

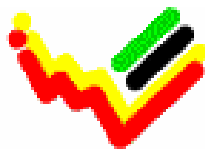
Report from a short-term mission

A product Based Cost Accounting system

TA for the Scandinavian Support Program to Strengthen the Institutional Capacity of the National Statistics, Mozambique

25 November - 3 December 2005

Robert Jäverlind



Instituto Nacional de Estatística

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EXECUTIVE SUMMARY

The objective of the mission was to support INE to continue the development of the time reporting component in a new product based cost accounting system. The mission objective was also to analyse the outcome from of a time report pilot test done at INE and improve the time report sheet used in the pilot test.

Time reporting is used for

- Cost efficiency*
 1. Making the production more effective by focusing more on costs and the use of resources in the production. Time reporting is an important component in that process to get a better picture of the resources used by each product. Resources that are free after the use of more effective production processes can be used for example to improve the quality of statistics or to produce more statistics.
- Quality*
 2. Making it possible to compare different production methods to establish witch method that is the most effective and uses fewer resources with the same quality outcome. If we changed production methods between the years did that affect the use of resources, which method would be most effective and used fewer resources? It can also be used to find god and bad performances on a given task and teach people to use more effective methods of working.
- Follow-up*
 3. Comparing planned worked time with actually worked time. Did we spend more or less time then we planned?
- Planning*
 4. Planning work on a product by looking at time previously needed to produce that product.
- Cost distribution*
 5. Show the costs for producing different products by distributing costs to products by a price per hour. The price could include just the salary costs or it could include all costs that are necessary for the product that will normally not be bookkept as costs of the product otherwise. An example of costs at INE, not directly involved in the production but still necessary for the production, is costs for the department of Administration and Finance and the department of Human Resources.
- Cost estimates*
 6. Estimating a price per hour which could be used to calculate a price for Commissioned work that will cover the costs.
- External relations*
 7. Improving the dialogue with government, parliament, ministries, customers and users about the finance could be easier if you have a cost effective activity. They know that the money spent on you will be used effective. Time reporting helps you to do that.

In an organisation, which is mainly offering service to the public time, reporting is essential for the management to keep control over its limited resources. This is due to the fact that human resources (when made measurable) are the prime resource to control for the management to reach its objectives. Time reporting gives information needed for calculation of prime cost for products produced as well to budget and follow-up resource allocation. Any organisation, private or public, needs to increase in productivity to be long-term persistent to changes and needs. Without time reporting the management is lacking what is generally seen as a common tool to be able to keep up good governance and safeguard entrusted funds.

Two different time report sheets (Appendix 2 and 3) were developed during the mission and could be used in a pilot test.

A time reporting pilot test was conducted at some of the departments at INE. The products were divided into different production processes. The outcome of the test should be looked on more as an example of what information you could get from time reporting than the actual figures that can be uncertain because many time reports are missing.

In the table below you can see the hours worked on the different production processes of the products.

Hours worked reported in the pilot test

PRODUCTO	RECOLHA	CRITICA	DIGITAR	PROCESSA	INTERVAL	OUTROS	TOTAL
Construcao	10,00	49,00	0,00	0,00	0,00	5,00	64,00
Crime e justica	1,00	32,00	27,00	21,00	12,00	38,00	131,00
Cultura	12,00	24,00	4,50	0,50	7,50	65,00	113,50
Esdem	94,80	183,24	401,25	145,40	75,85	364,05	1 264,59
Est economicas	57,50	67,50	56,00	31,00	0,00	58,00	270,00
Estatisticas economicas	0,00	7,00	56,00	0,00	0,00	0,00	63,00
Estatisticas de saude	14,00	6,50	7,50	4,50	2,00	26,50	61,00
Fecundidade por distrito	0,00	0,00	0,00	40,00	2,50	0,00	42,50
Ids	0,00	0,00	38,00	33,00	5,00	6,00	82,00
Ids aga khan	0,00	0,00	0,00	39,50	0,00	12,00	51,50
lftrab	0,00	0,00	0,00	186,50	12,50	30,50	229,50
lpc	84,75	182,75	27,00	849,00	57,00	3,50	1 204,00
Relatorio ids	0,00	0,00	0,00	35,00	5,50	181,00	221,50
Total	274,05	551,99	617,25	1 385,40	179,85	789,55	3 798,09

