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## STRENGTHENING THE INDUSTIRAL AND MANAGERIAL CAPACITIES OF THE COOPERATIVES AT MUKALLA AND SEIYUN

SM/PDY/87/005

THE REPUBLIC OF YEMEN

Technical report: Cost accounting procedures\*

Prepared for the Government of the Republic of Yemen by the United Nations Industrial Development Organization acting as executing agency for the United Nations Development Programme

## Based on the work of Wadie Ibrahim Expert in cost accounting

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Vienna

<sup>\*</sup> This document has not been edited.

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### INTRODUCTION AND WORK PROGRAMME

The activities covered by this report are part of project SM/PDY/87/005 entitled "Strengthening the Technical and Managerial Capacities of the Carpentry Co-operatives in Mukalla and Seiyun". In implementing this project. UNIDO recruited Wadie B. Ibrahim, Expert in cost accounting, who carried out his mission in the People's Democratic Republic of Yemen from 15 March to 13 June 1990. The job description is Annex I of this report.

During this mission a new costing system was designed after reviewing the actual situation and working conditions of the two cooperatives. The system and the supporting forms and documents were drafted in Arabic to facilitate their adoption and introduction and to ensure a proper understanding of the system which is annexed to this report.

Training manuals for the introduction of the costing system and the relevant documents were prepared and handed over to the 15 participants who attended the course given by Mr. Ibrahim. The manuals were also prepared in Arabic and have been issued as three separate technical reports.

The following programme of work was discussed and agreed with the Chief Technical Adviser of the project, Mr. R. Malis, and the general managers of the two Cooperatives.

- Visit and collect information on the Mukalla, Shahar and Gheil Bawazer units.
- 2. Visit and collect information on the Seiyun, Tarim, Hauta and Shibam units.
- 3. Review and discuss costing status in the two Cooperatives (Mukalla and Seivun).
- 4. Review and analyze costs of the range of products produced by the two Cooperatives.
- 5. Design a new costing system.
- 6. Training of personnel in the above tasks.
- 7. Short review of the marketing conditions.
- 8. Report writing.

# FINDINGS AND COMMENTS ON THE MUKALLA COOPERATIVE AND THE TWO UNITS AT SHAHAR AND GHEIL BAWAZER

The main workshop and the two units produce the following range of products:

- doors.
- windows.
- house furniture,
- school furniture.

They are using the same machines and methods of production. Work is done by experienced carpenters who have been in the profession for many years and who have formed the Cooperative to become stronger as a group rather than remain individual artisans.

All raw materials are imported and are paid for in hard currency. This situation requires financial planning in addition to production planning. The two units of Shahar and Gehil Bawazer get their supplies of raw materials from the main workshop in Mukalla.

They all depend on customers' orders and produce according to customers' requirements and specifications.

The selling prices are fixed as a result of adding up costs and a percentage for profits. Customer orders generally exceed production capacity.

The quality of production is not so good, but, in the absence of competition, products are sold.

The Cooperative has a showroom and a sales section in the town of Mukalla where customers can place orders. These are then transmitted to the workshop in Mukalla for execution.

According to the 1989 final accounts and balance sheet, the Cooperative sold products of 1.294,000 Din.rs¹ (excluding other repair and special service contracts). They also realized a net profit of some 100,000 Dinars.

Accounts of the two units are centralized in Mukalla.

Workers are paid according to the number of hours at an hourly rate of 384 fils. The Cooperative intends to increase this rate to 420 Fils following the overall rise in wages and cost of living.

## FINDINGS AND COMMENTS ON THE SEIYUN COOPERATIVE AND UNITS AT TRIM. HAUTA AND SHIBAM

The expert visited the Seiyun Cooperative on two occasions for three days each time.

The Seiyun Cooperative and its three units are producing the same overall range of products but Hauta and Shibam are specialized in doors and windows, while Seiyun and Tarim are also producing furniture.

All are using the same machines and production methods.

Workers are all artisans with long experience as carpenters.

Doors and windows are very bulky and excessive quantities of costly imported raw materials are used.

The quality of production (specially of furniture) is lower than that of Mukalla.

<sup>&</sup>lt;sup>1</sup> At the time of the mission the value of the Linar of PDR of Yemen (April 1990) was US\$ 1 = Din. 12.

Recently, they started to produce for stock according to specifications they feel are suitable for the market and thus they are producing for the market and also satisfying consumer requirements.

The Seiyun Cooperative will be relocated on a new site and a new layout will be prepared.

