



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

22500

32 p.
tables
graphs
diagrams



United Nations Industrial Development Organisation
NISP Lao project US/LAO/97/142

Survey of Small Manufacturing Establishments

1999

Report

BY

Shyam Upadhyaya

Ittichai Yossri

FOR

**Ministry of Industry and Handicrafts
Lao PDR**

Vientiane

February 2001

Table of contents

1. Introduction	2
1.1 Industrial database	2
1.2 Capacity building in MIH	3
1.3 Future direction of industrial statistics in Lao PDR	3
2. Survey of small establishments	4
2.1 Importance of the survey of small establishments	4
2.2 Scope and coverage of the survey	4
2.3 The frame and sampling units	5
2.4 Selection method.....	6
2.5 Data collection	8
2.6 Estimation procedure.....	9
2.7 The survey results	9
2.8 Limitations of the survey.....	11
3. Major findings of the survey	12
3.1 The size and structure of small establishments	12
3.2 Labour and production intensity.....	14
3.3 Employment and employment cost.....	15
3.4 Income and expenditure of small establishments	16
3.5 Some important relative variables	18
4. Appendices	20
4.1 Statistical tables.....	20
4.2 Listing form.....	29
4.3 Questionnaire	30

Table of figures in the report

Table 2.1: Number of Households and Number of Small Establishments by Provinces	6
Table 2.2: Sampling fraction by major variables at the first stage of sampling	6
Table 2.3: Major Variables in Sample after the First Stage of Selection	7
Table 2.4: Final allocation of samples	7
Table 2.5: Expected and Actual Number of Households and Small Establishments	8
Table 2.6: Distribution of Major Indicators by Size of Establishments	10
Table 3.1: Share of Grain Mills in Total of Small Establishments by Major indicators	12
Table 3.2: Contribution of Major Manufacturing Activities	13
Table 3.3: Percentage Distribution of Major Indicators by Provinces	14
Table 3.4: Percentage Distribution of Major Items of Expenditure by ISIC	17
Table 3.5: Sample Value of Selected Relative Variables	18

1. Introduction

The Ministry of Industry and Handicrafts (MIH) conducted two surveys of industrial establishments during the implementation of the National Industrial Statistics Programme (NISP) as technical assistance of UNIDO. The project was funded by the Government of Thailand. The first survey (Industrial Survey-99) covered large and medium industries engaged in mining and quarrying, manufacturing and electricity, gas and water supply. The final report of the Industrial Survey-99 was submitted to the Lao Government in July 2000. The present report covers the second survey conducted for small industrial establishments. As there were no small establishments reported in mining and quarrying and electricity, gas and water supply, this survey was named the Survey of Small Manufacturing Establishments (SME Survey-99).

The coverage of the Industrial Survey-99 was limited to establishments with 10 and more persons engaged, whereas the SME Survey was designed for establishments with less than 10 persons engaged. These two surveys complement each other and provide a complete set of statistics of the industrial sectors of the Lao PDR.

Lao government agencies responded to the Industrial Survey-99 with great interest and appreciation. The survey report was discussed in various inter-agency meetings and the statistics presented were studied and positively evaluated. The present report, covering the wide-spread small scale manufacturing activity is also expected to attract the attention of users of statistics, viz. the government departments, business organisations, academia and the general public.

1.1 Industrial database

Results of the SME survey-99 have expanded and enriched the industrial database created in the Statistics and Planning Division (SPD) of MIH. The database contains the results of the Industrial Survey-99 based on the survey of 227 industries as well as the complete profile of all large and a significant number of medium industries. Upon completion of the SME Survey, the database provides information on small establishments at provincial and national level. The SME Survey-99 provides individual profiles of almost 1700 units of all provinces except the Xaysomboune Region.

The industrial database contains primary data from the survey and statistical tables with national level estimates. In addition, the database stores international standard classification codes, national area codes and other auxiliary information for reference. Survey instruments, such as questionnaires, instruction manual, and methodological papers prepared during the survey are well documented and stored in the system for future reference. These documents are also provided to MIH in hard copies. The system has separate reports on both surveys. MIH is planning to translate these reports into Lao and publish them for wide distribution.

1.2 Capacity building in MIH

More on-the-job training was provided to national staff during the SME Survey-99. Staff members of MIH participated in the preparation of a complex multi-stage sampling design and made the selection of ultimate sampling units (villages) independently. Staff was trained in the design principles and estimation procedure of the survey. A lot of practical experience was also gained in the course of the identification of sample areas, data collection and supervision. The survey involved all provincial offices of MIH and required a good co-ordination of the fieldwork. The SME Survey-99 was indeed one of the few national surveys ever conducted in Lao PDR. The survey has significantly enhanced the technical capability of MIH in undertaking national level statistical operations.

After the successful completion of the first survey, UNIDO organised a study tour of senior statisticians of MIH to Vietnam, where a similar NISP project on a larger scale was carried out. Participants of the study tour visited the central and provincial statistical offices of Vietnam to share the experience of NISP implementation in both neighbouring countries. The team included two persons from the Ministry and one person from its field office.

1.3 Future direction of industrial statistics in Lao PDR

One of the immediate tasks of the Statistics and Planning Division of MIH is to sustain the achievements of the project. This means updating of the information collected during the project period. The Industrial Survey-99 was conducted on a sample basis. A complete industry profile is available only for large establishments. It is strongly recommended to complete the register with more information also for medium establishments. Similarly, the NISP establishment register should be updated with information on newly registered establishments.

The survey of large and medium establishments should be conducted on an annual basis. MIH has developed its technical capability with assistance from UNIDO during the project period. All required survey instruments, manuals and data processing facilities are available in the Ministry, while staff, currently working in SPD, have gained some experience from the previous survey, they are required to undertake the next operation independently. However, there is still an acute need for staff training. At least two staff members of SPD require formal statistical training, which could be organised by MIH in co-operation with the National Statistical Office (NSO).

In addition to the annual data collection system, there is also a high demand for quarterly or even monthly data. The future direction of industrial statistics is to set up a system of collecting quarterly/monthly industrial data and construct the index series of industrial production. This component may require external assistance to MIH.

2. Survey of Small establishments

2.1 Importance of the survey of small establishments

In the current industrialisation process of developing countries the role of small-scale industrial establishments has become particularly important. This is due to several reasons. Small-scale industries;

- can be run with a small amount of capital
- do not require advanced technology and highly skilled manpower
- are based on the local raw materials and domestic market
- generate employment and self-employment
- develop entrepreneur's skills among the rural population reducing their dependence on agriculture.

