

# **Project Timor - A Study to the Industrial Development of East Timor**

**Mário Cabral**  
**Department of Engineering**  
**National University of East Timor**  
**Dili, East Timor**

**Filipa D. Vieira and Cristina S. Rodrigues**  
**Department of Production and Systems**  
**University of Minho**  
**4800-056 Guimarães, Portugal**

## **Abstract**

East Timor is a young country, post-conflict and with low incomes, it is pointed out the need to implement a strategy in order to bring prosperity. One way to achieve these aspirations may pass through private sector investment through the creation and implementation of industry in the country. The present project intends to define a set of guidelines for the implementation of an industrial unit in East Timor. With the goal of identifying industrial areas most relevant to East Timor and taking as a starting point the case study of Timorese reality, a survey was held with Timorese population and information was collected with governmental entities as well with some industry. Results suggest that respondents recognize the importance of creating a manufacturing industry. Nevertheless the perceived advantages of employment and development, the respondents have concerns with environment and land conflicts with community. The coconut oil industry is considered the most important food industry, followed by the salt industry and the industries for the use of cork (baked). Cement industry is the most important construction materials' industry. The results presented are an important insight in terms of the expectations and attitudes of East Timor population concerning the establishment of manufacturing industry.

## **Keywords**

East Timor, Industrial Development, Manufacturing Industry, Attitudes

## **1. Introduction**

Industrialization is essential for the economic development of a country (Porter 2004). There are few examples of countries that have made the transition without industrialization, much at the expense of the existence of valuable natural resources (such as oil and diamonds), but with the resulting social inequalities. Industrialization is the normal process for the development of the economies, associated with the phenomenon of globalization of the industry and markets, allows the rapid growth of the same. Take the case of China, which in just over twenty years, went from a really rural to an industrial power in global terms (UNIDO 2009). Why promote industrialization in poor countries? Because if the developed countries to support industrialization in developing countries benefit from cheaper manufactured goods and the process allows to reduce the gap and inequalities between developed and developing countries (UNIDO 2009).

This article is organized into five sections, besides the introduction. Section 2 gives a brief review of the history of East Timor and of the government policies to promote private sector. Section 3 presents the survey Project Timor applied to East Timorese. Section 4 presents the results of the study designed to understand the attitudes and perceptions of the East Timorese in relation to industrial development of the country. Finally, Section 5 presents the main conclusions.

## **2. East Timor**

East Timor is a young country located in Asia and occupies half of Timor Island, having a single land border with Indonesia. East Timor was an overseas province of Portugal until 1974 and for 450 years. After this period, the territory was invaded and occupied by Indonesia, a situation that lasted until the referendum held on August 30, 1999. The process leading up to this historic event was long and difficult (Durand 2010). Unfortunately, the events

that followed were dramatic, but the violence following the consultation did not destroy their results and self-determination has finally arrived in East Timor in 2002. Restoration of Independence occurred in 2002, rising around one of the youngest countries in the world designated by the Democratic Republic of East Timor. Traditionally, East Timor has been largely an economy based on subsistence agriculture, with a scattered rural population and living near the poverty line. The National Human Development Report 2002 conducted by the United Nations Development Programme (UNDP) evaluates the performance of East Timor from 2002 to 2007, as one of the twenty poorest countries in the world, with about half the population living on less than a 1 USD per day, a strong indicator of poverty (UNDP, 2006). Official figures in East Timor indicate that 56% of people in paid employment work for the Government, or in its services (teachers, health professionals, among others) or in its business activity (DNE 2010). In the case of rural areas, only 32% of people are working for the private sector, usually in small or very small businesses. In 2010 the population of East Timor was 1,066,409 inhabitants and presented an annual population growth of 2.4%. More than half the population is under 19 years old. The proposal of the government of East Timor to the economic development is a strategic long term model and intends to reflect the will and aspirations of the people. Being a young country, post-conflict and with low incomes, it is pointed out the need to implement a unique and specific strategy to the country in order to bring prosperity (see for instance UNDP 2002, 2006, 2011; UNDAF 2007). One way to achieve these aspirations may pass through private sector investment through the creation and implementation of industry in the country. Recognition of the importance of the private sector for the development of the economy, contributed to the definition of the target in 2030 that the private sector become the main source of growth of income and employment in rural areas of East Timor (RDTL 2010b). To ensure the growth of the private sector in rural and urban areas, and standardize the requirements and procedures for registration of companies, making it easier and faster to create a business in East Timor (RDTL 2012) the following changes are planned structural:

- 1) The creation of a new investment law (to ensure the interests of investors and make new legislative reforms, with a view to creating a 'one stop shop' for companies, which will further improve the investment environment);
- 2) The creation of the Chamber of Commerce and Industry of East Timor (to train the human resources of private companies, so that they have quality and ability to identify new business opportunities, creating business, expand into new areas or markets, and start exporting (RDTL 2010b, 2012);
- 3) The establishment of a National Development Bank (financial support for entrepreneurs to invest in these areas that have been identified as having advantage and long-term sustainability);
- 4) The creation of the Investment Company of East Timor (to help companies develop the Timorese economy, favoring investment clear and rigorous administrative and business operations independent and high standards of good governance);
- 5) The transformation of Microfinance Institute of East Timor into the National Bank of Commerce of East Timor (with branches in each district vehicles and mobile banking, is intended to provide services to individuals and businesses (micro, small and medium) in order to develop and expand their businesses in remote areas, to easily respond to the needs of all citizens, not only of urban residents, but also residents in rural areas (RDTL 2010b).

The implementation of industry in the country allows for increased employment, improved living conditions of the East Timorese people and consequently the economic development of East Timor, reinforcing the message widely disseminated in "Goodbye Conflict, Welcome Development" (RDTL 2010a). The private sector economy currently only creates about 400 new formal jobs per year, and the number of young people entering the labor market is between 12 000 and 15 000, each year. This disparity is further raising unemployment in general, with 23% of the workforce in Dili unemployed and about 40% of people in rural areas do not have jobs. Soon, a thriving private sector in rural areas will be necessary to promote rural development in East Timor (RDTL 2010b).

There has been some private investment in small and medium enterprises (SMEs) in key sectors, suggesting an emerging sector of private enterprise. In East Timor, and through help of Non-Governmental Organisations (NGOs) and the international community, began to create some industries, with small dimension, in several districts of the country. Initially, their activity was confined to the manufacture of cotton cloth (such as the soirees and such), straw mats and artifacts, sugar and brandy for indigenous use. Already in extractive industries, activity included the harvest of salt, mineral extraction, performed by themselves and for their personal use (for example, copper in Bibicusso, iron in Laleia and gold (auriferous quartz) in Orlaquiri, Tubuloso and Turiscain). However, the lack of communication infrastructure, not allowed access to markets like Australia, despite its proximity.

For the period 2011-2030, the first decade will focus on creating the basic conditions for development in all areas: infrastructure, education and training, health, agricultural productivity and food self-sufficiency, sustainable urbanization and development of important sectors industry and services. Private investment in Small and Medium

Enterprises (SMEs) and Research and Experimental Development (R&D) in key sectors are one of the four pillars of the economic framework by 2020, presented by the government of East Timor (RDTL 2010b).

### 3. Data collection

The present study aims to understand the attitudes and perceptions of the East Timorese in relation to industrial development of the country. For this purpose, we developed a questionnaire designated by Project Timor, organized into two distinct parts. The first part of the questionnaire had a total of 6 questions regarding the installation of manufacturing industry in East Timor, including attitudes, perceived advantages and disadvantages, examples of the perceived importance of the food industry, the construction industry and other industrial sectors. To facilitate the completion of the questionnaire had questions in Portuguese and Bahasa (Indonesian). The second part of the questionnaire included 14 questions characterization of respondents: name, age, gender, household, residence, educational attainment, occupation / position, monthly disposable income, employer, experience outside East Timor (location, duration and aim).

The inquiry involved a visit to East Timor by the lead investigator and was implemented during the months of November and December 2012. In addition to the bilingual questionnaire, each respondent was assisted in filling by the principal investigator. Assuming it as a convenience sample, the students, teachers and staff at the National University of Timor Lorosa'e were invited to participate in our study. Given the reality of East Timor, it was understood that this group of people for their above average formation is the country's future and will be the decision makers and / or leaders of opinion in relation to the general population.

Each respondent was personally invited to participate in the study. Of the 101 completed questionnaires, all were considered acceptable. Subsequently and based on a codebook created for this purpose, responses were entered into the SPSS (version IBM Statistics 19) (Malhotra 2001; Maroco 2007; Hill and Hill 2002). The sample has a total of 101 elements, of which 84.16% are male and 15.84% are female. The average age of respondents is 26.67 years, with a standard deviation of 9.282 years and a range of values between 18 and 52 years (see Figure 1).

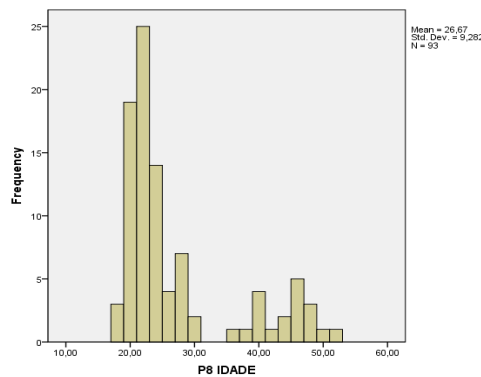


Figure 1: Sample age distribution

By analyzing the ages by gender (see Table 1) it is found that the male respondents have an average age of 27.58 years and a maximum age of 52 years. In the case of female respondents the sample is significantly younger, with a mean age of 21.5 years and a range of 10 years.