The possibilities of specialization were discussed. Since the Hauta unit is specialized in doors and windows, the expert felt that one of the two other units should specialize in furniture. Local management argued that their customers expect these units to satisfy all their requirements without their needing to go from one place to another.

Workers are also paid on an hourly basis (395 Fils per hour) with incentives according to the number of pieces turned out.

All materials are imported and are paid in hard currency.

### THE PRESENT COSTING SYSTEM IN THE COOPERATIVES

Neither of the two Cooperatives uses industrial cost accounting, but the basis of some sort of cost accounting exists in both Cooperatives.

The calculation of the estimated direct cost (material and labour) is made by the production department after the preparation of production orders.

Materials are issued according to these orders and their cost is obtained according to pricing based on actual invoice prices plus transportation and clearance expenses. Material costs are kept fixed throughout the year. Any deviations are covered from a special adjustment fund kept by financial accounts for this purpose. The same procedures of material cost calculation are applied by the two cooperatives.

Actual working hours are calculated and costed at an hourly rate which differs slightly from one cooperative to another.

Fixed costs to cover industrial costs (energy, water, maintenance, depreciated, etc.) are calculated at 7 per cent of direct costs (materials and labour) and ll per cent of direct costs plus industrial costs to cover administrative and selling costs. Seivun has a different method of calculation of fixed costs. These are calculated on an hourly rate for a number of hours equal to direct labour hours. Fixed costs are then added to direct cost of material and labour.

A percentage of net profit (7 per cent in Mukalla and 8 per cent in Seiyun) is added to the total cost to get the selling price for every item produced.

The present status of cost calculation is adequate under the actual condicions of production. Both cooperatives were able to obtain final accounts and to get balance sheets reflecting cost of production and sales without any difficulty. But a more modern costing system is required as they are now starting to produce for stock and not only for customers. An allocation of fixed costs to cost centres is going to be needed. They also need a better recording of cost elements.

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## REVIEW AND COST ANALYSIS OF THE RANGE OF PRODUCTS

After reviewing the range of products made by the Cooperatives. it was possible to identify the products shown in the table hereunder. For the purpose of the analysis, direct and fixed costs were calculated. Then selling prices were worked out for each product. More than ninety percent of the range of products are demanded repeatedly. Some customers however, still come up with special orders and special specifications. The Cooperative is expected to respond to these orders.

The result of the review and cost analysis is as follows:

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# WINDOWS AND DOORS

Code number	Product	Direct material costs	Auxiliary materials costs	Direct	Industrial costs	Adminis- trative and sales costs	Total costs	selling price
8/3/2/1/46	Window 4'x4'	13,685	5,790	17,280	2,512	4,326	43,683	46,710
8/3/2/1/47	Window 45'x4 '	19,897	5,790	17,856	2,768	4,854	46,965	90,255
8/3/2/2/57	Window, with glass	9,947	4,107	9,216	1,631	2,743	27,684	29,625
R\$/2/2/¢/B	Window, with glass	8,570	3,927	B, 928	1,499	2,521	25,445	27,225
B/3/2/4/50	Window 4'x4' (iron and glass)	22,11B	10,680	23,040	3,908	6,572	B10,338	70,960
B/3/2/4/52	Window 4'x3' (lron and glass)	18,265	H, 525	20,448	3,306	\$ 25 ° E	56,103	60,030
B/3/2/4/60	Window 4'x4' (iron and glass)	22,809	7,425	24,192	3,409	6,405	64,640	69,165
8/1/1/1/6	Doors, plywood faced flush, 200490 cm	16, 858	2,167	12,672	2,218	3,730	37,645	40,280
B/3/1/1/123	Doors, plywood faced flush, 210x180 cm	26,860	4.047	21.600	2,675	6,140	62,362	66,730
B/3/1/52	"Gawl" doors 64'x3'	16,692	2,450	14,576	2,388	4,015	40,521	43,360
8/3/1/6/37	Doors 7'x34'	12,061	1,393	990'R	1,506	2,532	25,556	27,345
8/3/1/6/39	Doors 7'x4'	13,512	2,910	8,928	1,774	2,983	30,107	32,218
B/3/1/9/10	Doors with glass 7'x3'	24,123	4,725	22,464	3,591	\$ CO ' &	60,942	65,210
8/3/1/8/13	Doors with glass 7'x34'	26,749	7,540	24,576	4,120	HZ1.'9	69,913	74,805

The two Cooperatives are manufacturing three groups of products, as follows:

- house furniture (20 main products)
- doors and windows (14 main products)
- school furniture (6 main products)

Selling prices differ according to models, sizes and customer requests.