The importance of small establishments in the economy of developing countries has given the task of statistics greater priority. However, data collection from smaller units is a complex operation due to several factors. Small industrial units by their nature are hard to locate and identify. Even those identified cannot supply the information due to a lack of formal accounts and a substantial part of statistics provided depends on the estimates of owners. Hence, surveys of small establishments require a different statistical approach of planning, design and data collection. Although small establishments do not contribute much to the total output, industrial statistics would be incomplete without the survey of small establishments. Hence, the SME Survey-99 is aimed to produce the basic measure of small establishments in terms of size, employment and production indicators. The survey results are expected to meet the existing data gap on small establishments in the country.

The importance of the survey of small establishments has been emphasised also in terms of the capability building of MIH in conducting such an industrial survey of a complex nature. In the case of large and medium establishments the register serves as the frame for the industrial survey. However, for the survey of small establishments, the list of registered units cannot be directly administered as a large number of small establishments once registered never come into operation. Therefore, it is necessary to identify establishments actually in operation through fieldwork. Also in terms of the survey design, a survey of small establishments requires a combination of area and list, when primary sampling area units are selected proportional to the number of units. MIH staff observed this complex process of survey design and learned statistical methods applied to the survey of large, medium as well as small establishments.

2.2 Scope and coverage of the survey

The industrial sector comprises mining, manufacturing and electricity, gas and water supply. The Industrial Survey-99 covered all these three sectors.

There is no electricity, gas and water supply reported in the small scale sector, while cases of any mining or quarrying activity for other than household consumption purpose was considered as negligible. Hence, the coverage of the survey was limited to manufacturing activities.

Establishments with 10 and more persons engaged were covered by the Industrial Survey of large and medium scale establishments, whereas the SME Survey covered those with less than 10 persons engaged. The coverage of the survey was also limited in terms of the final use of products. Any activity carried out solely for the purpose of household consumption was excluded. In order to be eligible for the survey, it was absolutely necessary that all or part of the goods produced were sold in the market.

The survey was designed for the whole country. However, data collection could not be carried out in the Xaysomboune Special Region due to some security problems. Similarly, survey staff dropped the remote district of Nale of Louangnamtha Province, which was not easily accessible during the survey time.

2.3 The frame and sampling units

The survey was designed based on the area frame. Lao PDR is divided into 16 provinces. In addition, Vientiane municipality and Xaysomboune Special Region have an equal status to those of the provinces. Each province is divided into several districts, while the districts are divided into villages¹.

The list of small scale manufacturing establishments was not available, however SPD collected some reports from the provincial offices of MIH about the number of small establishments by districts. These reports provided approximate figures, but could be used for the sampling design. Another source of information for the sampling design was the result of the Population Census 1995. SPD brought the list of villages of all districts with the number of households listed in the population census. Using these two sources, an overall picture of the country in terms of the small establishments and household numbers was drawn.

At the first stage of sampling, districts were stratified by province. Taking the province as a stratum, two districts were selected as primary sampling unit (PSU) from each stratum. The selection of at least two was an attempt to balance the survey cost with the possibility of producing some estimates at the provincial level. The selection of a pair of PSUs was also intended to facilitate the computation of the sampling error at the estimation stage using the method of replicated samples. The number of area units, households and establishments used for the sampling procedure is presented by provinces in Table 2.1.

¹ Village or *Bane* (in Laotian) is not necessarily a rural area unit in Laos. Urban districts are also divided into *Banes*.

**Table 2.1:
Number of Households and Number of Small Establishments by Provinces**

Province codes	Name of provinces	Number of districts	Number of villages	Number of households	Number of small establishments ²
01	Vientiane Mun.	9	470	96955	1045
02	Phongsaly	7	679	25501	1189
03	Louangnamtha	5	505	21426	422
04	Oudomxay	7	814	35843	1292
05	Bokeo	6	417	20815	493
06	Luangprabang	11	1226	61992	2347
07	Houaphanh	8	961	38458	235
08	Xayabouly	10	585	52348	1020
09	Xiengkhouang	7	534	30855	883
10	Vientiane	10	575	50175	1759
11	Bolikhamxay	6	498	29556	1531
12	Khammouane	9	883	52406	1671
13	Savannakhet	15	1667	111750	1943
14	Saravanh	8	742	45380	1396
15	Xekong	4	286	10493	298
16	Champasak	10	908	89434	1653
17	Attapeu	5	211	16382	196
18	Xaysomboune SR	5	140	7999	166
	All provinces	142	12101	797768	19539

2.4 Selection method

Primary sampling units were selected based on the probability proportional to the size (so called PPS_{wor} method), where the number of small establishments was taken as a size measure of the province. Thanks to the PPS method, the sample area could be limited to the districts with a higher concentration of small establishments. As a result almost half of the small establishments were secured in one quarter of the districts.

Table 2.2: Sampling fraction by major variables at the first stage of sampling

Variables	In total	In sample	Sampling fraction (in %)
Number of districts	142	36	25.35
Number of villages	12101	3166	26.16
Number of households	797768	217729	27.29
Number of small establishments	19539	8629	44.16

The average number of households in sample districts varied from 1000 to 14000 with an overall average number of 6000. This number was quite high to make the district ultimate sampling unit. As the total number of households in

² The number of small establishments was reported by the field offices of MIH

sampled districts was more than 200,000, it was not feasible to cover such a large number in terms of the cost of survey.

Table 2.3:
Major Variables in Sample after the First Stage of Selection

Code	Name of provinces	Number of sampled districts	Number of villages	Number of households	Number of small establishments
01	Vientiane Mun.	2	138	28672	361
02	Phongsaly	2	154	6896	444
03	Louangnamtha	2	219	8524	154
04	Oudomxay	2	279	12364	635
05	Bokeo	2	202	12303	358
06	Luangprabang	2	296	19564	871
07	Houaphanh	2	173	7677	91
08	Xayabouly	2	181	16970	435
09	Xiengkhouang	2	213	15559	752
10	Vientiane	2	145	12557	506
11	Bolikhambay	2	136	11638	968
12	Khammouane	2	121	10530	468
13	Savannakhet	2	262	27701	686
14	Saravanh	2	270	19420	505
15	Xekong	2	98	6605	298
16	Champasak	2	153	18641	895
17	Attapeu	2	77	8588	128
18	Xaysomboune SR	2	49	2192	74
	All provinces	36	3166	217729	8629

Hence, a proportional sample of one fifth of the villages was made from each selected district that significantly reduced the sample size to 623 villages. This number actually exceeded the required sample size of 618 calculated on the basis of variance of the average number of households per small establishment. The second stage selection was based on systematic sampling, where the villages were ordered by the number of households. The selection procedure was simple for MIH staff to carry out. As the number of households and number of establishments were highly correlated, the use of systematic sampling based on the number of households also ensured a better representation of villages with the different levels of manufacturing activities.