Table 1: Sample age distribution by gender

Gender	Mean	Standard deviation	Min	Max
Male	27.58	9.72	18	52
Female	21.5	2.95	18	28

Regarding the district of origin of respondents, they are distributed in the territory (see Figure 2), particularly in the districts of Baucau (28.71%), Viqueque (17.82%), Dili (12.87%) and Lautem (11.88%).

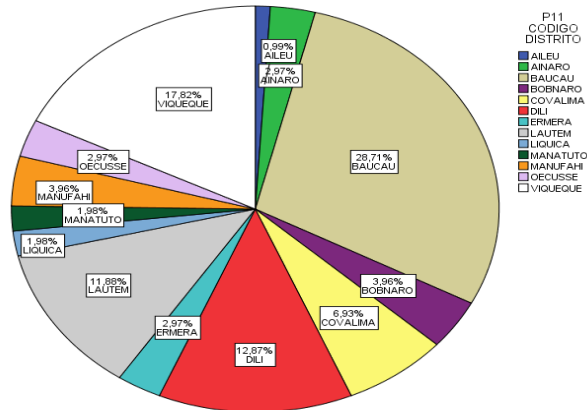


Figure 2: Sample residence districts

With regard to the qualifications of the respondents, 78.22% have secondary education, 11.88% a master's degree, 6.93% an undergraduate degree and 2.97% a bachelor's degree. Regarding professional occupation, the majority of respondents are students (76.24%) or higher-education teaching (16.83%).

#### 4. Project Timor Results

Taking as a starting point the survey Project Timor, we present and discuss the results obtained on various issues such as attitudes in relation to existing industrial development potential of the country, perceived advantages and disadvantages of industrialization and industrial sectors that are perceived as more relevant to East Timor.

##### 4.1 Establishment of manufacturing industry in East Timor

The first question on the questionnaire Project Timor respondents were asked to indicate their level of agreement (Likert scale of 5 levels, from 1 – “strongly disagree” to 5 – “strongly agree”) to seven statements, developed specifically for this inquiry:

1. Perceived importance ("It is important to create manufacturing in East Timor");
2. Existence of resources ("Today, Timor-Leste is already able to develop an industrial plan (financial and human resources)");
3. Effect on living conditions and employment ("The installation of manufacturing industry will result in better living conditions and increases employment");
4. Political stability ("Political stability affects positively the creation of manufacturing industry");
5. Long-term duration ("The effective creation of manufacturing industry in Timor-Leste, is a project that involves time (long term project)");
6. Condition of knowing how to do ("To have manufacturing industry is necessary to have knowledge of how to do (for example: how do sweaters, shoes, bricks, ...)");
7. Existing level of preparation ("Timor-Leste already know how to do in terms of manufacturing industry").

In general respondents mostly agreed with the statements presented (see Figure 3). Regarding claims that resulted in a greater number of positive responses, i.e., “agree” or “strongly agree”, may be noted the following:

- the importance of creating a manufacturing industry (claim 1) overwhelmingly recognized by the respondents (98.0% of total positive responses);
- the condition of the knowledge of how to do (claim 6) also recognized the significant majority of respondents (91.1% of positive responses);
- the expected improvement of living conditions and employment (claim 3) are also expected, with 89.1% of positive responses;
- the long-term need (claim 5) significantly accepted by 74.2% of respondents (sum of positive responses).

Regarding the statements with the highest percentage of discordant responses (i.e., “disagree” or “strongly disagree”) is possible to verify:

- the level of preparedness of Timor-Leste (claim 7) with 21.8% of respondents disagree and with a significant 35.6% of respondents neutral (neither agree nor disagree);
- the beneficial effect of political stability (claim 4) with 14.9% of respondents disagreeing and 33.7% of respondents neutral;

- the existence of resources (claim 2) with 10.9% of respondents disagreeing and 19.8% of respondents neutral.

