SENAI Model of Forcasting

Developments and changes

Bogotá, 22 de noviembre de 2017

PROSPECTIVA E PROJEÇÃO

Sistema Indústria

SENAI Model of Forecasting

Objectives:

SENAI Model of Forcasting aims to identify the needs for professional training in the following dimensions:

- Identification of changes in professional profiles.
- Identification of changes in curricular designs.
- Identification of changes in the offer for professional training (regular courses and specializations)
- Setting up educational strategies (ex: training of teachers and identification of investments in educational technologies).

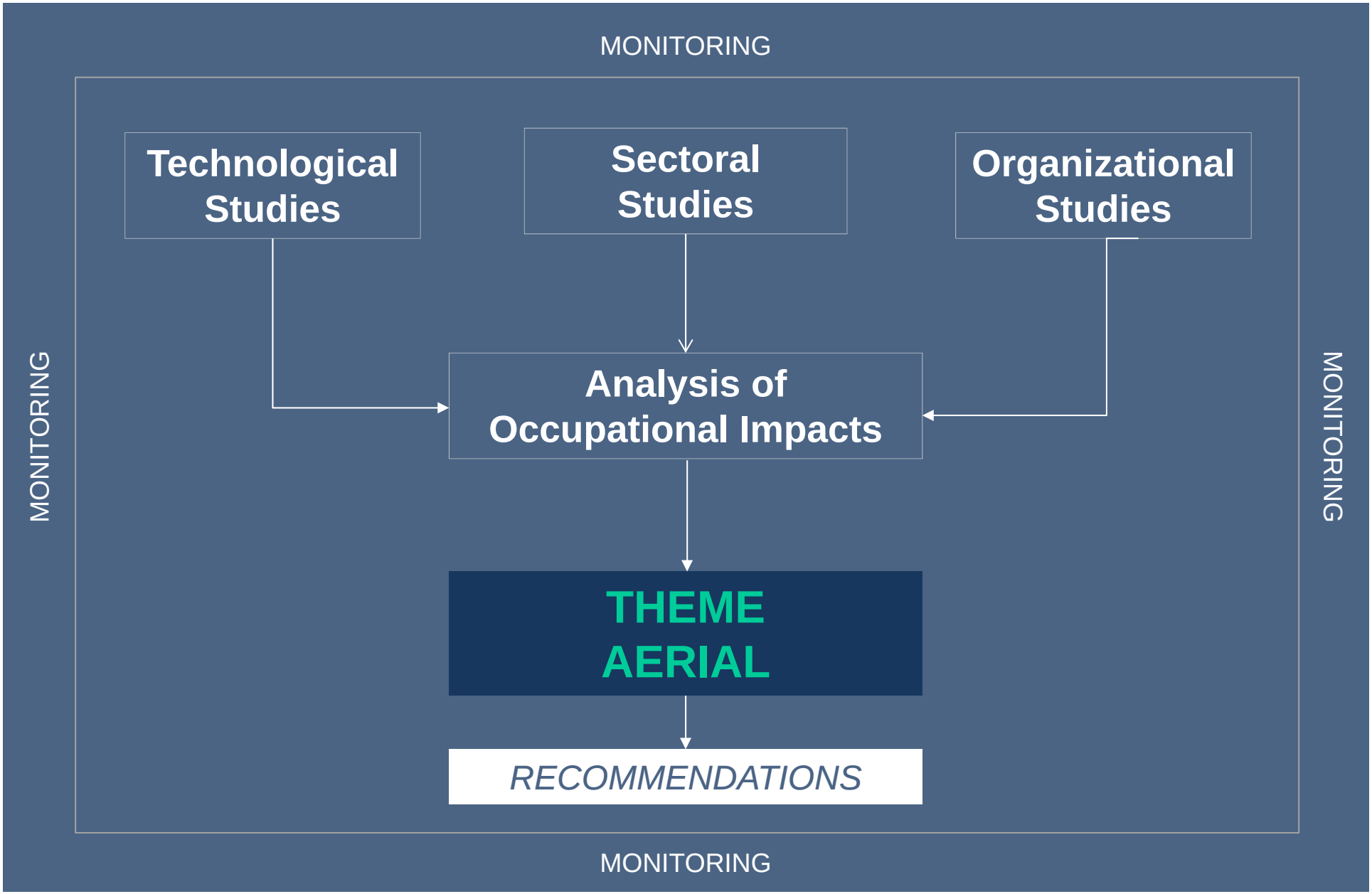
SENAI Model of Forecasting Cornerstones

Focus on the sectors – It allows us to identify, in details, the future technological and organization dynamism, as well as its impacts on the work organization structure and specific professional training.

Specific Emerging Technologies – As they are known technologies that remain in the initial phase of commercialization or have a low degree of dissemination on the market, the analysis of their impacts on occupations is safer.

Technological and Organizational Dissemination – Knowing the probable technological and organizational disseminations allows us to set up in a safer way, those technologies and organizational changes, which will have a greater degree of dissemination and their respective impacts on the occupations.

Time Horizon – The Model sets for its studies the time horizon from 5 to 10 years. This time period allows, with a greater degree of certainty, the Professional Training Institutions for the adequacy of their processes of training given the probable changes in the professional profiles.