Table 2.4: Final allocation of samples

	First stage selection	Second stage	Fraction in relation to the first stage (in %)
Number of districts	36	36	100.00
Number of villages (ultimate sampling units)	3166	623	22.28
Expected number of households	217729	48506	19.68
Expected number of establishments	8629	1726	20.00

2.5 Data collection

In order to identify the small manufacturing establishments, first all structures of sample villages were listed. Listing of structures provided information on three important variables of the survey: number of structures, number of households and number of small manufacturing establishments. These figures, when compared to earlier data, indicate the consistency and reliability of the survey results. In most of the cases the number of households from listing data are very close to or exceed their expected numbers. However, the number of surveyed establishments varies from earlier estimates. The actual number of establishments in operation was found to be more than expected in industrial area such as Vientiane Municipality, Savannakheth, and Xayabouly. In other areas, however, only 58% of registered establishments were found in operation. The difference between administrative and survey data was reported to be particularly high in Luangprabang, where only 32.2% of establishments were found in operation. The numbers of expected and surveyed units are given below.

Table 2.5:
Expected and Actual Number of Households and Small
Establishments in Sample area

Province	Number of villages in sample	Number of households in sample		Number of establishments in sample	
		Expected	Actually listed	Expected	Actually surveyed
Vientiane Municipality	27	5735	6044	72	142
Phongsaly	31	1379	1400	89	48
Louangnamtha	23	955	954	21	94
Oudomxay	56	2473	2475	127	105
Bokeo	40	2460	2467	72	45
Luangprabang	59	3913	4039	174	56
Houaphanh	35	1535	1542	18	68
Xayabouly	37	3394	3385	87	226
Xiengkhouang	42	3112	3145	151	239
Vientiane	19	1737	1750	101	65
Bolikhamxay	27	2328	2330	194	89
Khammouane	24	2106	2113	94	77
Savannakheth	53	5540	5495	137	162
Saravanh	54	3884	3790	101	76
Xekong	20	1321	1320	59	26
Champasak	31	3728	3742	179	102
Attapeu	16	1717	1725	26	35
Xaysomboune SR	10	439	Not listed	15	Not surveyed
Total	623	48506	47716	1726	1655
Total excl. dropped area	594	47317	47716	1702	1655

2.6 Estimation procedure

Estimation at the level of districts was made by multiplying the total value of a characteristic for all selected villages by the sampling interval k , where $k = \frac{N}{n}$. The value of k for all districts was constantly 5. Estimation at the provincial level can be made from the district value using standard formulae for the PPS selection, where the estimated value of Y characteristics for a province equals:

$$\tilde{Y} = \frac{1}{n} \left(\frac{M}{m} \sum_n y_i \right) \quad \text{where, } \sum_n y_i \quad \text{is the total value of } y \text{ characteristics for}$$

selected districts in a province,
 m – number of small establishments in sample districts,
 M – total number of small establishments in a province,
 n – number of sample districts in a province.

For practical reasons a multiplier was calculated for all districts based on the above formulae. The multiplier can be easily converted for a village by including the k factor, i.e. $\frac{1}{2} \left(\frac{M}{m} \right) \times 5$.

Estimation also involved raising the monthly figures to annual estimates. Income and expenditure data were asked only for the latest one-month period. Monthly data were raised to annual estimates based on the number of months, during which an establishment was in operation during the reference year.

Estimation of variance and standard error was based on the method of **Balanced repeated replication (BRR)**. Each province (stratum) consisted of two randomly selected districts (*PSU's*). These two districts were considered as replicates (not overlapping sub-samples). Then the variance of y characteristics was computed as follows:

$$\text{var}(y) = \frac{1}{4T} \sum_t (y_1 - y_2)^2 \quad \begin{array}{l} \text{Where;} \\ y_1 \text{ and } y_2 - \text{value of } y \text{ characteristics of first and second} \\ \text{PSU (district) of a stratum (province)} \\ T - \text{number of pairs} \end{array}$$

The variance and sampling error was calculated for the sample average of surplus per establishment. The value of surplus, calculated as the difference of income and expenditure, is a highly correlated characteristic to major indicators of the establishment and its precision represents the reliability of the results as a whole. The sampling error was estimated at 6.4% of the average surplus per establishment.

2.7 The survey results

The survey was the first of this kind and there are no other sources for direct comparison of survey results. Therefore the survey results are compared

to administrative records of the MIH and the Industrial Survey-1999. The number of small establishments according to the report submitted by provincial offices for 1999 to MIH was 19373 (excluding Xaysomboune SR). From the survey results, the total number of units is estimated at 21759. The survey estimates should not necessarily match the register figures for at least two reasons. First, the survey covered not only registered units and second, not all registered units were in operation. However, the number of units in the register and in operation is highly correlated. In most of the provinces the expected number of units based on the register figures was quite close to those of survey results. Additional information for verification was the number of households. Enumerators were asked to list the structure and households in the selected area. The number of households from the listing result was found quite close to the figures of the last population census. The number of households in the sample area was found to be 47716 against the expected number of 47317.

While total figures at the national level were found quite comparable, some inconsistencies were reported at the level of provinces. For example, the estimated number of small establishments in the Luangprabang Province was less than 1/3 of the expected number. On the other hand, the number of establishments surveyed in Houaphanh province was 4 times higher than the expected number.

The results of the survey look quite consistent when compared to the figures for large and medium establishments covered in the Industrial Survey-1999. Small establishments, many in number, produce only 13.4% of total industrial output. Small establishments employ more than half of the total persons engaged, however, the average number of persons engaged per establishment was only 2 persons as more than 90% of the surveyed establishments employed 3 persons or less.

Table 2.6:
Distribution of Major Indicators by Size of Establishments

Indicators	Large and medium	Small	Industry total
Number of establishments	1.92	98.08	100.00
Number of persons engaged	46.46	53.54	100.00
Gross fixed capital formation	91.59	8.41	100.00
Gross output	86.62	13.38	100.00

In general the survey results give the impression of a slight under coverage due to the problems encountered in data collection. First, these data exclude one province totally, although its contribution to total was not expected to be more than 1%. Second, the fieldwork with the geographical condition of a country like Laos is a difficult task. Many sample areas were remote and inaccessible by motor transport. The chain of field supervision was also not always satisfactory. These factors might have contributed to some margin of omission of sampling units during data collection.

2.8 Limitations of the survey

The SME Survey-99 was a very important survey to meet the critical data gap of small establishments in Lao PDR. However, the survey has some limitations that should be taken into consideration when using the results of the survey.

MIH is in the process of capacity building for the undertaking of sample surveys. Staff involved in the survey may not have been fully aware of all aspects of the survey which caused a relatively high margin of non-sampling errors. The weaker part of the survey organisation was the lack of sufficient supervision of the fieldwork by the central staff. There have been some reports of inadequate coverage of the sample area, especially in remote villages. The difference of expected and surveyed numbers of establishments was quite high in some area. In addition, one province totally and one sample district of another province was not covered in the data collection. Similarly, non-response cases were not recorded, although field staff reported that such cases were negligible. The survey estimates are produced with the adjustment for one district not covered, but Xaysomboune SR is excluded from the estimates.