There is a code number for each product and costs are calculated according to these code numbers. When sold, these same code numbers are the basis for invoicing and pricing.

Direct and auxiliary materials which are all imported represent 50 per cent of the cost of production.

The cost of labour represents 25 per cent of the total cost of production.

Fixed industrial costs, including depreciation of machines and tools represent 7 per cent of direct costs (material and labour).

Administrative and selling costs are costed at ll per cent of total production costs (material + labour + industrial costs) in Mukalla. In Seiyun, fixed costs are calculated on an hourly rate for a number of hours equal to direct labour hours.

7 percent of the total production cost is added as net profit to reach the selling price for production. This "cost plus" method of pricing was found suitable since both cooperatives produce according to customers' requests.

When considering that materials and labour absorb around 75 per cent of the total cost of production and that 18 per cent of the total cost are fixed costs, then only 7 per cent are the net profits of the Co-operatives.

The purchasing power affects prices and the range of products made.

The high quality, high price policy is not applied in the Cooperatives.

Products which are manufactured according to special specifications are slow-moving.

Small and standard dimension items are moving more quickly.

Prices of furniture range between 9 Dinars for an ordinary chair to 204 Dinars for a wide bed with mirror and radio set, built in the headboard.

Doors and windows range between 27 Dinars for a small window to 74 Dinars for a big door, depending on their dimensions.

School furniture range between 8 Dinars for a chair to a desk for two for 31 Dinars.

Production plans are made monthly according to customers orders.

6 percent of special orders were not executed in 1989. 5 percent of windows were not executed. 11 percent of doors and 20 per cent of house furniture were not executed.

Although unexecuted orders were carried forward to 1990, this shows that customers orders exceed production capacity.

Increasing the capacity of production is only possible by better production planning and control and accepting serial methods of production. This would furthermore lead to a better absorption of fixed costs (18 per cent) and a possibility of increasing net profitability (7 per cent).

For pricing purposes, selling prices should be rounded up to the nearest Dinar.

A coloured catalogue with photos of all products and prices should be printed to serve as a sales promotion tool.

### THE NEW COSTING SYSTEM

After reviewing the steps leading to total costs in the two Cooperatives, and after examining the flow of documents at the starting point which is customers' order and ending by delivering the product, the expert was able to design a suitable costing system.

- 1. The new system is based on the principles of obtaining accurate and dependable direct and indirect costs for the production of the two Cooperatives.
- 2. It was easily applied by the same people who were trained to do the application.

A set of new forms was designed and each one was explained to assure a proper utilization leading to obtaining the cost of production for each product as well as the selling price.

- 3. The new system helps to obtain the cost of production for the Cooperative as well as for the customers. It will thus be possible to plan production both ways without limiting themselves only to the execution c. customers' orders.
- 4. The new system allows the obtention of the cost of work in progress for unfinished products.
- 5. It also ensures a control of both materials and labour which absorb about 75 per cent of the total cost.
- 6. When the Cooperatives will move to the standardization of products, the system allows for future use of cost centres for production and services together with codes for cost allocation (direct and indirect).
- 7. The new forms and documents were explained in detail regarding how to fill them and who fills what. They were also explained to the people in charge of production, in the workshop and in the costing department.

- 8. The flow of documents under the new system is faster and easier. IT also avoids duplication.
- 9. As the basis of cost accounting for each product in both Cooperatives is the same, a comprehensive comparative evaluation is possible and can easily be performed.
- 10. The new costing system together with the required documents, was reproduced as a separate technical manual.

#### TRAINING

Courses were organized to introduce the new costing system and train the staff of the Cooperatives in its application. These courses grouped people from production, sales, purchase, and accounts in both Mukalla and Seiyun. They were trained in how to use the new forms and documents in the application of the system.

Manuals was prepared (in Arabic), reproduced and handed over to participants. These manuals have been issued as separate technical reports.

Following an agreement with the management of the Cooperatives, the national project manager and UNDP, it was found that it would be more useful to substitute the marketing expert by a tool maintenance expert. It was also agreed that the expert in costing prepare a marketing training manual. This was done and handed over to participants to an evening marketing course that was organized for the management and sales personnel. This manual was also issued as a separate technical report.