MONITORING
Technological Studies
Sectoral Studies
Organizational Studies
Analysis of Occupational Impacts
THEME AERIAL
RECOMMENDATIONS
MONITORING
MONITORING
MONITORING

Changes in the Model - **Technological Prospection**

The panels of specialists are made through structured meetings that seek interaction between specialists to reach a certain degree of consensus.

Its structure is based on the application of **questionnaires or previously conceived questions**, in addition to setting spectific work rules.

It is an interesting way to obtain **perceptions from specialists** and, it has increasingly been used in the national prospection.

The panel of specialists must investigate and study the **determined topics** and present their conclusions and recommendations.

They must have the same integrity and conduct as other scientific and technical studies and **should seek consensus**, **but not to the point of eliminating all discrepancies.**

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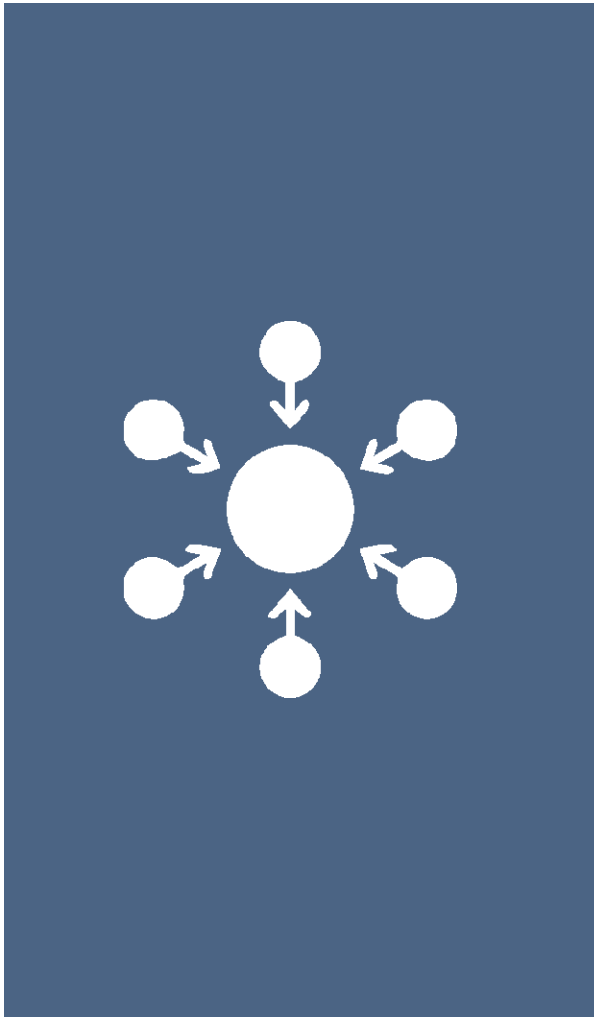
Changes in the Model – **Technological Prospection**



The Panels of Specialists, whichever the topic is, are always organized according to two principles:

Allowing all interlocutors a **great freedom of speech** (time of individual reflection in silence, gathering all ideas in writing);

Channeling and using the participants' intellectual production (mainly through a **rigorous time administration and, especially, through systematically falling back on** techniques such as classification of ideas, hierarchy, etc.)

