co-financing: partially with funds given by ProChile, partially with the exporter's ones
- To encourage funds competition between interested exporters as an incentive to generate better projects
- To improve projects assessment reliability
- To be fair in the funds allocations, for the selected projects.

Given the above, the new funds allocation process should fulfill the following objectives:

- To enhance and increase support for Export Promotion Programs (EPP)
- To support the development of programs and export projects that fit in a better way exporter's companies requirements of the companies in the face of their internationalization
- To assure a non discretionary and non discriminatory resources allocation mechanism
- To optimize the systems of evaluation of the results of the PPE, in function of their objectives.

The next figure shows the new administration of funds process, based on a new EPP evaluation system that also incorporates the evaluation of the results weighted in terms of the objectives proposed in each case.

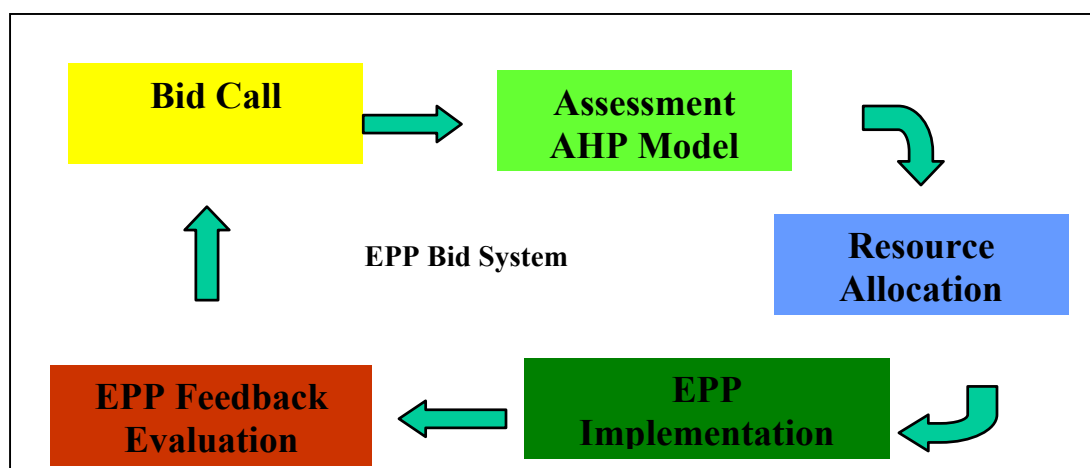


Figure 3: New Funds Administration Process (Source: Prochile 1999)

The information considered in the evaluation system can be classified clearly in two categories:

- Qualitative information: Information based on factors like:
 - Quality and form of the EPP elaboration
 - EPP Coherence and viability
 - Expected results
 - Information related with the EPP beneficiaries
- Quantitative information: Statistical information gathered by ProChile related to:
 - Destination market characteristics
 - Products to export characteristics
 - Exporter company inside the national industry characteristics

The new funds administration process was redefined according to the following frame :

1. EPP effectiveness determination in term of the given objectives. It was considered that each EPP could postulate only in one financing line (prospecting, penetration, or permanency), existing minimum levels of effectiveness to reach for each line. Independent hierarchy models were made for each financing line.
2. Entire set of EPP review under a premise of efficiency (cost-efficacy) of resource allocation .
3. An amount for each financing line was defined. It would be reviewed in terms of the number of EPP participants, as well as the number of EPP with a minimum effectiveness and a minimum cost-efficacy relationship.

In first instance, the assignment of funds would be based on the delivery of all the funds requested by each prioritized EPP, until completing the total available resources. In a second instance, the final assignment will be carried out starting from a combination of the pattern of effectiveness with the pattern of whole lineal optimization (AHP&PLE).

To determine the effectiveness of a EPP in terms of defined objectives, an AHP model was build, which considers the following components or steps:

- (a) Evaluation pattern generation
- (b) Importance assessment of the approaches in each pattern
- (c) Complete set of programs and projects of EPP assessment
- (d) Ranking by effectiveness of the complete set of programs and projects

This was made by all actors direct participation in the evaluation process.