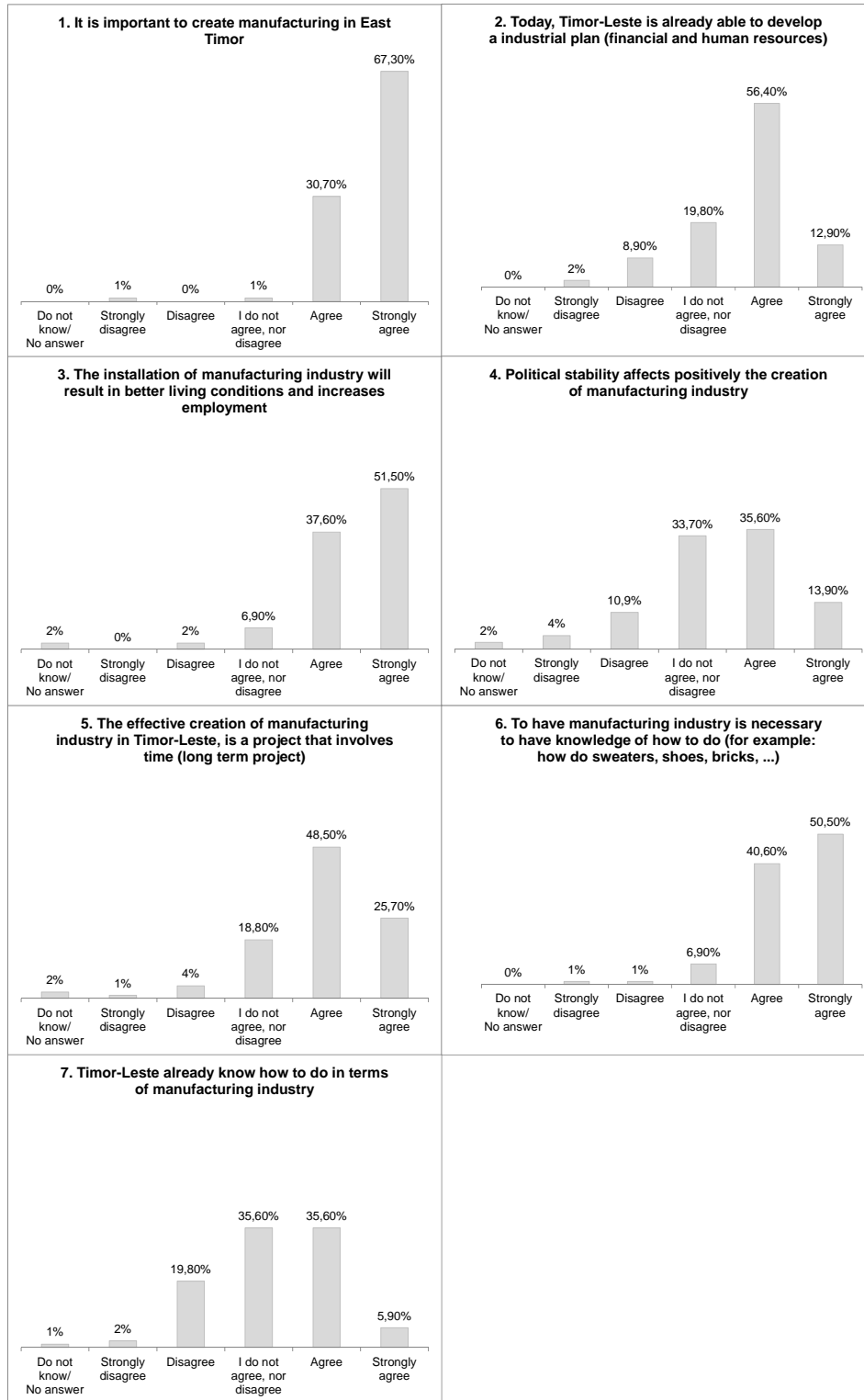


Figure 3: Attitudes towards the establishment of manufacturing industry in East Timor

#### 4.2 Perceived advantages and disadvantages

The second question asked the respondent to indicate the perceived advantages in the manufacturing facility of Timor-Leste. In turn, the third question asked the respondent to indicate the perceived disadvantages.

Regarding the advantages, the most cited by respondents relate to the improvement of living conditions, employment and development. We present examples of the advantages' responses in Table 2.

Table 2: Establishment of manufacturing industry in East Timor: perceived advantages

<b>Advantages</b>
<i>"Open new field of work and uses local raw materials"</i>
<i>"Increase income of the people"</i>
<i>"Increase the development and training of human resources"</i>
<i>"Development of the country in the short, medium and long term"</i>
<i>"Economic growth and decrease problems"</i>
<i>"Economy improves and unemployment declines"</i>
<i>"Increasing the standard of living"</i>
<i>"Reduce imports and creates work camp"</i>
<i>"Reduce reduces poverty and chaos"</i>
<i>"Improving living condition of the people"</i>

Regarding the perceived disadvantages, respondents mostly referred the environmental impact and the impact on communities, either with the entry of foreign workers by the lack of qualification of local workers, either by the eventual land expulsion. We present examples of the disadvantages' responses in Table 3.