In the course of the conclusions sessions, organized at the end of these seminars, is when the different groups share their reflections and compare them.

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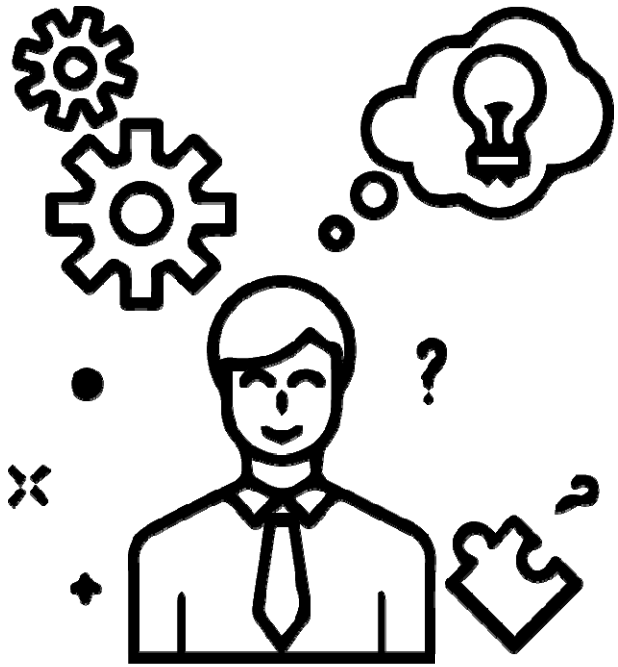
Panel of Specialists – Specialists' Profile



Professional Experience

Independence

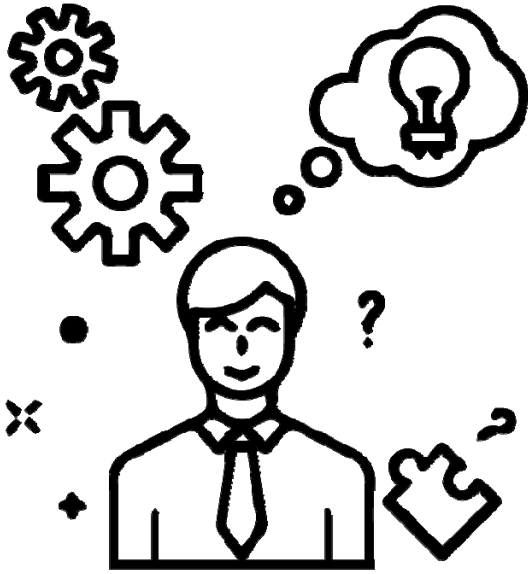
Ability to work in group

Panel of Specialists – Points of Attention

Many times the perception they have are wrong or preconceived.

Some times they are ambiguous and divergent perceptions among specialists from the same area.

Influence of the status and of the personality power among the invited specialists (Cyphert & Gant, 1970).



Technological Dissemination– Elements of analysis

Based on this definition, it can be considered that the dissemination process has four elements of analysis:

Innovation: The ideas, the practices and the objects that are perceived as new by an individual or social group.

Communication channels: are the means by which messages pass from one individual to another.

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Time: This element is divided into three analysis of factors – the process of adoption of the innovation; in which an innovation is adopted by an individual or group and the innovation adoption rate.

Social System: We consider it here as a network of actors who seek, through Innovation, to solve common problems and whose objects are similar.

