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**METRIC ISSUES  
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**UNITED STATES METRIC BOARD  
AUGUST 1981**

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>the findings are:

- About one-quarter of small business are using metric measurements in some of their activities. Industry action and customer demand dominate as reasons for converting; lack of customer demand leads as a reason for not converting.
- While small business does a considerable amount of planning, very little planning for metric conversion is seen. It is a matter of conjecture as to what constitutes conversion planning and just how much planning is needed for small business metrication.
- When problems with conversion are confronted, suppliers are often called upon for assistance. When problems with conversion under hypothetical conditions of extreme market pressure are envisaged, the government is likely to be called upon for help.
- Those conversions that have been undertaken by small businesses seem to have been accomplished with little trauma. When difficulties are encountered, the seem to have been overcome within the resources of the marketplace.

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**METRIC ISSUES  
FOR  
SMALL BUSINESS**

**Executive Summary**

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August 1981**

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## OVERVIEW OF THE STUDY

### THE SURVEY

As part of its continuous concern with the benefits and problems of metrication in the small business community, the United States Metric Board conducted a survey of small businesses in 1980. Five categories of firms were studied: construction, manufacturing, retail trade, transportation, and wholesale trade. The random sample of 2500 firms represented a population of about 725,000. About 500 firms could not be reached, most likely because they were no longer in business. About 55 percent (1097 firms) of the resulting sample responded to the survey. The response rate and the probability sample support inferences about the population, from the analysis of the responses.

### FINDINGS IN BRIEF

About one-quarter of small business (as represented by manufacturing, construction, transportation, wholesale trade, and retail trade firms) are using metric measurements in some of their activities. Industry action dominates as a reason for converting; lack of customer demand leads as a reason for not converting.

Most of the manufacturing firms see the costs of designing and producing metric products as greater than the costs of equivalent customary products; the other business groups dominating the metric scene (wholesale and retail trade) see the costs as about the same. About 16 percent of the three types of firms produce or distribute more than half of their products in hard metric form. Four out of ten firms with overseas business deal with metric products.

While small business does a considerable amount of planning (more than 70 percent plan for at least one year in the future; more than a third plan for at least three years), very little planning for metric conversion is seen. It is a matter of conjecture as to what constitutes conversion planning and just how much planning is needed for small business metrication.

While about half of the small business firms are members of trade or business associations, very little association metric conversion planning is seen.

When problems with conversion are confronted, suppliers are most often called upon for assistance, particularly with general information. When problems with conversion under hypothetical conditions of extreme market pressure are envisaged, the government is likely to be called upon for help, particularly with educational and financial assistance.

## IMPLICATIONS FOR THE UNITED STATES METRIC BOARD

One major observation made in the course of the study of small business was that there is still considerable confusion about the Board's role and the national policy concerning metric conversion. Comments provided by respondents indicate perceptions of the Board as an authoritative agency and that a national metric conversion program exists with a specific timetable for conversion. Although Board actions and programs are designed to combat the misunderstandings, there is evidence that the information is either not being received by small business or is not being understood by the recipients. Further public awareness efforts on the part of the Board are required; particular attention should be paid to trade and business associations that have small business firms among their members. Such associations can be an inexpensive conduit to the small business community. The results of this study, as well as other small business studies, can be used as a basis for further emphasizing the U.S. policy of voluntary metric conversion.

Those conversions that have been undertaken by small businesses seem to have been accomplished with little trauma. When difficulties are encountered, they seem to have been overcome within the resources and mores of the market place. While the work to date was selective with respect to the types of business firms studied, the results are certainly indicative. The concerns expressed by the U.S. Congress on behalf of small business must still guide the Board; however, much of the small business community seems to be well able to take care of itself within the give-and-take of the market with minimal government support, provided extreme pressure to convert is not applied.

It is contingent upon the United States Metric Board to inform the relevant Members and Committees of the findings of this study and the implications derived therefrom. At this time, it seems that small business is meeting the problems of voluntary metric conversion within its own resources (managerial, technical, and financial). It does not appear that there is any need, under the present market conditions, to initiate Federal actions, other than that of remaining informed and alert to the behavior and reactions of small business to the conversion process.