Table 3: Establishment of manufacturing industry in East Timor: perceived disadvantages

<b>Disadvantages</b>
<i>"Water pollution"</i>
<i>"Increased air pollution and increase industrial wastewater"</i>
<i>"Removing people in your locality and increases the environmental impact"</i>
<i>"Spend more money because of less manpower"</i>
<i>"Skilled workers who are not ready"</i>
<i>"More foreign workers than local"</i>
<i>"There is no guarantee of political stability"</i>
<i>"Social Problem, raw materials and government support"</i>
<i>"Earth land has no space. For example, the cement industry and sugar occupy much of the land"</i>
<i>"Dump community areas where industry will be built"</i>

#### 4.3 Food industry perceived importance

Recognizing the food needs of the population of East Timor and the importance of basic food industry in this country, the fourth question asked respondents to indicate the perceived importance (Likert scale of 5 levels, from 1 – "not at all important" to 5 – "very important") of 5 food industries defined according to the resources available in East Timor:

1. Industries for use of the Corn (baked)
2. Coconut Oil Industry
3. Salt Industry
4. Cannery (sardines, tuna ...)
5. Sugar Industry.

The survey results show that 85.1% of respondents attach greater importance to the industry of coconut oil, followed by the salt industry, with 73.3% of responses and industry to use corn (bread), with 69.3% (see Figure 4). These data reflect the abundance of these raw materials, and recognized the importance of scale in their operation.