Attributes that influence with the transmission process speed

Attribute	Characteristics/definition
Relative Advantage	It is related to the way the new technology is perceived in relation to the old technology. This attribute can be measured in terms of economic profitability, social prestige, low initial cost, etc.
Compatibility	It is the way the new technology is perceived as consistent with the existing values, past experiences and the needs for potential clients.
Complexity	It is the degree of difficulty of understanding and utility perceived by a potential user. In theory, the degree of difficulty of understanding and usefulness perceived by the potential user. In theory, the easier it is to understand and implement innovation, the faster it will be disseminated.
The proof capacity	It refers to the possibility of a potential user to experiment the innovation before buying it.
Possibility of observation	It refers to the possibility to observe and measure results obtained by the innovation before buying it.

Attributes influencing with the dissemination process speed

Attribute	Characteristic/definition
Impact on social relations	It refers to posible effect of ruptura of the social environment by the innovation.
Reversibility	It refers to the possibility of replacing the new technology.
Time required	It refers to the time spent to adopt the new technology.
Modification power	It refers to the possibility of the new tecnology being changed or recreated.

Source: Cândido e Brito (2003)

Other variables affecting the dissemination process speed

- **Complementarity**: This variable is related to the need for new technologies to need complementary technologies for their actual dissemination.

- **The cumulative effect of the incremental improvements**: This variable refers to small improvements that occur during the dissemination process of the new technologies.

- **The Business relations**: The complexity and specificity of the production flows have caused the technological development of one sector to be strongly related to the others.

- **The technological expectations**: The high expectations of the potential users about the future technological development of the new technologies can delay the dissemination of those. This means that one company cannot acquire a new technology due to the expectation of new developments, by the market.

Source: Rosenberg (apud Rocca, 1994)

Other variables affecting the dissemination process speed

Financing Programs and tax advantage for technological modernization.

Institutional environment favorable to direct investments.

Establishment of international agreements for technology transfer.

Existence of an efficient intellectual property system.

Existence of skilled labor and support organisms to the innovative process.

Source: Tigre (2006)

Other variables affecting the dissemination process speed

Questionnaire general question

What will be the dissemination (acquisition and use) of the technology .....?

For a better reflection on the technology dissemination, it is possible to break down the main question (general) into other simpler ones. This breaking down may help the specialists in the process of forecasting the dissemination likelihood of the technologies.

Are the entrepreneurs in the sector conservative in the technological change process?

Does the country's National Innovation System allow a good technology transfer process?

Does the sector have a large number of SMEs?

Does the country have financing systems for the purchase of new technologies? Are they known by the entrepreneurs of the sector?

Does the sector have skilled workers for the use of Specific Emerging Technologies?

Are the suppliers of the specific Emerging Technologies located in the country?

Changes in the Model- **Organizational Prospection**

New business models

New management practices

New professional profiles

Organizational prospection Stages

- The Mapping of the Value Chain

- Input-output structure
- Geographical reach
- Governance
- Institutional context

- Business models in the value formation chain

- Management practices

- Operations
- Human resources and talent management
- Preparation and splitting of goals
  - Measurement of performance and indicators
  - Practices for Sustainability
  - Practices for the development and implementation of innovations