1 Introduction

INE has adopted a strategy to build a modern statistical institution also in the field of cost accounting with budget and financial results based on products and on time reporting and time budgeting on the product level. Two missions had been already been undertaken. The first mission resulted in a draft model of a product based accounting system. The second mission resulted in a draft model for time reporting.

The objective of the third mission was to support INE to continue the development of the time reporting component in a new product based cost accounting system. The mission objective was also to analyse the outcome from of a time report pilot test done at INE and improve the time report sheet used in the pilot test.

Advisers The mission was conducted by Mr Robert Jäverlind, Financial Controller, and consultant from Statistics Sweden. It started on the 25th of November with preparatory work in Stockholm, and continued in Maputo from 27th of November to 3rd of December 2005. Mr Tomas Kjerf consultant from the Swedish National Financial Management Authority was not able to go on the mission due to sickness.

Activities There were meetings with Mr. Luis Mungamba Director of DARH, employees who had participated in the pilot test about their experience, IT-people at INE, Mr. Domingos Maringue, Head of DAF and others. The result from the pilot test and the time report sheet used in the test was studied and discussed.

There were regular briefings with Mr. Lars Carlsson, the Co-ordinator of the Scandinavian Bridging Program, regarding the mission and the expected output

2 Time reporting and pilot test

2.1 Time reporting

Time reporting here means that employees report the time he/she has worked on different products or projects. The time is normally measured in hours, and the reporting made by an electronic application or by manual registration on a paper form. The reporting could be done every day, once a week or once a month. The costs will be higher if the time is reported more frequently (more work), but the quality of the reports will also be higher because people tend to forget what they have worked with after some time.

Time reporting is used for

- Cost efficiency* 1. Making the production more effective by focusing more on costs and the use of resources in the production. Time reporting is an important component in that process to get a better picture of the resources used by each product. Resources that are free after the use of more effective production processes can be used for example to improve the quality of statistics or to produce more statistics.
- Quality* 2. Making it possible to compare different production methods to establish which method that is the most effective and uses fewer resources with the same quality outcome. If we changed production methods between the years did that affect the use of resources, which method would be most effective and used fewer resources? It can also be used to find good and bad performances on a given task and teach people to use more effective methods of working.
- Follow-up* 3. Comparing planned worked time with actually worked time. Did we spend more or less time than we planned? If so it could be interesting to analyse why.
- Planning* 4. Planning work on a product by looking at time previously needed to produce that product.
- Cost distribution* 5. Show the costs for producing different products by distributing costs to products by a price per hour. The price could include just the salary costs or it could include all costs that are necessary for the product but that will normally not be bookkept as costs of the product otherwise. An example of costs at INE, not directly involved in the production but still necessary for the production, is costs for the department of Administration and Finance and the department of Human Resources.
- Cost estimates* 6. Estimating a price per hour which could be used to calculate a price for Commissioned work that will cover the costs.
- External relations* 7. Improving the dialogue with government, parliament, ministries, customers and users about the finance could be easier if you have a cost effective activity. They know that the money spent on you will be used effectively. Time reporting helps you to do that.

Time reporting takes some time and that costs money. Are the benefits larger than the costs for time reporting? If the information from the time reporting is used back into making the activities better and more effective I believe so and experiences from other National Statistic Offices using time reporting is that it is worth the extra work, i.e. Statistic Sweden experience anyway.

Two time report sheets (Appendix 2 and 3) was developed during the mission. The time report sheets could be used in a pilot test, perhaps after some modifications by the participant department/departments.