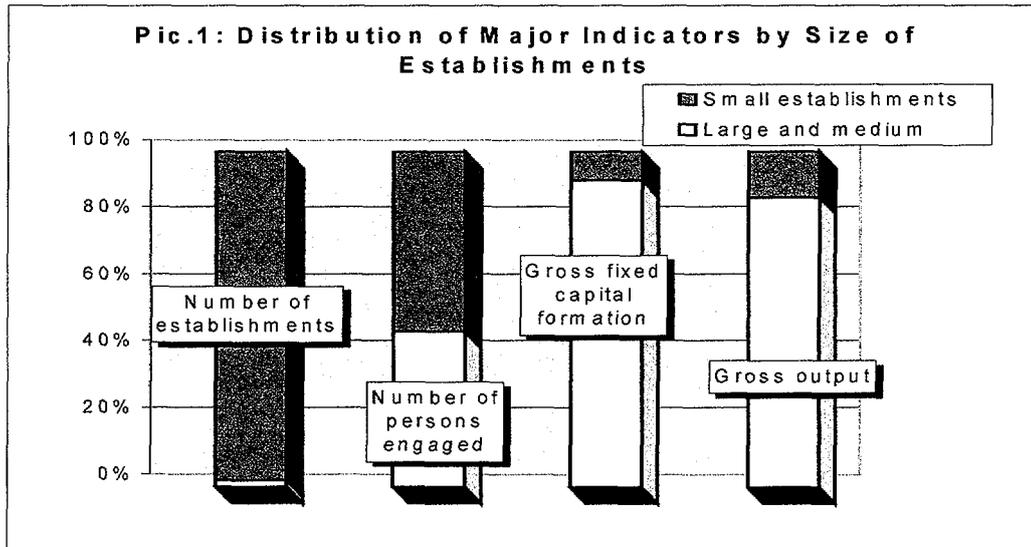
The survey of small establishments requires that field staff ask sufficient probing questions to assist the respondent in memory recall. Probably for this reason expenditure reported was not very consistent to income data in some cases. In general, income and expenditure items were covered quite satisfactorily in the survey.

Despite these limitations the survey results produce very important and fairly consistent statistics. The survey results are presented in comparison to the results of the Industrial Survey-99. In addition to estimates for the total, some useful relative variables are also presented in the report, which are highly reliable and contain a lesser margin of errors. The survey has certainly created a benchmark of statistics of small establishments in the Lao PDR.

3. Major findings of the survey

3.1 The size and structure of small establishments

The total number of small establishments was estimated at 21759. Small establishments made a substantial contribution to industrial employment in the reference period, however, their contribution to capital investment was well below 10%. Small establishments produced 13.4% of industrial output in 1999. The relation between small and large and medium industries for major indicators is shown in the following graph.



The manufacture of grain mill products was the most widespread activity for small manufacturing establishments in Laos. Grain mills accounted for almost 75% of all establishments. They contributed two-thirds of employment and 70% of capital investment. However, their contribution to gross output was only 43%, because of their very small size and lower productivity. The average number of persons engaged in grain mills was less than 2 persons (1.7) as against 2.8 in other activities. The average output was 2.5 times higher in other activities on average than in grain mills.

**Table 3.1:
Share of Grain Mills in Total of Small Establishments
by Major indicators (1999)**

Major indicators	Total	Grain mills	Share of grain mills in total
Number of establishments	21759	16516	75.91
Number of persons engaged	42725	28004	65.55
Gross addition to fixed assets (million Kips)	8931	6225	69.70
Gross output (million Kips)	339606	146835	43.24

Among other activities a notable contribution was made by furniture and textile manufacturing. Production of furniture is combined with other manufacturing in ISIC 36. Actually, the contribution of other manufacturing was negligible. This is explained by a large number of wood based activities in Laos. Wood and wood products is also among the major activities in small scale. The contribution of major manufacturing activities to the total value of principle indicators is given below.

Table 3.2:
Contribution of Major Manufacturing Activities (in %)

Industry classification (ISIC)	Number of establishments	Number of persons engaged	Gross output
15 Food products and beverages ¹	81.78	72.73	53.35
17 Manufacture of textiles	4.62	7.11	10.05
20 Wood and of products	2.39	3.07	2.39
26 Non-metallic mineral products	2.34	4.35	2.97
27 Manufacture of basic metals	1.62	1.78	2.48
36 Furniture and other manufacturing	4.29	7.02	26.45
Sub-total of major activities	97.05	96.05	97.67
Other activities combined	2.95	3.95	2.33
Total	100.00	100.00	100.00

1. Including grain mills

The distribution of small manufacturing establishments by legal organisation showed that almost all establishments were operated as individual proprietorship. Out of 1655 surveyed establishments, only 16 units were run under co-operatives and partnership and none were reported on share capital basis.

As stated above, the estimates at provincial level can be used with some precautions as the fieldwork supervision was weak in some areas and a certain degree of under coverage is not ruled out. Detailed estimates at the level of provinces are available in the database, but have not been presented in this report. However, the geographical distribution of major indicators from the sample value is presented.

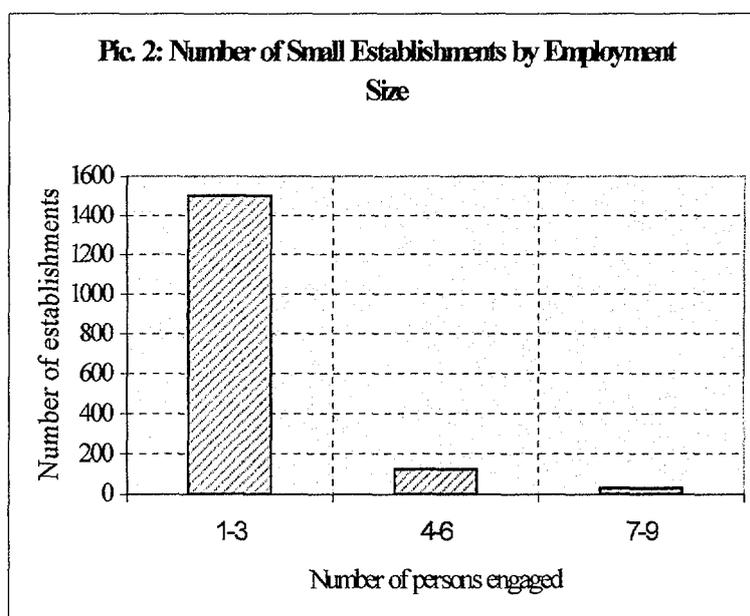
In the SME survey-1999 the largest concentration of small establishments was observed in Xiengkhuang and Xayabury provinces. However, the highest contribution to total gross output of small manufacturing establishments was made by Champasack province followed by Vientiane municipality. Vientiane municipality also had the highest share in employment. Among others, Borikhamxay and Savannakhet provinces made a significant contribution to total gross output and the number of persons engaged. The northern provinces of Houaphanh, Bokeo and Luangnamtha made the least contribution to total gross output. The percentage distribution of sample values for major indicators is depicted in Table 3.3