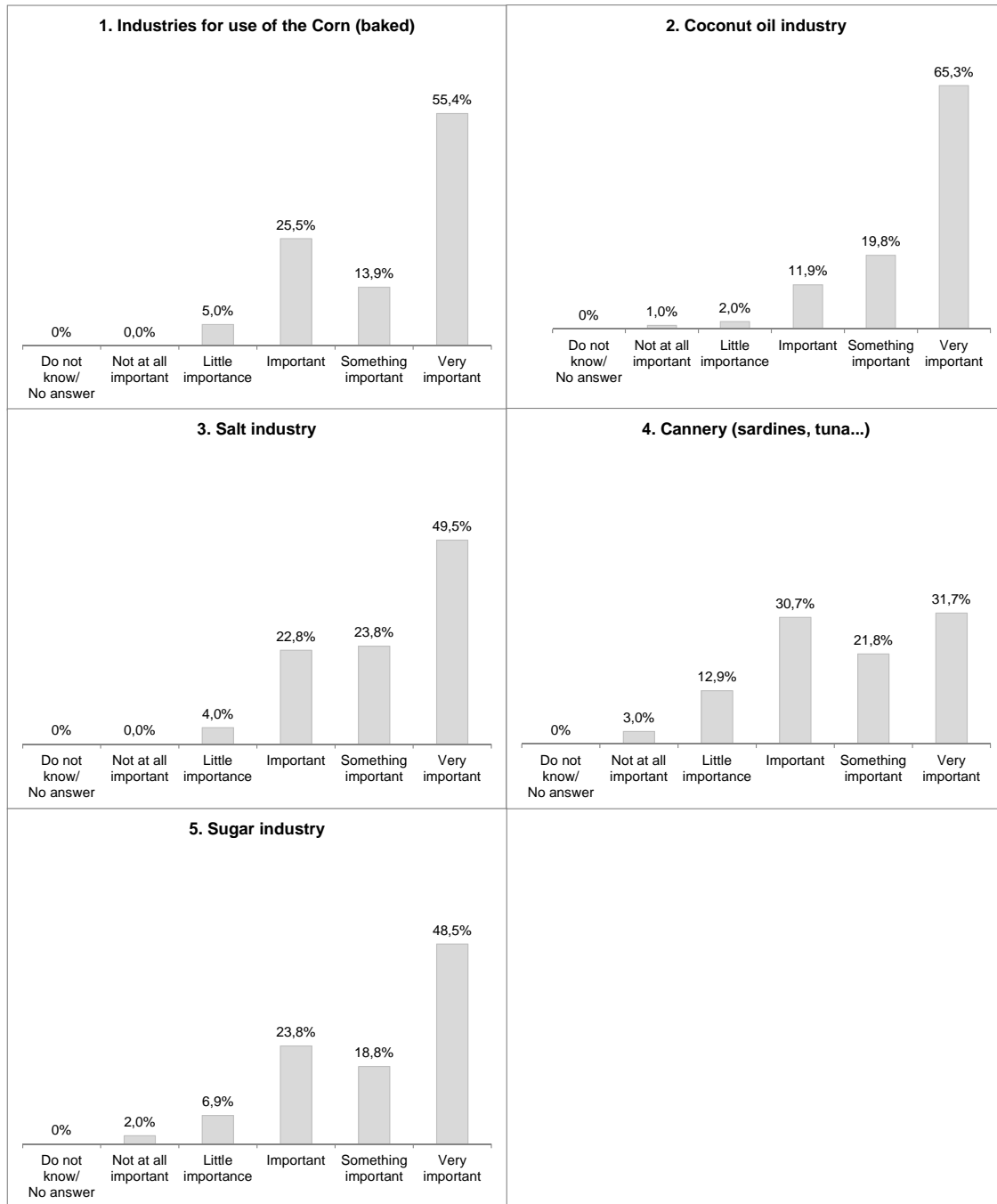


Figure 4: Food industry perceived importance

#### 4.4 Perceived importance of the construction materials' industry

Another recognized situation in East Timor is the difficulty of access to construction materials. Faced with a previous selection of 5 materials (bricks, ceramics, cement, windows glass and woodwork of doors and windows), the fifth question asked respondents to indicate the degree of perceived importance of manufacturing industry associated with each material (Likert scale 5 levels, from 1 – “not at all important” to 5 – “very important”). Through analysis of the results obtained on the “very important” option (see Figure 5) there is a high perceived importance of cement industry, with 58.4%, followed by the woodwork industry (doors and windows) with 56.4% and the windows glass industry with 41.6%.