2.1.1 Distribution of costs

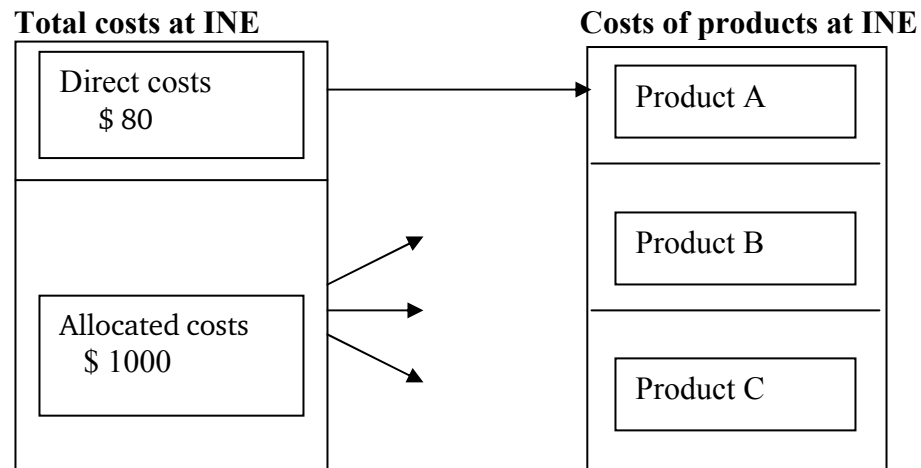
Some costs could be directed to a specific product by bookkeeping them on the product, for example costs for a consultant working just with the consumer price index (CPI). Usually a large part of the costs cannot be allocated directly to a specific product and has to be distributed to the products by some form of key. The time used for producing each product is possible to quantify and correlates sufficiently well with the costs. Allocation by time use is the most commonly used key in companies with similar activities as INE.

If the direct costs are booked on product codes you will have the specific costs in the booking system. INE isn't bookkeeping costs on products at the moment, which means that all costs have to be allocated. INE has salary costs for different staff groups (each person), departments and de total costs at INE (both salaries and other costs).

There are a couple of possible ways to distribute costs to each product:

Example 1

If you book the costs on products (done at Statistic Sweden) the example below could illustrate how it could be done. The only adjustment INE has to do is to add the direct cost of \$80 to the allocated cost of \$1000 in the example below and distribute them also by worked time.



Time report, worked hours:

Product A	Annual National Accounts	30 hours
Product B	Quarterly National Accounts	20 hours
Product C	Social Welfare	50 hours
Total hours worked:		100 hours

$$\text{Price per hour for indirect costs} = \frac{\text{Allocated costs}}{\text{Time spent on products}}$$

$$\text{Price per hour is } \$ 10 = \frac{\$ 1000}{100 \text{ hours}}$$

Allocation of the indirect costs of \$ 1000 on the products:

Product A	Annual National Accounts	30 hours x \$ 10 = \$ 300
Product B	Quarterly National Accounts	20 hours x \$ 10 = \$ 200
Product C	Social Welfare	50 hours x \$ 10 = \$ 500

Cost	Product A	Product B	Product C
Direct cost	\$ 80		
Allocated cost	\$ 300	\$ 200	\$ 500
Total cost for product:	\$ 380	\$ 200	\$ 500

If the direct cost isn't booked on products (INE doesn't today) the time price per hour will be \$10.8 (\$1080/100 hours) and the costs for the products will be:

Product A	Annual National Accounts	30 hours x \$ 10,80 = \$ 324
Product B	Quarterly National Accounts	20 hours x \$ 10,80 = \$ 216
Product C	Social Welfare	50 hours x \$ 10,80 = \$ 540

The disadvantage by this model is that everybody will have the same price per hour, even if their salary could be very different.

Example 2

Another alternative could be to first estimate the salary cost per hour for each person. Salary for an employee is \$300 and the reported hours are 200 hours in that period.

$$\text{Price per hour is } \$ 1,5 = \frac{\$ 300}{200 \text{ hours}}$$

Of the 200 hours reported 30 was registered on Annual National Accounts and the cost for Annual National Accounts will then be 30 hours x \$ 1,5 = \$ 45

The other costs (besides salary) at INE could be distributed to products by for example:

- The persons reported hours compared to the total hours reported INE

- The persons salary compared to total salary: 1% of the total salary = 1% of the other costs.