Table 3.3
Percentage Distribution of Major Indicators by Provinces

Province	Number of establishments	Number of persons engaged	Gross output
01 Vientiane municipality	8.58	14.24	20.00
02 Phongsaly	2.90	2.97	2.15
03 Luangnamtha	5.68	5.79	1.57
04 Oudomxay	6.34	6.12	2.54
05 Bokeo	2.72	2.12	1.55
06 Luangprabang	3.38	3.15	3.20
07 Houaphanh	4.11	2.27	0.91
08 Xayabury	13.66	9.39	4.93
09 Xiengkhuang	14.44	12.94	6.45
10 Vientiane	3.93	4.03	4.17
11 Borikhamxay	5.38	5.85	8.63
12 Khammuane	4.65	2.97	4.68
13 Savannakhet	9.79	12.82	5.71
14 Saravane	4.59	4.73	2.10
15 Sekong	1.57	1.91	3.70
16 Champasack	6.16	6.48	23.33
17 Attapeu	2.11	2.21	4.38
Total	100.00	100.00	100.00

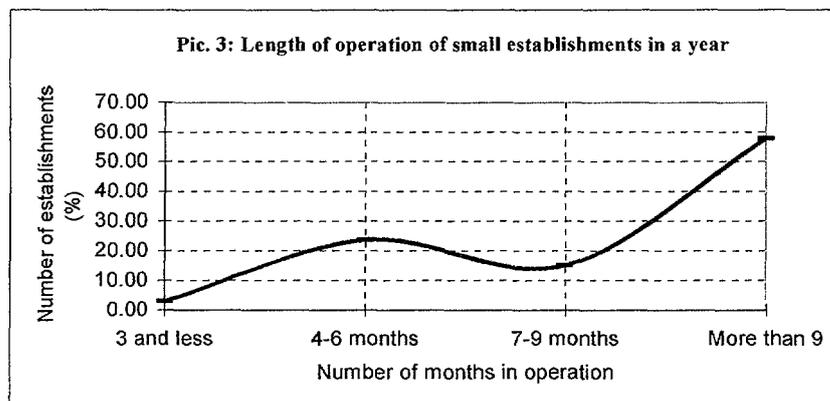
3.2 Labour and production intensity

The average size of small establishments in terms of employment was only 2 persons per unit. Such an extremely low employment size was mainly due to the very large number of grain mills of smaller size. As mentioned earlier (Table 3.1),



grain mills dominated all indicators of small establishments. Out of 1210 surveyed grain mills 1175 i.e. 97.1% reported to have 3 or fewer persons engaged. In total, 91% of small establishments were reported to have 1 to 3 persons engaged, while 7% reported 4 to 6, and only 2% reported to have 7 to 9 persons engaged. In this size class, the total number of establishments still tends to be 420, which is quite consistent to the results of the Industrial Survey-1999.

Manufacturing activities in the small scale sector are often carried out with other economic activities, thus a large number of these establishments are in operation seasonally. Due to the lack of proper accounts, the respondent recalls the required information from memory. In order to minimise the effect of memory lapse on respondent's estimation, income and expenditure data are asked for the latest month of operation of small establishments. The number of months in operation also indicates the production intensity of small manufacturing units.

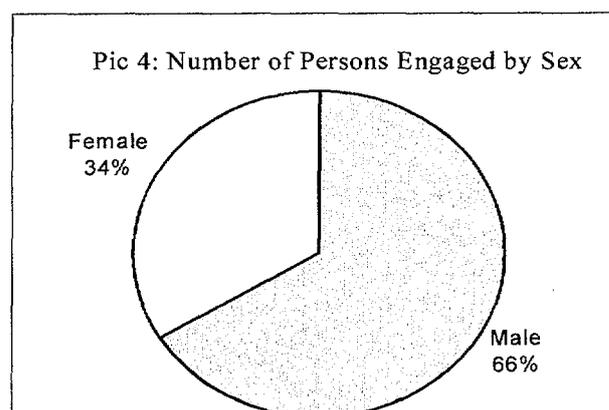


The survey results have shown that more than 40% of small establishments were in operation 9 months or less during the year 1999, while little more than one quarter operated for half a year or less. Establishments engaged in textile, wood products and furniture manufacturing were less affected by seasonal fluctuation than grain mills and metal works. The graph also shows that small establishments tend to work for half a year or a full year, rather than 1/3 or 2/3 of the year. This may be caused by the two main seasons in Laos, the rainy season, when the vast population is busy in agriculture and the dry season, when non-agricultural activities are carried out.

3.3 Employment and employment cost

One of the important aspects of small establishments is employment generation. The survey results have shown that there are more persons engaged in small manufacturing establishments than in large and medium industries combined. The total number of persons engaged in small establishments in 1999 is estimated at 42725 as compared to 37075 in large and medium scale industrial establishments. The number of working proprietors and unpaid family workers was 86% of total persons engaged in small establishments in comparison to 2% in large and medium industries.

One third of the total persons engaged were female. The number of female workers was quite high in textile and wearing apparel related activities. In these two sectors combined (ISIC 17 and 18) the number of female workers was 85% of total persons engaged. Male workers dominated in grain mills and non-metallic mineral products.



The total number of employees was estimated at 5872, which represent just 14% of total persons engaged. The total amount of wages and salaries paid to employees was 12.6 billion Kips. The amount of other payments made by establishments to social security and pension funds etc. was negligible (less than 0,5%). The average rate of wages and salary was 2.1 million Kips per year, approximately US\$ 300. The rate is lower as compared to large and medium establishments, where the average wage rate was reported at 2.5 million Kips or US\$ 360. Benefits for employees working in small establishments is even lower, as workers of large and medium were entitled to social security coverage that was equivalent to 15% of the total compensation of employees. The average wages and salary was very low (0.7 million Kips per annum) in tobacco manufacturing. In contrast, employees working in furniture production enjoyed a higher rate of 3.3 million Kips per annum.

3.4 Income and expenditure of small establishments

When measuring the revenue of small establishments, the sale of goods produced by establishments and goods produced and retained for own consumption was considered as the main sources. 'Other receipts' covered receipts from services rendered. Work in progress and changes in stocks as well as any non-commodity receipts such as dividend or interest were not relevant to small establishments. Hence, the total revenue formed the value of gross output of small establishments.