3.2 Effectiveness Evaluation Model

The figure below, summarizes the general structure of the hierarchy model, which presents variations for each financing line (prospecting, penetration or permanency).

Diverse statistical indicators were used under the approaches of (Market, Product, Company) trilogy, in the managerial and sector level.

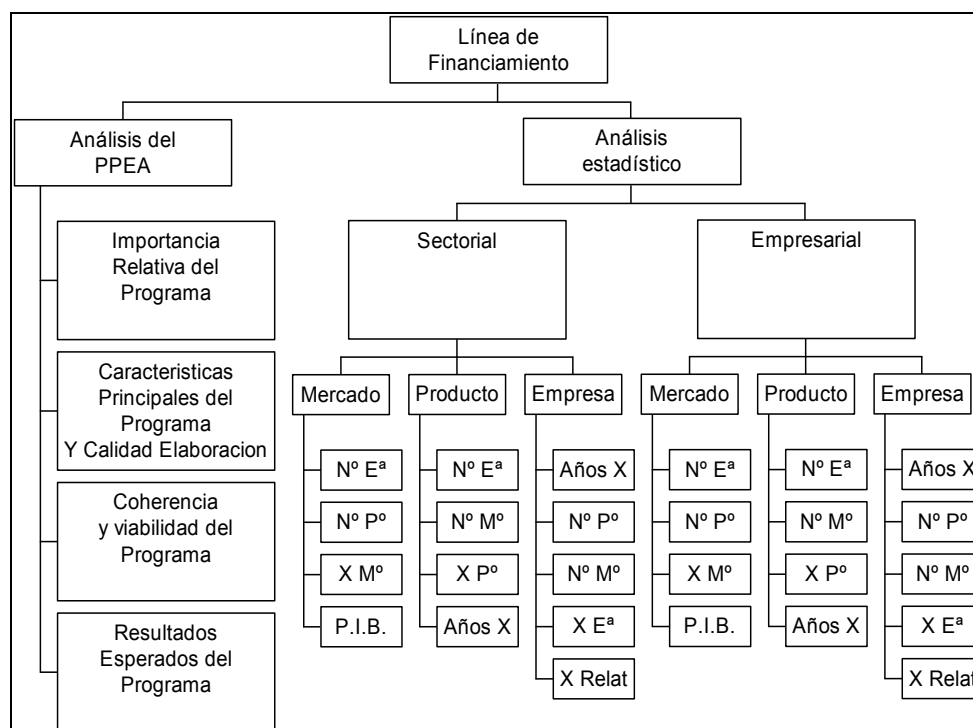


Figure 4. Effectiveness Hierarchy (Pro-Chile, 1999)

3.3 Process Considerations

The proposed process considers as elements to solve the following challenges:

- Involve all ProChile representatives specially the core directors, since it is important that the effectiveness evaluation of the EPPE is carried out by diverse ProChile's specialists, which are located all over Chile and in foreign countries.
- Strong work in development of database systems in order to consolidate information, due to the fact EPP evaluation would be made by many ProChile's representatives spread around the world.
- Clearly identify the required participants and their responsibilities, so that the process would have an initial agreement and fluency about evaluation terms and results generation (one month long).
- Adaptation of computing systems to give support and registration of the complete process. This should be particularly important to support future instances of control objectives, during the process execution as well as the feedback step.

3.4 Obtained Results

- The generated and described hierarchy model in the previous points, has been applied under the guide of the Export Department of ProChile twice a year since June, 1999.
- In December 2000, the total competing EPP reached the record number of 300 participants (doubling the historical number), for the bidding funds, (US\$10 Millions per line).
- The set of projects evaluation was a task approached by 50 ProChile representatives around the world, which received an e-mail set of instructions.
- The evaluation was carry out Team_EC9.5 from Expert Choice Inc. software, which gave the final ranking for effectiveness and the frontier of efficiency of the group, for each financing line.