- Number of persons at INE: 400 persons = 0,25% (1/400) of other costs per person

Practical example

An example to show how the figures in the time report sheet in **Appendix 2** could be used to estimate costs:

The person who has time reported has worked with ESDEM for 25 hours this week, 4 hours of administration and has been on holiday for 8 hours. We want to distribute all the costs to the external products so we have to just use the hours reported on ESDEM not the hours on administration, education and absence.

The person's salary is 17.200.000 MT per month and to get a weekly salary we divide the month salary by 4,3 and get 4.000.000 MT which is the weekly salary cost.

Let us say that INE:s other costs (besides salaries) are 8.000.000.000 MT per year. We can distribute these costs to products by comparing salaries. The salary of the person above is 17.200.000 M per month which is 1% of the total salaries at INE that month. We take 1% of the other costs which are 80.000.000 MT and divided by 52 to get the weekly cost that is around 1.540.000 MT

De total costs which should be distributed for that person this month is 5.540.000 MT (4.000.000+1.540.000)

$$\text{Price per hour is } 221.600 \text{ MT} = \frac{5.540.000 \text{ MT}}{25 \text{ hours}}$$

De reported hours in the time report (Appendix 2) and the costs for each production process using the price per hour of 221.600 MT is shown in the table below.

ESDEM	Horas	Custos
Preparação	3	664 800
Supervisão	0	0
Recolha de dados	15	3 324 000
Crítica de dados	0	0
Digitação	7	1 551 200
Processamento	0	0
Outros	0	0
Total	25	5 540 000

2.1.2 Commissioned work

By calculating a price per hour it is also possible to calculate prices for commissioned work that should cover all your costs.

Example:

A customer wants you to do a survey and print the results in a publication. The calculated price is \$ 4 per hour:

250 hours work, \$ 4 per hour = \$ 1000

Paper and printings costs for publication = \$ 100

Total price for the work = \$ 1100

You can also calculate how many hours you can work for a fix amount, how many hours can you work if you get \$1600? With a cost of \$4 per hour you can work 400 hours if you don't have any other costs related to the work.

2.2 Analyse of the pilot test at INE

A time reporting pilot test was conducted at some of the departments at INE. The products were divided into different production processes so that the time worked on each process could be measured. Everybody didn't participate in the test and all the people participating in the test didn't report every day. The outcome of the test should be looked on more as an example of what information you could get from time reporting than the actual figures that can be uncertain.

In the table on the next page you can see the hours worked on different production process of the products.

Hours worked reported in the pilot test

PRODUCTO	RECOLHA	CRITICA	DIGITAR	PROCESSA	INTERVAL	OUTROS	TOTAL
Construcao	10,00	49,00	0,00	0,00	0,00	5,00	64,00
Crime e justica	1,00	32,00	27,00	21,00	12,00	38,00	131,00
Cultura	12,00	24,00	4,50	0,50	7,50	65,00	113,50
Esdem	94,80	183,24	401,25	145,40	75,85	364,05	1 264,59
Est economicas	57,50	67,50	56,00	31,00	0,00	58,00	270,00
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Estatisticas de saude	14,00	6,50	7,50	4,50	2,00	26,50	61,00
Fecundidade por distrito	0,00	0,00	0,00	40,00	2,50	0,00	42,50
Ids	0,00	0,00	38,00	33,00	5,00	6,00	82,00
Ids aga khan	0,00	0,00	0,00	39,50	0,00	12,00	51,50
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Relatorio ids	0,00	0,00	0,00	35,00	5,50	181,00	221,50
Total	274,05	551,99	617,25	1 385,40	179,85	789,55	3 798,09