The total revenue of small manufacturing establishments for 1999 was estimated at 340 billion Kips. The main component was the sale of goods produced by the establishment, which contributed 80% to total output, while 13% of output was retained for own consumption. The remaining 7% came from other receipts. The volume of products retained for self-consumption was highest (27%) in grain mills, whereas establishments engaged in manufacturing of textile, paper, chemical and metal products sold all products to the market. The share of other receipts was around 15% and below in most of the sectors except those providing mainly industrial services. For this reason the share of other receipts was particularly high in publishing and printing (60%).

The total expenditure of establishments comprised wages and salaries, payment for utilities (fuel, electricity and water), purchase of materials including those from own production, payment for repair and maintenance and other services and indirect taxes. Total expenditure less wages and salaries and indirect taxes resulted in the value of intermediate consumption of establishments. Similar to the revenue side, the change in the stock of materials purchased for processing and any financial expenses were not considered as relevant to small establishments.

Total expenditure of small manufacturing establishments for 1999 was estimated at 191 billion Kips, which indicated a surplus of 149 billion Kips from the total amount of estimated revenue of 340 billion Kips. The surplus comprised 43% of total revenue. The relatively high level of surplus in small establishments appears unrealistic, however, there is an objective reason for such a result of the survey. All major indicators of small establishments were highly dominated by the trend observed in grain milling. The number of employees in grain mills was only 2% of the total number of persons engaged. That is why wages and salaries paid to employees was less than 2% of total expenditure of the manufacture of food and beverages that include grain mills. Wages and salaries comprised 15% of total expenditure on average, excluding the manufacture of food and beverages.

Table 3.4:
Percentage Distribution of Major Items of Expenditure by ISIC

Industry classification (ISIC)	Wages and salaries of employees	Payment for utilities	Expenditure on goods and services	Indirect taxes	Total
15. Food products and beverages	1.59	14.35	81.42	2.63	100.00
17. Manufacture of textiles	11.63	4.95	83.26	0.17	100.00
20. Wood and of products	13.16	6.78	78.68	1.38	100.00
26. Non-metallic mineral products	13.36	6.91	75.60	4.14	100.00
27. Manufacture of basic metals	12.21	7.43	73.06	7.30	100.00
36. Furniture and other manufacturing	17.03	5.66	72.98	4.33	100.00
Sub-total of major activities	6.30	11.16	79.82	2.72	100.00
Other activities combined	16.05	11.06	68.03	4.86	100.00
Total	6.58	11.16	79.48	2.78	100.00

The high value of surplus was also caused by a high value added output ratio, almost 50%, or in other words by lower cost of production. More than one third of materials processed by small establishments came from own production. Valuation of these materials was done by respondents according to the prevailing market prices. In rural area, materials of own production are not only under valued, but also under reported. Even when materials used from own production are fairly reported, their prices are lower by the trade and transport margin normally included in the price of purchased materials.

On average, the cost of goods and services comprised 80% of total expenditure. Grain mills, which is a type of "One-man versus one-machine", used

On average, the cost of goods and services comprised 80% of total expenditure. Grain mills, which is a type of "One-man versus one-machine", used more fuel and electricity and less manpower, so had a different cost structure from others due to the low cost of employment. Payment for utilities was lower in sectors of a high level of manual works, such as textile and furniture production.

Total value added was calculated as the difference between the estimated value of gross output and intermediate consumption. Value added so computed was 166 billion Kips, which is 16.6% of the total value added of industrial sectors. Due to the high rate of value added reported in small establishments, their share in total value added is higher than that in total industrial output.

3.5 Some important relative variables

In addition to estimates of the total, some important relative variables are calculated from the sample value. These variables contain a lesser margin of error than estimates for the total and can be used as estimators in future. In the SME Survey-99, the number of establishments estimated was quite close to those figures provided by the field offices of MIH. In practice, there are a number of units registered, but not in operation and also those in operation but not registered. Hence, the number of establishments registered not necessarily equals those in operation. This survey covered those in operation. In the near future, when a nation wide survey is not feasible for cost or other reasons, a smaller operation can be undertaken to find out the number of establishments in operation. The relative variables presented below can be used to estimate the total of major indicators.

Table 3.5 Sample Value of Selected Relative Variables

Variables	Unit	Grain mills	Other establishments
Number of small establishments	In %	73.11	26.89
Number of persons engaged per establishment	Number	1.70	2.79
Number of employees in total number of persons engaged	In %	2.04	33.63
Average monthly wages and salaries of employees		220.00	209.27
Average value of gross output per establishment per month	'000' Kips	1212.54	2733.42
Average value added per establishment per month		554.73	1258.43
Average length of operation in a year	Months	9.5	9.5

Due to the different and dominant characteristics observed in grain mills, it was thought necessary to separate the figures for grain mills from the total. Similar numbers were observed in both groups only for average wages and salaries and the length of operation during the year. One more advantage of estimates based on the above variables will be the possibility of obtaining real growth rate. Because, estimates of gross output and value added will be implicitly obtained at constant prices. The estimation procedure using the above figures is illustrated below.

Let us suppose that observation of some selected area indicated about 2% increase of the number of small establishments in the year 2000.

Hence, the estimated number of establishments for 2000 equals:

$$21773 ('99) \times 1.02 = 22208$$

Out of which:

Grain mills	$(22208 \times 73.11)/100 = 16236$
Other establishments	$(22208 \times 26.89)/100 = 5972$

Similarly, the estimated number of persons engaged would be:

Persons engaged per establishment \times Number of establishments

	Persons engaged per establishment	Number of establishments	Estimated number of persons engaged
Grain mills	1.70	16236	27601
Other establishments	2.79	5972	16662
Total			44263

When estimates are made for gross output or value added it is necessary to take the average length of operation into account. Using the average output per establishment per month and the average length of operation, **the estimated value of gross output** would be:

	Average monthly output per establishment	\times	Number of establishments	\times	Average number of months in operation in the year	
	Average monthly output per establishment '000' Kips		Number of establishments		Average number of months in operation	Estimated value of gross output (mil. Kips)
Grain mills	1212.54		16236		9.5	187025
Other establishments	2733.42		5972		9.5	155078
Total						342102

Using the above relations, value of gross output for 2000 could be estimated at 342 billion Kips.

Relative variables are also more stable over time, however, due to the structural changes in the economy, any estimates based on these variables lose their validity after a few years. A new round of similar surveys should then be conducted for another statistical cycle.

4. Appendices

4.1 Statistical tables

The industrial database established in the Statistics and Planning Division of the Ministry provides a wide range of information about large, medium and small industrial establishments. This report presents the summary tables highlighting the major outcomes of the SME Survey-99. Statistical tables present estimated value for the total, which was obtained by weighting the sample value and the distribution of sample value itself when weighting would not have resulted in a significant difference from the sample value.