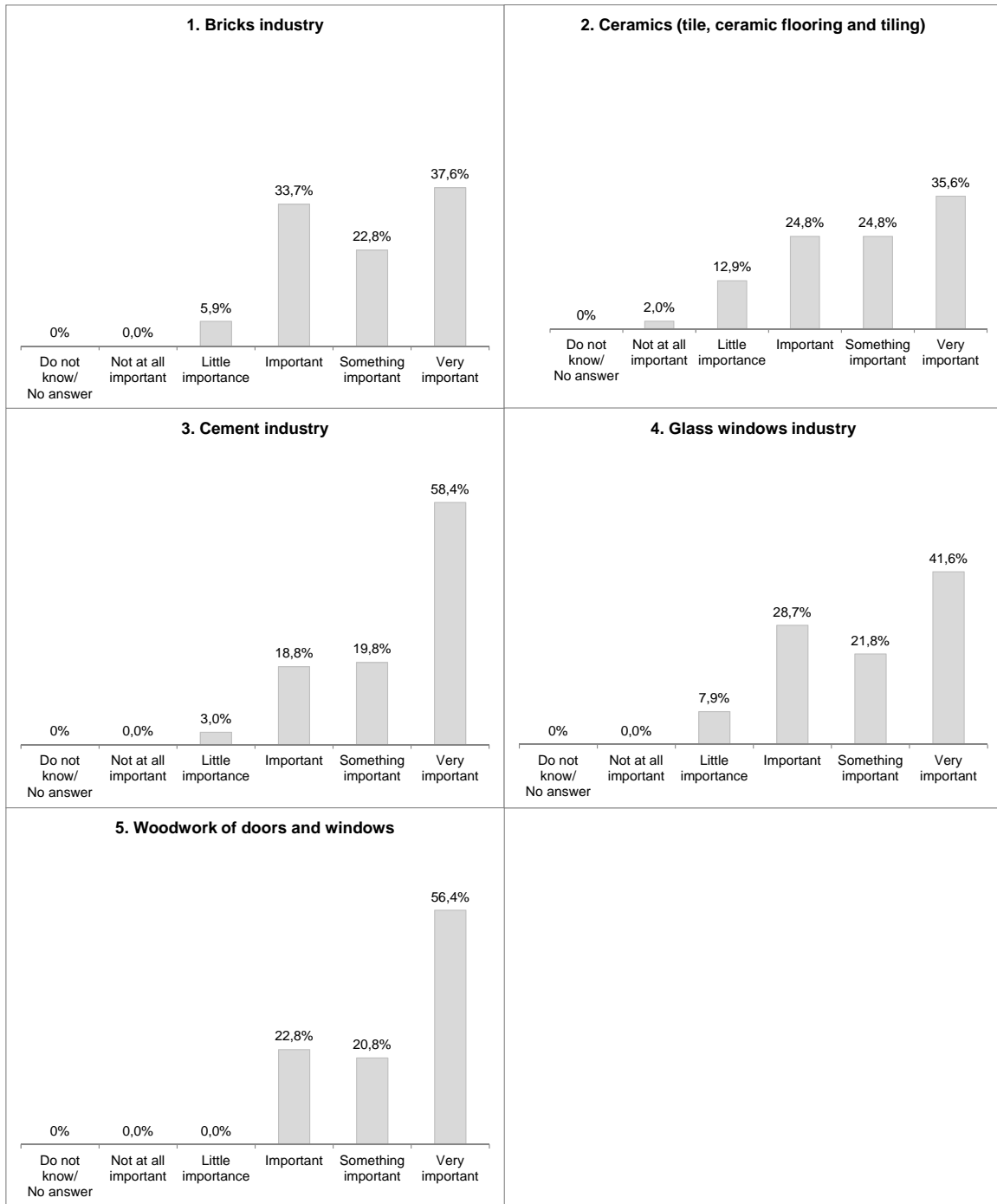


Figure 5: Perceived Importance of the Construction Materials' Industry

#### 4.5 Perceived importance of other industry

The sixth question analyzed the degree of perceived importance of three industries (soap, furniture, textiles and clothing, other) (Likert scale of 5 levels, from 1 – “not at all important” to 5 – “very important”). The analysis of the responses “very important” shows the perceived importance of the textile and clothing industry (48.5%), followed by the soap industry (44.6%). The furniture industry recorded the highest percentage of negative responses (15.9%, sum of “not at all important” and “little importance”). In turn, other industries, 34% of respondents indicated no suggestion (see Figure 6).



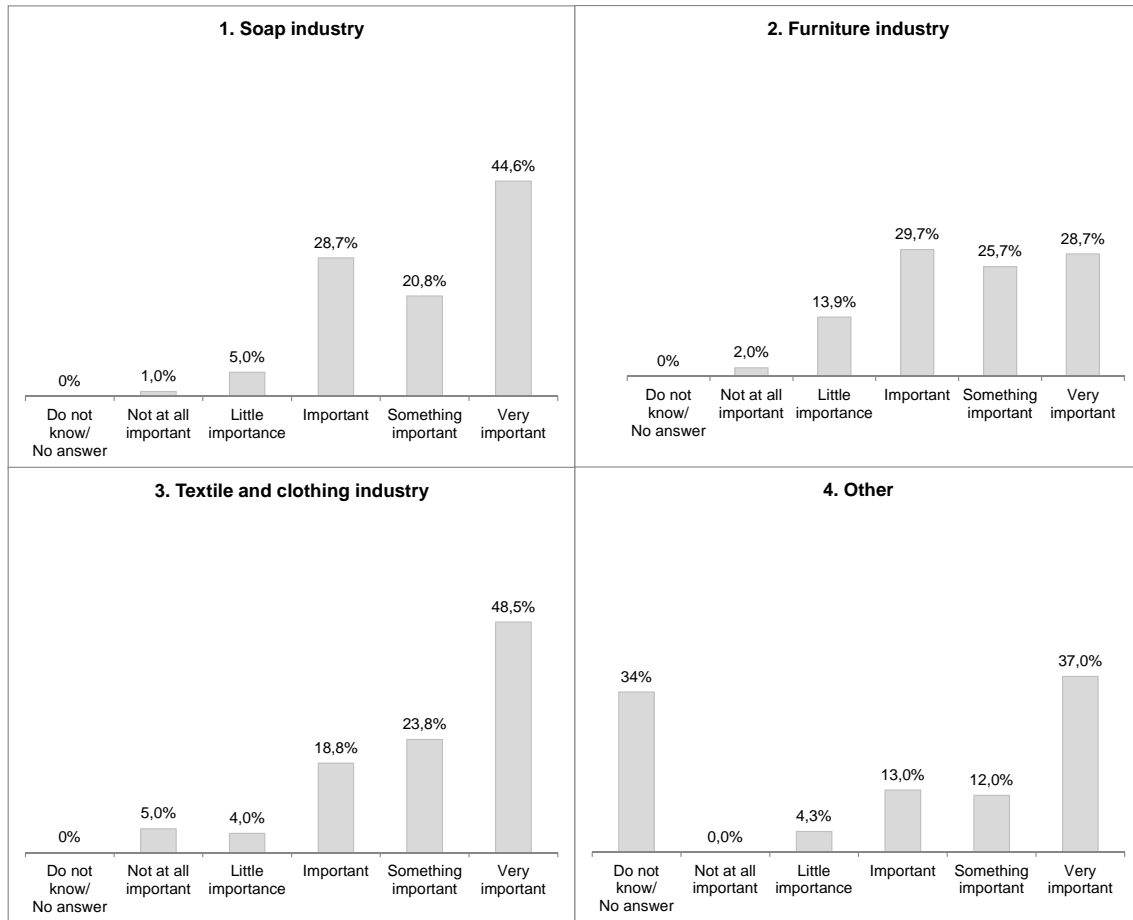


Figure 6: Perceived importance of other industry

In the "other" option respondents could provide a type of industry not covered in the study. The most cited were the coffee industry (with 18.8%), hygiene products (10.9%), fruit (9.4%), beverages (7.1%) and cereals (6.3%). In total these responses represent 53.1% of total industry proposals.

## 5. Conclusions

The theme of industrial development has been on the government agenda of the Democratic Republic of East Timor. But what thinks Timorese population about the theme and what their real expectations?