### A BRIEF REVIEW OF MARKETING CONDITIONS

Both cooperatives are operating in a sellers' market where they are nearly the only producers (with the exception of very few artisans). They do not have to worry about the market as demand is always there and is more than the supply. As competition is building up, the market will soon be a buyers market, especially when the cooperatives will have increased their productivity whether as a result of specialization or after adding more modern machines.

Customers will expect new models, better quality and suitable prices. Marketing techniques will be required, starting by a market research to explore new marketing segmentation. Quality has to be improved and sales promotion will be needed. The poor show room which exists now in Mukalla will have to be redesigned and decorated to serve as a site where nice and attractive items are exhibited in such a way as to motivate customers to buy. An able sales service will be needed to respond quickly and effectively to consumers' requirements. There should be a continuous development of new designs and models.

### RECOMMENDATIONS

1. The new costing system, and specially the cost centres which will be used in the allocation of fixed costs, need to be introduced gradually with every new move towards specialization and standardization.

- 2. Production planning is important as it can help in the better utilization of production capacities (mainly machines and labour). It can also help in using basic raw materials and auxiliary materials in the best possible way. Production planning must be set up before starting actual production to help in economizing and improving productivity.
- 3. The production Department must not be involved in any costing.
- 4. Control of costing factors have to be undertaken by the costing section which is supposed to undertake the responsibility of calculating cost of material. labour and indirect costs.
- 5. The present system of charging industrial costs and administrative and selling costs may continue as they are suitable for the present conditions of the Cooperatives and are realistic since they are based on an analysis over a number of prior years.

With the application of the new system, an allocation of fixed costs to cost centres will be required as soon as the expenditure takes place.

- 6. Some kind of market survey is required to find out customers' tastes, desires, preferences etc. This will permit better production planning.
- 7. The two cooperatives are encouraged to become more market oriented, trying to encourage customers to buy after considering a wider range of products and models attractively exhibited in show rooms.
- 8. The production, sales and costing departments should meet on a weekly basis to ensure better coordination and harmonization of the three activities. each one advising the other of its problems so as to become more efficient in carrying out production plans based on market requirements and actual costs.



### ANNEX I

### UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

### Project of the Government of the People's Democratic Republic of Yemen

# Strengthening the technical and managerial capabilities of the Carpentry Cooperatives in Seigum and Mukalla

### JOB DESCRIPTION

SM/PDY/87/005/11-02 (J-12209)

Post title

Cost accountant

Duration

3 months

Date required

Early 1990

**Duty** station

Mukalla with travel to Seiyun and Aden

Purpose of project

To strengthen the Technical and Managerial capabilities of the carpentry cooperatives in Mukalla and Seiyum.

Duties

Under the guidance of the Furniture and Joinery Production Expert, the project's Chief Technical Advisor, the cost accountant will be expected to:

- 1. Review the present product range of both cooperatives and, in close collaboration with the counterpart accountants, prepare a comprehensive cost analysis of the different items produced.
- 2. Introduce a modern costing system to suit the cooperatives needs.
- 3. Train his counterparts in the operation of the costing system proposed through short intensive courses and on the job training.
- 4. Prepare manuals for use in these courses.
- 5. Prepare a technical report outlining his findings and recommendations addressed to the plant's management, the government and international organizations.

Qualifications

Cost accountant familiar with establishing and maintaining simple costing systems in industries producing on a batch basis.

Language

Arabic preferred, English acceptable.

Background information:

The woodworking sector in the People's Democratic Republic of Yemen consists of the Public Corporation for Carpentry in the Aden Governorate and two carpentry cooperatives in the Hadramawt Governorate. It employs approximately 1000 people and its sales volume reached nearly YD 2.5 million in 1985. In general the woodworking sector produces low quality products at high costs. This can be attributed mainly to low utilization of equipment, poor maintenance of production facilities, low labour productiguity and extensive use of expensive raw materials. Factories are often run without a sound orientation on the market requirements and subsequent production planning and organization lack long term perspective.

The present strategy of the People's Democratic Republic of Yemen towards industrial development, as reflected in the Third Five Year Plan, focuses on strengthening the industrial infrastructure. It concentrates on three types of measures: (a) increase the utilization of existing productive capacities, through the rehabilitation of selected factories (b) the establishment of a limited number of new factories to cater for the growing needs for indigenously produced goods, with a view to saving hard currency through import substitution; and (c) improving the production and managerial capacities in industrial enterprises. This project in the woodworking sector falls under the first and the last categories.