2.3 A draft plan for further work in this area

<i>When</i>	The next step is for INE to decide when a time reporting pilot test should take place over a longer time, perhaps at one or two of the departments involved in the statistic production. If the pilot test is successful time reporting could be introduced to other parts of INE. INE also has to decide if the time reporting should be done daily or weekly (weekly is recommended) and if the time reports should be done by paper or electronic. If INE decides to choose an electronic time report a system off gathering the data has to be developed, IT-personnel at INE said it wouldn't be a problem to construct such a system. INE also has to decide which persons should be responsible for the collection and submission of the time reports and reminding people who forget to time report.
<i>Where</i>	
<i>Period</i>	
<i>How</i>	
<i>Responsible</i>	

To be successful, time reporting has to be understood and accepted among the employees. It is very important that the management at INE supports and participates in the time reporting; otherwise it will be very hard to get the employees to except it.

The developed time report sheets (appendix 2 and 3) could be used, perhaps after some modifications discussed with the participant department/departments involved in the time report pilot test.

APPENDIX 1. List of persons met (among others)

Mr. Luis Mungamba Director of DATH

Mr. Domingos Mateus Maringue, DARH

Mr Tomás Bernardo, Vice Director DICRE

Mr. Lars Carlsson, Team leader SCANSTAT

Mrs Anastácia IT

Mr Karsten Bormann LTA IT SCANSTAT

A number of participants in the time report pilot test

Conception of Product

The product is the output of an operation. It is the answer on the question what is performed and achieved. Time spend to achieve a product is usually measurable with time reporting. A product is produced to reach the objective for the organisation. For example if reduce poverty is the objective statistic products as average income is preformed to support the objective.

APPENDIX 2. Time report sheet 1

INE Instituto Nacional de Estatística

TESTE PILOTO v 0.3

Registo de uso do tempo Contabilidade de custos

Nome

Direcção 5

Categoria

Período (dia/semana)

Código	Produto/Actividade	Nº de Horas
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302	<input style="width: 250px; height: 20px;" type="text" value="ESDEM"/> 11	25
3021	Preparação	3
3022	Supervisão	
3023	Recolha de dados	15
3024	Crítica de dados	
3025	Digitação	7
3026	Processamento	
3027	Outros	

Código	Produto/Actividade	Nº de Horas
--------	--------------------	-------------

0	<input style="width: 250px; height: 20px;" type="text" value="1"/>	0
1	Preparação	
2	Supervisão	
3	Recolha de dados	
4	Crítica de dados	
5	Digitação	
6	Processamento	
7	Outros	

1

0	<input style="width: 250px; height: 20px;" type="text" value="1"/>	0
1	Preparação	
2	Supervisão	
3	Recolha de preços	
4	Crítica de dados	
5	Digitação	
6	Processamento	
7	Outros	

0	<input style="width: 250px; height: 20px;" type="text" value="1"/>	0
1	Preparação	
2	Supervisão	
3	Recolha de dados	
4	Crítica de dados	
5	Digitação	
6	Processamento	
7	Outros	

	Outros produtos (anota)	0
	
	

50	Produtos para Publicação	
0	<input style="width: 250px; height: 20px;" type="text" value="1"/>	0
4	Crítica de dados	

	
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8	Reprocessamento	
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110	Administração	4
120	Educação e treino no INE	
130	Educação e treino fora do INE	
<i>Total de horas trabalhadas</i>		<i>29</i>
<i>Total de horas ausentes</i>		<i>8</i>

140	Ausências	8
141	Férias (próprio)	8
142	Férias (nacional)	
143	Doenças	
144	Ausência privado	

Registo de uso do tempo
Contabilidade de custos

Nome	
Direcção	

Período (dia/semana)

Semana 22/11 - 4/12 de 2005

Código	Produto/Actividade	Nº de Horas
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Código	Produto/Actividade	Nº de Horas
--------	--------------------	-------------

Económica Estatísticas

20		
	Preparação	
	Supervisão	
	Recolha de preços	
	Crítica de dados	
	Digitação	
	Processamento	
	Outros	

Demografica Estatísticas

30		
	Preparação	
	Supervisão	
	Recolha de dados	
	Crítica de dados	
	Digitação	
	Processamento	
	Outros	

	Outros produtos (anota)	
	