Table 1:
Estimated Value of Major Indicators of Small manufacturing establishments by ISIC (1999)

Industry classification (ISIC)		Number of establishments	Number of persons engaged	Number of employees	Wages and salaries of employees	Gross addition to fixed assets	Gross output	Intermediate consumption	Value added
		Numbers			Value in million Kips				
15	Food products and beverages	17795	31075	1137	1859	7095	181163	111919	69244
1531	Grain mill products	16516	28004	516	727	6225	146835	92577	54258
16	Manufacture of tobacco products	64	320	64	49	0	1483	1178	305
17	Manufacture of textiles	1005	3036	1416	2667	1	34130	20232	13898
18	Manufacture of wearing apparel	141	231	40	91	5	2299	1047	1251
20	Wood and of products	521	1312	273	639	645	8110	4149	3961
21	Paper and paper products	9	17	0	0	0	124	43	81
22	Publishing and printing	18	36	0	0	40	161	122	39
24	Chemicals and chemical products	5	10	0	0	0	472	260	212
25	Rubber and plastics products	25	50	25	18	0	76	29	47
26	Non-metallic mineral products	509	1858	815	959	123	10083	5923	4160
27	Manufacture of basic metals	353	760	174	445	733	8407	2935	5473
28	Fabricated metal products	13	13	0	0	0	30	12	18
29	Machinery and equipment n.e.c.	25	49	0	0	0	557	428	130
31	Electrical machinery and apparatus	223	498	0	0	0	543	314	229
35	Other transport equipment	120	460	315	720	-22	2155	890	1265
36	Furniture and other manufacturing	934	2998	1571	5121	311	89812	23651	66162
Total		21759	42725	5829	12568	8931	339606	173129	166476

Table 2:
Estimated Value of Major Indicators of Small manufacturing establishments
by provinces (1999)

Province	Number of establishments	Number of persons engaged	Gross output	Intermediate consumption	Value added
01 Vientiane municipality	2057	6809	81414	46072	35343
02 Phongsaly	856	1688	14122	9444	4678
03 Luangnamtha	1854	3767	9851	7415	2436
04 Oudomxay	1334	2816	9246	7479	1768
05 Bokeo	327	529	3392	2552	840
06 Luangprabang	682	1118	12770	7109	5662
07 Houaphanh	1723	1929	6888	3398	3490
08 Xayabury	2699	3655	12831	9768	3063
09 Xiengkhuang	1294	2477	9603	7242	2362
10 Vientiane	1528	3057	28920	15710	13210
11 Borikhamxay	735	1548	20174	13510	6664
12 Khammuane	1529	1803	17454	12171	5284
13 Savannakhet	2284	6009	18689	10188	8501
14 Saravane	955	1964	7889	5472	2417
15 Sekong	171	456	3939	2555	1384
16 Champasack	1460	2523	25716	8134	17582
17 Attapeu	271	576	56705	4912	51793
Total	21759	42725	339606	173129	166476

Table 3:
Number of Small Establishments Surveyed by number
of months in operation (1999)

Industry classification (ISIC)	Less than 3 months	4 to 6 months	7 to 9 months	More than 9 months	Total
15 Food products and beverages	46	311	191	793	1341
1531 Grain mill products	43	281	164	722	1210
16 Manufacture of tobacco products	0	8	0	1	9
17 Manufacture of textiles	1	9	5	53	68
18 Manufacture of wearing apparel	1	2	2	9	14
20 Wood and of products	0	7	13	25	45
21 Paper and paper products	0	0	1	0	1
22 Publishing and printing	0	0	0	3	3
24 Chemicals and chemical products	0	0	0	1	1
25 Rubber and plastics products	0	0	0	2	2
26 Non-metallic mineral products	1	10	18	10	39
27 Manufacture of basic metals	1	10	2	11	24
28 Fabricated metal products	0	1	0	0	1
29 Machinery and equipment n.e.c.	0	0	1	0	1
31 Electrical machinery and apparatus	0	10	3	1	14
35 Other transport equipment	0	2	1	8	11
36 Furniture and other manufacturing	2	23	14	42	81
Total	52	393	251	959	1655

Table 4:
Number of Small Establishments Surveyed by employment size classes (1999)

Industry classification (ISIC)	Less than 4 persons	4 to 6 persons	7 to 9 persons	Total
15 Food products and beverages	1285	46	10	1341
1531 Grain mill products	1175	30	5	1210
16 Manufacture of tobacco products	1	8	0	9
17 Manufacture of textiles	41	21	6	68
18 Manufacture of wearing apparel	13	0	1	14
20 Wood and of products	35	10	0	45
21 Paper and paper products	1	0	0	1
22 Publishing and printing	3	0	0	3
24 Chemicals and chemical products	1	0	0	1
25 Rubber and plastics products	2	0	0	2
26 Non-metallic mineral products	28	7	4	39
27 Manufacture of basic metals	20	3	1	24
28 Fabricated metal products	1	0	0	1
29 Machinery and equipment n.e.c.	1	0	0	1
31 Electrical machinery and apparatus	11	3	0	14
35 Other transport equipment	7	2	2	11
36 Furniture and other manufacturing	49	25	7	81
Total	1499	125	31	1655

**Table 5:
Estimated Number of Persons Engaged by ISIC and by Sex (1999)**

Industry classification (ISIC)		Number of establishments	Number of persons engaged		Unpaid workers		Number of employees	
			Male	Female	Male	Female	Male	Female
15	Food products and beverages	17795	21414	9660	20488	9449	926	211
1531	Grain mill products	16516	19839	8165	19332	8156	507	10
16	Manufacture of tobacco products	64	178	142	121	135	57	7
17	Manufacture of textiles	1005	406	2629	394	1226	13	1403
18	Manufacture of wearing apparel	141	66	165	58	134	8	31
20	Wood and of products	521	634	677	405	634	229	43
21	Paper and paper products	9	9	9	9	9	0	0
22	Publishing and printing	18	28	8	28	8	0	0
24	Chemicals and chemical products	5	5	5	5	5	0	0
25	Rubber and plastics products	25	38	13	13	13	25	0
26	Non-metallic mineral products	509	1523	335	916	127	607	208
27	Manufacture of basic metals	353	644	116	471	116	174	0
28	Fabricated metal products	13	13	0	13	0	0	0
29	Machinery and equipment n.e.c.	25	49	0	49	0	0	0
31	Electrical machinery and apparatus	223	320	178	320	178	0	0
35	Other transport equipment	120	435	25	120	25	315	0
36	Furniture and other manufacturing	934	2571	428	1107	320	1464	108
Total		21759	28333	14391	24516	12380	3817	2011