The first technical assistance to the woodworking sector in the People's Democratic Republic of Yemen was provided in 1978 through a review of the Aden Public Corporation for Carpentry. The review indicated various areas for improvement of production and management. In 1981, project PDY/81/006 'Training in Management and Efficiency Improvement in Industries' provided a consultancy mission to conduct a survey of the manufacturing facilities of the Coastal Carpentry Cooperative. The survey team's findings indicated the urgent need for technical assistance in relation to the cooperative's plan to consolidate the operations of three of its member units. Thus, in 1983, a three month mission was fielded to review this issue. This mission

drew up the blueprint for a central workshop in Mukalla and advised on the necessary technical assistance to implement the plan. As no funds could be secured for this purpose, no follow-up was given by UNDP.

Two cooperatives are active in the Hadramawt Governorate: one in the area around Seiyun and one in the area around Mukalla. Each cooperative consits of a number of small scale production units, which supply their immediate environment with construction woodworking items (doors, windows) and selected furniture (beds, tables, chairs, sofas).

The cooperative of Seiyun has workshops in Tarim, Al-Hauta, Shibam and Seiyun itself. It employs 173 persons in various capacities, compared to 166 in 1977. The volume of sales of this cooperative was YD 644.348 in 1987 compared to YD 455.007 in 1982. Production is at an artisanal level, relying mainly on the individual skills of the carpenters.

The Coastal Carpentry Cooperative has workshops in Chail, Mukalla and Shahr. The total number of employees was 366 in 1977 and 376 in 1987. Most of the people are employed by the central workshop in Mukalla. The sales volume of this cooperative in 1987 was YD 1.245.842. Production in the central workshop in Mukalla has industrial characteristics, particularly in the furniture production, but the other workshops are of the same level as those in Seiyun.

All items are produced on demand and according to the specifications of the customer. Most workshops have waiting lists for certain iters which are much In Seiyun the construction woodworking items form about 72 percent of the sales volume, thereas this figure is 46 percent in Mukalla. As both cooperatives have hardly any capacity for cost accounting, it is impossible to assess which category of products has the highest added value of what the highest cost factor in are fixed based on global is. Prices production production costs and a traditional feeling of 'what the market will allow'.

Both cooperatives are weak in terms of human and physical resources and need strengthening in all aspects of their operations. With the exception of the workshops in Mukalla and Tarim, the production facilities of the workshops are cramped and poorly maintained. The machinery has reached the end of its technical life and breaks down frequently.

As most items are produced on demand, and according to customer specifications, production planning is totally dependent on the intake of orders. The

Cooperatives are not producing any items for stock and so there is hardly any serial production. Therefore, production organization is geared towards meeting the consumer preferences, and relies heavily on the skills of the individual carpenters to produce the items required. Consequently, most production techniques used in the cooperatives are still at the artisanal level.

Given the lack of managerial capacities and technical knowhow, the cooperatives have only been able to achieve limited product and production innovation, thus retaining low levels of labour productivity. As the wage rates in both cooperatives are directly linked to the productivity of the individual workers, wages have hardly gone up in real terms over the last five years, and in Seiyum they have actually decreased considerably

(21 percent).

Most of the cooperative members are illiterate skilled labourers, who have either had small workshops of thier own before the cooperative was established or they have been trained by their colleagues in the workshop. As both cooperatives are situated in rural areas, job opportunities are few and the well-being of cooperative members is dependent on the economic and financial prosition of the cooperative. The cooperative does not only provide jobs and wages, but it also provides pensions and guarantees bank loans. In this context, both cooperatives have started self-help housing schemes for their members.

### SUBSTANTIVE OFFICER'S COMMENTS

This report contains an assessment of the present situation, an analysis of costs of the products and a proposed new costing system. The expert also provided very useful training to the staff of both cooperatives and prepared three training manuals (in Arabic) which have been issued as separate technical reports. These cover:

- 1. Elements of Costing.
- 2. Industrial Costing
- Training in Marketing.

Having reviewed these it is our opinion that these are not only useful reference material for his counterparts, but could also serve as a textbook for use in other industrial enterprises in the country. The fact that these are in Arabic increases potential end users.

The one on elements of costing provides useful definitions etc. to laymen. Again, a useful textbook for an audience larger than the Cooperatives' staff.

That on industrial costing is appropriate to the needs of a wide range of enterprises at the level of the Cooperatives.

The expert was called upon to provide material on marketing because, at the time of the mission, the situation was of a sellers' market, but management felt that persons should be trained for the time when it would change. The material is rather basic, but relevant, bearing in mind the situation then prevailing.