This article analyzes the preliminary results of the Project Timor survey. The high degree of agreement recorded in the attitudes questions concerning the creation of manufacturing industry suggest that the issue of industrial development is recognized as important and necessary to East Timor. Although the strong agreement with the importance of "know-how", it is interesting to note the perception by respondents of gaps in East Timor preparation (21.8% negative responses).

Regarding the industry establishment advantages, the most cited by respondents relate to the improvement of living conditions, employment and development. Nevertheless, the environmental and land concerns registered as disadvantages were unexpected. However it reveals a very strong community-land link.

Regarding the perceived importance of some sectors of the food industry, the coconut oil industry is perceived as most important, followed by the salt industry and industries to use corn. In the industry of building materials, cement industry is considered the most important, followed by the carpentry industry and by the glass windows industry.

The results presented are preliminary and require more careful analysis, as well as the need to be replicated in a larger sample. Still, our results are an important insight in terms of the expectations and attitudes of East Timor population concerning the establishment of manufacturing industry.

## Acknowledgements

The first author would like to thank the scholarship granted by the East Timor Government and the National University of Timor-Leste. The authors also wish to acknowledge the support of CGIT and Algoritmi R&D Centre, two research centres at the University of Minho, Portugal. This work is supported by FEDER Funds through the Operational Programme Competitiveness Factors – COMPETE, and National Funds through FCT - Foundation for Science and Technology under the Projects FCOMP-01-0124-FEDER-022674 and Pest-OE/EME/UI0252/2012.

## References

- DNE, *Timor-Leste Labour Force Survey 2010*, Direcção Nacional de Estatística de Timor-Leste, 2010.
- Durand, F., *História de Timor Leste, da Pré-história à actualidade* (in Portuguese). Edições Lidel, Lisboa, 2010.
- Hill, M. M. and Hill, A., *Investigação por questionário* (in Portuguese), Edições Sílabo, Lisboa, 2002.
- Malhotra, N., *Marketing Research: An applied orientation*, Prentice Hall, Harlow, 2001.
- Maroco, J., *Análise Estatística – Com utilização do SPSS* (in Portuguese), Edições Sílabo, Lisboa, 2007.
- Porter, M., *Estratégia e competitividade, Técnicas para análise da indústria e da concorrência* (in Portuguese). Editora Campus, S. Paulo, 2004.
- RDTL (República Democrática de Timor-Leste), *Programa do V Governo Constitucional 2012-2017* (in Portuguese), 2012.
- RDTL (República Democrática de Timor-Leste), *A Caminho da Paz e Prosperidade. Plano Estratégico de desenvolvimento de Timor-Leste* (in Portuguese). Sinopse. Gabinete do Primeiro-Ministro, 2010a.
- RDTL (República Democrática de Timor-Leste), *Programa Estratégico de Desenvolvimento 2011-2030* (in Portuguese), Dili, 2010b.
- UNDAF (United Nation Development Assistance Framework), *UNDAF Timor-Leste 2009-2013*, Dili, 2007.
- UNDP (United Nations Development Programme), *Relatório Nacional Desenvolvimento Humano de Timor-Leste 2002. O caminho à nossa frente* (in Portuguese), 2002.
- UNDP (United Nations Development Programme), *Relatório Nacional Desenvolvimento Humano de Timor-Leste 2006. O caminho para sair da pobreza* (in Portuguese), 2006.
- UNDP (United Nations Development Programme), *Relatório Nacional Desenvolvimento Humano de Timor-Leste 2011. Gestão de recursos naturais para o desenvolvimento humano: desenvolver a economia não-petrolífera para alcançar as metas de desenvolvimento do milénio* (in Portuguese), 2011.
- UNIDO (United Nations Industrial Development Organization), *Industrial Development Report 2009. Breaking In and Moving Up: New Industrial Challenges for the Bottom Billion and the Middle-Income Countries*, 2009.

## Biography

**Mário Cabral** holds a Master in Industrial Engineering. Engineering professor in the National University of East Timor. His research interests are engineering and entrepreneurship.

**Filipa D. Vieira** holds a Ph.D. in Industrial and Systems Engineering. Assistant Professor at the Production and Systems Department, School of Engineering, University of Minho, since 2007. Lecturing activities on Innovation and Economics Engineering, at undergraduate and post-graduate courses. Researcher fellow at CGIT (Production and Systems Department Research Centre). Author of several research papers on innovation and entrepreneurship.

**Cristina S. Rodrigues** holds a Ph.D. in Industrial and Systems Engineering. Assistant Professor in the Department of Production and Systems, School of Engineering at the University of Minho and is responsible for disciplines of applied statistics in undergraduate and master engineering courses. She is also a researcher fellow at Algoritmi R&D Centre.