3.5 The 3 Extensions Steps

ProChile's Export Promotion Department, due to the success of the program, is working now in the following three extensions steps to the original process:

3.5.1 Internet

Elaboration of a mechanism based on Internet technology, to facilitate the access from the appraisers to the information of each EPP and to proceed to the evaluation under the hierarchy model. This mechanism, partially executed on July 2000 bid, gives graphic facilities that simplify the input, handling and consolidation of big volumes of information, getting close the evaluators to the process itself.



Fig. 6: Starting Screen for Project&Program Evaluation

Ficha de Evaluación de Programas (General)

Identificación del Programa

Número Programa:

Unidad Evaluadora:

Nombre Evaluador:

1 Situación Actual Beneficiario-Oferta

Criterios	Nota
1.1 Novedad del Sector	<input type="text" value="Excelente"/>
1.2 Diagnostico Viabilidad	<input type="text" value="Excelente"/>

2 Características Generales del Programa

Figure 7. Screen of Evaluation Record for Project or Program

3.5.2 Feedback

Definition of a feedback mechanism to assess the obtained results, by means of a model that captures the expected benefits and the obtained benefits. This mechanism could be used conceptually in diverse periods during the useful life of a program or project exporter, but initially it is conceived fundamentally associate at the end of the program. The consolidation and storage of this information will allow ProChile the generation of new indicators to validate the exporters lines, as well as the execution by the winners participants of the commitments made at the moment of the funds assignment. This concept is represented by Figure 8:

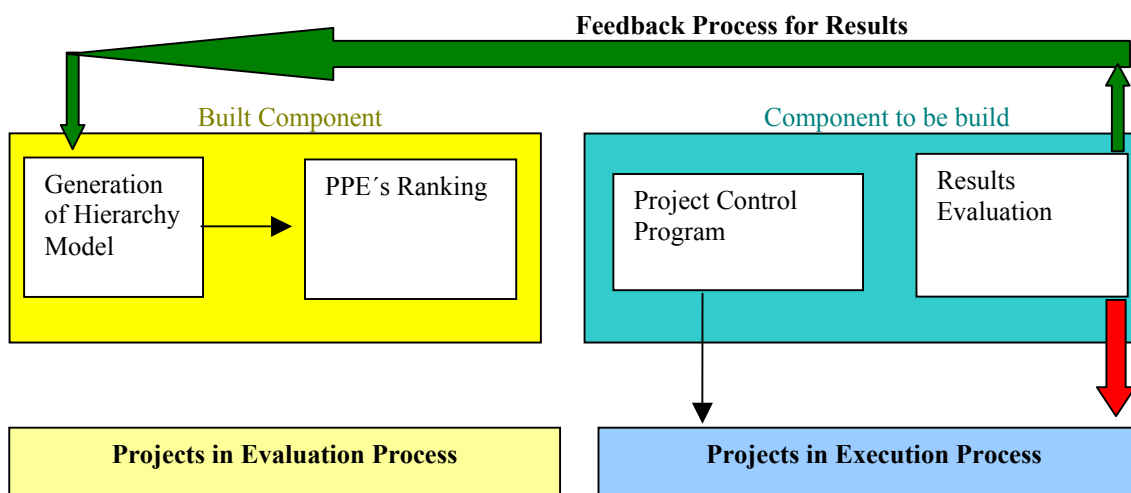


Figure 8: Current and Future General Evaluation System (Pro-Chile, 2000)

3.5.3 Optimization

Implementation of optimization mechanism in funds assignment, by means of the integration of other operational research packages, like Integer Linear Programming.

4. Summary

As a final conclusion for this application, it is interesting to note the positive impact of the EPP system supported by these funds. It has generated a growing demand for the available resources, that made evident the need for a National Bid to ensure free access, non discretionality assignment and the fairness of the process, also propitiating the competition among the Exports Promotion Programs that are presented.