Organizational prospection questionnaire

Pantalla Excel

Organizational Prospection

Results – Naval Construction Sector

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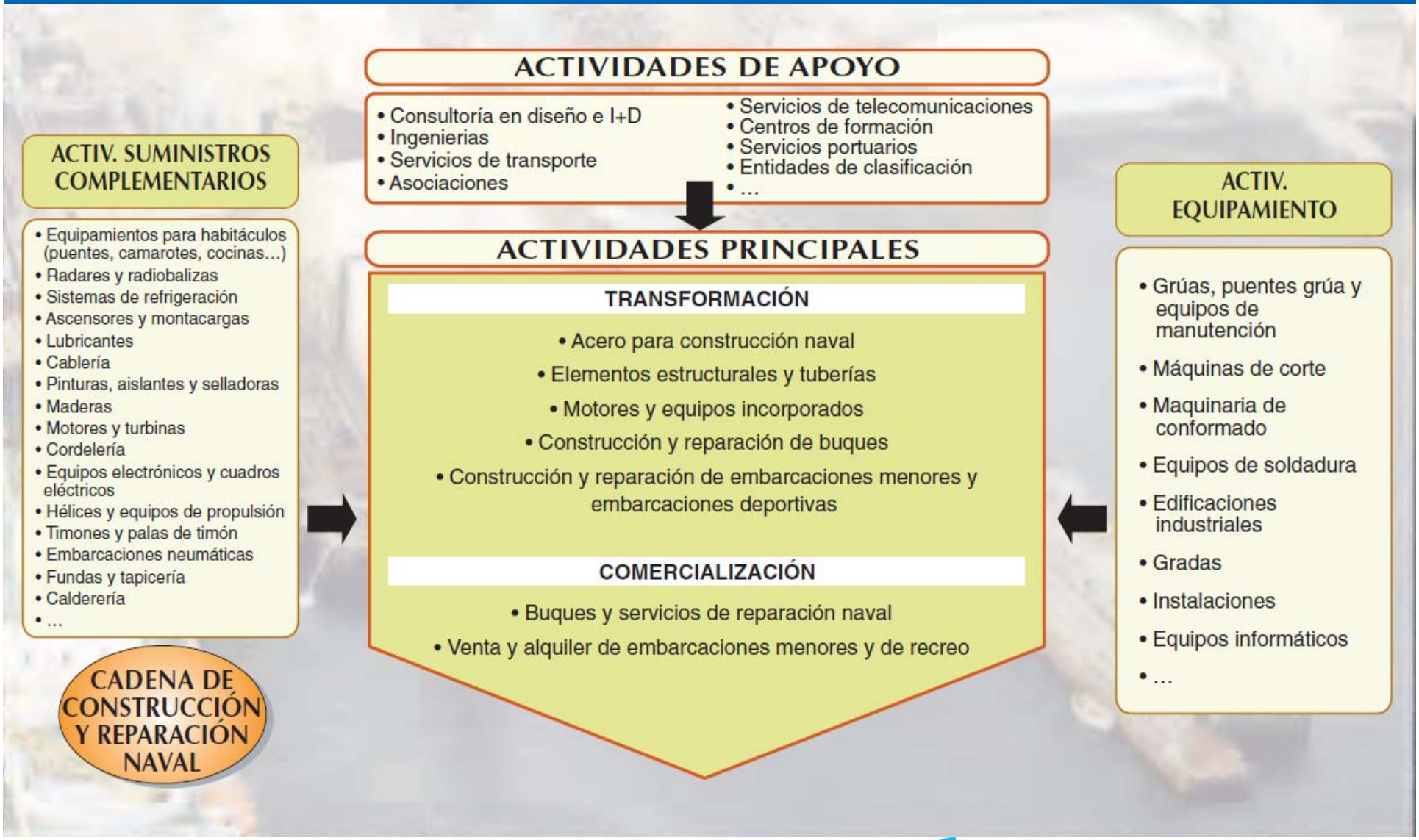
Production chain - Naval Construction sector



Source: Foro caixanova de estrategias empresariales, nº 14 (2008)

Results – Naval Construction Sector

Excel Screens

Results – Naval Construction Sector

Organizational Factor	Specification	Percentage of companies in the productive chain that will implement it in the next 5 years	Percentage of companies in the productive chain that will implement it in the next 10 years
Strategies of positioning on the market	Leadership in costs	51 to 70%	31 to 50%
Marketing strategies	Innovative service offers	Up to 10%	11 to 30%
Production Strategies	Lean Manufacturing	51 to 70%	51 to 70%
Tools for decision-making process	Tools for development, management and evaluation of projects	51 to 70%	51 to 70%
Strategies for attraction, identification, development and retention of talents	Quality programs at work and coaching programs	31 to 50%	31 to 50%
Establishment of actions and corporate responsibility program	That inform and educate their final clients, regarding the best use and disposal of the products generated by the chain	11 to 30%	31 to 50%

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Thanks!

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