	
	
	

501	Produtos para Publicação Anuário Estatístico	
5011	Crítica de dados	
5012	Reprocessamento	

110	Administração	
120	Educação e treino no INE	
130	Educação e treino fora do INE	

140	Ausências	
141	Férias (próprio)	
142	Férias (nacional)	
143	Doenças	
144	Ausência privado	

Total de horas trabalhadas 0

Total de horas ausentes 0

TERMS OF REFERENCE

Within the Scandinavian Assistance to Strengthen the Institutional Capacity of INE/Mozambique, 2003-2007

Product Based Cost Accounting

A 2 person x 1-week mission

Background

INE has adopted a strategy to build a modern statistical institution also in the field of cost accounting with budget and financial results based on products and on time reporting and time budgeting on the product level. In the strategic plan for INE a Product Based Accounting System is a prerequisite for the development of the INE's management system. It is in the interest of INE to go further in the direction of time reporting supporting a Product Based Accounting System.

With the support of the Scandinavian Program INE has started to work on the Product Based Accounting System and two missions had been already undertaken.

Objectives of the mission

The objective of a third mission is to analyse the outcome from a pilot test of the time reporting model and make suggestions for the implementation of time reporting as a component for Product Based Cost Accounting.

A time report sheet was developed during the second mission. To be able to go further the time report sheet has to be tested. The test must be realistic and take place under a sufficient period. The Pilot test should result in an outcome of worked time per product. The outcome should then be used for dividing cost to products. The experience from the test is also the foundation for the further development.

Some ideas on a more detailed time reporting have been discussed at the IT-department (DISI). Connections with this approach should be studied.

Benefactors of the mission

All parties interested in the possibility to strengthening planning and accounting at INE. The Mozambique government, various institutions and organizations and the donors.

INE staff, particularly within the Directorate of Administration and Human Resources.

Expected results

- Revised questionnaire, pilot data and comments
- Modifications of the process discussed
- A discussion done on how to connect cost accounting with planning
- A draft plan for further work in this area.

Consultant and Counterpart

Consultants will be Mr Robert Jäverlind, Statistics Sweden, and Thomas Kjerf, Swedish National Financial Management Authority.

Main counterparts at INE: Mr Luis Mungamba and Mr Domingos Maringue at Directorate of Administration and Human Resources¹. Staff at DISI are also expected to participate.

Necessary preparations:

By INE:

A decision that INE has the intention to introduce a product based accounting system in a near future and has also to introduce time reporting to support it.

A first prerequisite for the mission is that INE starts to use an object plan (described in the first missions report). Not only bookkeeping cost of accounts but also on products and cost centres. Otherwise it will not be possible to estimate costs of each product.

A second prerequisite for the mission is that a pilot is done to test time reporting and document the results. The pilot should be within a line organization, which is producing about five different statistical products. The test period should be sufficient to ensure that occasional divergence not completely overthrow the result. That means that one week is too short and three months is more than sufficient.

The documentation of the result consist of

- All the point of views, criticism, notes and so on is taken done and structured depending on kind and frequency
- The actual outcome of the time reporting per product and administration is presented.

By the consultants:

- To familiarize themselves with the material presented.

Timing of the mission

Due to the need of the necessary prearrangements of INE and the possibility for the consults to prepare the mission the most suitable time is November 2005, the week 28 November to 2 December.

Reporting

The consultants will prepare a draft report to be discussed with INE before leaving Maputo. They will submit a final draft to INE for final comments within one week of the end of the mission. Statistics Denmark as Lead Party will print the final version within 3 weeks of the end of the mission. The structure of the report should be according to Danida-format.

The Counterpart has to ensure that the final printed report has at least a summary in Portuguese if the main report is in English – or vice versa

These Terms of Reference were prepared by

Day / /
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Approved by/in the name of the President of INE

Day / /