It is a public and informed system, attended technically by specialists in Chile and in the exterior that guide and support the beneficiaries in the presentation of their Programs. This system goal is the transparency, efficiency and effectiveness in the assignment and use of the public resources, increasing and improving the coverage of both funds.

5. Appendix

Next is a list of 52 ProChile's world offices that have participated in this process:

LIST OF PROCHILE COMMERCIAL OFFICES AROUND THE WORLD

COUNTRY	CITY	LOCATION
ALEMANIA	HAMBURGO	OFICOM
ARGENTINA	BUENOS AIRES	OFICOM
	MENDOZA	ANTENA
	NEUQUEN	ANTENA
	SALTA	ANTENA
AUSTRALIA	SYDNEY	OFICOM
BELGICA	BRUSELAS	OFICOM
	BRUXELLES (CEE MISSION)	EMBAJADA
BOLIVIA	LA PAZ	OFICOM
BRASIL	SAO PAULO	OFICOM
	CURITIBA	ANTENA
	SALVADOR	ANTENA
	PORTO ALEGRE	CONSULADO
	PORTO ALEGRE	REPRESENTACION
CANADA	TORONTO	OFICOM
CHINA	BEIJIN	OFICOM
	SHANGHAI	ANTENA
	TIAJIN	ANTENA
COLOMBIA	BOGOTA	OFICOM
COREA	SEUL	OFICOM
COSTA RICA	SAN JOSE	OFICOM
ECUADOR	QUITO	REPRESENTACION
UNITED STATES	MIAMI	OFICOM
	NUEVA YORK	OFICOM
	WASHINGTON	OFICOM
	WASHINGTON	EMBAJADA
	CHICAGO	ANTENA
	LOS ANGELES	REPRESENTACION
EGIPTO	EL CAIRO	ANTENA
EL LIBANO	BEIRUT	ANTENA
EL SALVADOR	SAN SALVADOR	ANTENA
ESPAÑA	BARCELONA	OFICOM
	MADRID	OFICOM
	BILBAO	ANTENA
FEDERACION RUSA	MOSCU	OFICOM
FRANCIA	PARIS	OFICOM
GRECIA	ATENAS	ANTENA
GUATEMALA	CIUDAD DE GUATEMALA	ANTENA
HOLANDA	LA HAYA	OFICOM
HONDURAS	TEGUCIGALPA	ANTENA
HONG KONG	HONG KONG	OFICOM
HUNGRIA	BUDAPEST	OFICOM
INDIA	NUEVA DELHI	OFICOM

INDONESIA	JAKARTA	REPRESENTACION
INGLATERRA	LONDRES	OFICOM
ITALIA	MILAN	OFICOM
JAPON	TOKIO	OFICOM
	TOKIO	EMBAJADA
	OSAKA	ANTENA
KENIA	NAIROBI	ANTENA
MALASIA	KUALA LUMPUR	REPRESENTACION
MARRUECOS	CASABLANCA	OFICOM
MEXICO	C. DE MEXICO	OFICOM
MONGOLIA	ULAANBAATAR	ANTENA
NICARAGUA	MANAGUA	ANTENA
NUEVA ZELANDIA	WELLINGTON	ANTENA
PANAMA	C. DE PANAMA	ANTENA
PERU	LIMA	OFICOM
POLONIA	VARSOVIA	REPRESENTACION
SINGAPUR	SINGAPUR	REPRESENTACION
SUD AFRICA	JOHANNESBURGO	OFICOM
SUECIA	ESTOCOLMO	OFICOM
SUIZA	GINEBRA (WOC MISSION)	EMBAJADA
TAILANDIA	BANGKOK	REPRESENTACION
TAIWAN	TAIPEI	OFICOM
TURQUIA	ANKARA	ANTENA
UCRANIA	KIEV	OFICOM
URUGUAY	MONTEVIDEO	OFICOM
VENEZUELA	CARACAS	OFICOM

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