Table 6:
Estimated value of expenditure items of small manufacturing establishments (1999)
(Value in million Kips)

Industry classification (ISIC)	Wages and salaries of employees	Fuel electricity and water	Material and supplies purchased	Value of materials used from own production	Repair and maintenance and other services	Other expenditure	Indirect taxes	Total expenditure
15 Food products and beverages	1859	16773	35138	39069	13653	7286	3078	116855
1531 Grain mill products	727	13397	22892	38228	12433	5626	2606	95910
16 Manufacture of tobacco products	49	106	0	985	88	0	22	1250
17 Manufacture of textiles	2667	1135	15765	549	192	2592	38	22937
18 Manufacture of wearing apparel	91	74	868	2	18	86	67	1205
20 Wood and of products	639	329	2934	73	287	525	67	4854
21 Paper and paper products	0	1	28	0	0	14	0	43
22 Publishing and printing	0	71	24	19	2	5	1	123
24 Chemicals and chemical products	0	3	252	0	0	6	9	269
25 Rubber and plastics products	18	18	5	0	0	6	10	57
26 Non-metallic mineral products	959	496	4363	588	73	403	297	7179
27 Manufacture of basic metals	445	271	2388	5	1	269	266	3646
28 Fabricated metal products	0	2	8	0	0	3	2	14
29 Machinery and equipment n.e.c.	0	15	393	0	0	20	12	439
31 Electrical machinery and apparatus	0	200	48	38	26	2	6	320
35 Other transport equipment	720	115	593	0	38	144	137	1747
36 Furniture and other manufacturing	5121	1703	17568	725	1650	2005	1302	30074
Total	12568	21311	80373	42051	16030	13364	5315	191012

Table 7:
Estimated Value of Revenue of Small Establishments by ISIC (1999)
(in million Kip)

Industry classification (ISIC)	Sale of goods produced	Value of goods produced and retained for own consumption	Other receipts	Total revenue
15 Food products and beverages	121598	40009	19556	181163
1531 Grain mill products	90112	39514	17210	146835
16 Manufacture of tobacco products	1159	199	125	1483
17 Manufacture of textiles	33106	4	1020	34130
18 Manufacture of wearing apparel	2002	110	187	2299
20 Wood and of products	6626	0	1484	8110
21 Paper and paper products	70	0	54	124
22 Publishing and printing	45	19	97	161
24 Chemicals and chemical products	472	0	0	472
25 Rubber and plastics products	76	0	0	76
26 Non-metallic mineral products	9437	429	217	10083
27 Manufacture of basic metals	7732	36	639	8407
28 Fabricated metal products	30	0	0	30
29 Machinery and equipment n.e.c.	538	0	20	557
31 Electrical machinery and apparatus	492	51	0	543
35 Other transport equipment	1793	0	362	2155
36 Furniture and other manufacturing	86667	1623	1523	89812
Total	271844	42479	25283	339606

Table 8:
Estimated Value of Fixed assets at the End of year (1999)
(in million Kips)

Industry classification (ISIC)	Fixed assets at the beginning of year	Assets purchased during the year	Sale or loss of fixed assets	Gross addition to fixed assets	Fixed assets at the end of year
15 Food products and beverages	71039	7470	375	7095	78134
1531 Grain mill products	64376	6467	242	6225	70601
16 Manufacture of tobacco products	121	0	0	0	121
17 Manufacture of textiles	1821	52	51	1	1822
18 Manufacture of wearing apparel	110	5	0	5	114
20 Wood and of products	3882	672	27	645	4527
22 Publishing and printing	550	40	0	40	590
24 Chemicals and chemical products	37	0	0	0	37
25 Rubber and plastics products	14	0	0	0	14
26 Non-metallic mineral products	2923	123	0	123	3046
27 Manufacture of basic metals	1287	738	5	733	2021
28 Fabricated metal products	9	0	0	0	9
29 Machinery and equipment n.e.c.	511	0	0	0	511
31 Electrical machinery and apparatus	595	0	0	0	595
35 Other transport equipment	521	14	35	-22	500
36 Furniture and other manufacturing	6668	388	77	311	6979
Total	90088	9501	571	8931	99019

4.2 Listing form

Listing form		Confidentiality			Sample	
All structures of sampled area are to be listed irrespective of their type of use.		Information provided hereby will be kept strictly confidential and cannot be used otherwise than for statistical purpose.			Sample for this survey is an area of selected village	
Province:		District:		Village:		Sample no.
SN	Name of occupant of the structure	Type of structure	Type of business	Number of dwelling units	Type of main income generating activities carried out by any of the household member living in this house during the last month.	If the type of activities is '2' is your business located in this village?
1.	2.	1. Dwelling 2. (Go to 5) 3. Dwelling cum business 4. Business 5. Others (END)	1. Agriculture and livestock 2. Manufacturing including handicrafts, jewellery 3. Shops, food stalls and repairing services 4. Others For structure type '3' (END)	If more than one unit use separate lines for further questions.	1. Agriculture and livestock 2. Manufacturing including handicrafts, jewellery, carpentry 3. Shops, food stalls and repairing services 4. Others	1. Yes 2. No

4.3 Questionnaire

Ministry of Industry and Handicrafts
Survey of Small Scale Industrial Establishments-1999

QUESTIONNAIRE

Information collected hereby is strictly confidential and cannot be used other than for statistical purpose.

1. Identification

Sample area	SN of structure in the listing form	Name of the owner/ entrepreneur	Name of the Establishment
District: Province: Village:			

2. Main product and operation period

201. What is the main product of your business? _____
202. How many months your business was in operation in year 1999? _____

3. Type of organisation

301	Individual Proprietorship
302	Co-operatives and partnership
303	Company
304	Others

4. Number of persons engaged

(Average figure for the last month or for the last month of operation)

		Male	Female	Total
401	Working proprietors and unpaid family workers			
402	Employees			
4	Total number of persons engaged			

5. Expenditure of establishments (last month or last month in operation)

Items		(in '000' Kip)
501	Wages, salaries and other payments to employees	
502	Payment for social security, pension funds etc.	
503	Payment for fuel, electricity and water	
504	Cost of raw materials and supplies purchased	
505	Value of materials used from own production	
506	Cost of repair and maintenance and other services	
507	Payment for hired machinery, rent of land and building	
508	Postage, telephone, fax etc.	
509	Other expenses	
510	Indirect taxes paid	
5	Total	

6. Revenue of establishment (in '000' Kip)

Items		
601	Revenue from the sale of goods produced	
603	Value of goods produced and retained for own consumption	
602	Other revenue	
6	Total revenue	

7. Gross addition to fixed assets

		Land and buildings	Machinery, equipment and vehicles	Furniture and others	Total
701	At the beginning of year				
702	Assets purchased during the year				
703	Sale or loss of fixed assets				