## SUMMARY OF THE STUDY

### WHAT IS THE STUDY ALL ABOUT?

In mid-1980, the United States Metric Board conducted a survey of U.S. small business firms. The study is part of a continuing effort of the Metric Board to report on the status of the use of metric measurements and identify the benefits from and problems with conversion from customary to metric units.

The survey was designed to respond to four broad questions:

- What are the factors that influence the metrication decisions of small business entrepreneurs?
- How much metrication is there in the small business community?
- How well is small business represented when it comes to planning for conversion?
- How much help (and of what kinds) does small business need when conversion is undertaken?

The U.S. Metric Board, created by the Congress with the Metric Conversion Act of 1975 (P.L. 94-168, 15 USC 205), has the responsibility of carrying out national metric policy, stated in the Act to be:

"...to coordinate and plan the increasing use of the metric system in the United States and to establish a United States Metric Board to coordinate the voluntary conversion to the metric system."

The operative word guiding the Board's behavior is voluntary, meaning that the Board undertakes no action to foster or inhibit the use of customary or metric measurement units; both are legal for use in the U.S. The Board's responsibility is to be available to assist, with information or action, anyone who voluntarily wishes to convert to metric measurements and who approaches the Board for assistance. Market place activities (e.g., pressure from customers, suppliers, an industry in general or a government agency) may require a particular business firm or group of firms to use metric measurements for economic survival. It is precisely that type of possible situation that led the Congress to instruct the Board to pay particular attention to the affects of metrication in the small business community and to provide information on the state of metrication in that community.

This summary report on the survey of small business is designed to present an overview of the findings and implications of the study. It deals only cursorily with the study's methods, detailed findings, and limitations. For a full perspective on the study, the reader is referred to the complete report.\*

Five business groups (construction, manufacturing, transportation, wholesale trade, and retail trade) were suggested by an advisory panel\*\* as businesses likely to be involved in metrication. Ten Standard Industrial Classification codes (SICs), covering the five groups, were chosen to represent the groups. One SIC each was chosen for the construction, transportation, and wholesale trade groups; two for retail trade; and five for manufacturing. A stratified random sample of 2500 firms was drawn from a Dun and Bradstreet listing of small businesses. In the Dun and Bradstreet listing, the ten codes comprise about 725,000 firms. Table 1 shows the distributions of sales volume of the respondents; Table 2 provides data on the number of employees of the firms. The significant differences between the self-reported and Dun and Bradstreet sales volume data (Table 1) for the less than one million dollars classes are not readily explainable.

Table 1 - Sales Volume of Small Business Firms

<u>Sales Volume (\$)</u>	<u>Percent of Firms<sup>a</sup></u>	
	<u>Dun &amp; Bradstreet Data</u>	<u>Self-reported Data</u>
Less than 100,000	16	23
100,000 - 500,000	40	29
500,000 - 1 million	16	11
1 million - 5 million	18	16
5 million - 10 million	3	4
More than 10 million	1	2
Not available	<u>6</u>	<u>16</u>
Total	100	101 <sup>b</sup>

<sup>a</sup> Based on the 1097 randomly selected respondent firms.

<sup>b</sup> Does not total 100 because of rounding.

\* M. Foote and S. O. Annan, *Survey of Small Businesses: Issues in Metric Planning and Conversion*, DAMANS and Associates, Inc., Rockville, Maryland, December 1980, Contract Number AA-79-SAC-N2131. The report is available from the National Technical Information Service, Springfield, Virginia, under Accession Number AD-A-095-103.

\*\* The advisory panel for the study was made up of owners and operators of small business firms, small business association executives, a representative from the U.S. Small Business Administration, and the U.S. Metric Board's small business representatives.

Table 2 - Sizes of Small Business Firms<sup>a</sup>

<u>Number of Employees</u>	<u>Percent of Firms<sup>b</sup></u>
1 - 25	89
26 - 50	7
51 - 100	3
101 - 999	1

<sup>a</sup> Source: Dun and Bradstreet.

<sup>b</sup> Based on the 1097 randomly selected respondent firms.

A self-administered questionnaire was mailed to the 2500 selected firms. Repeated mailings and telephone follow-up activity revealed that about 2000 of the 2500 were viable firms; the balance had either gone out of business or moved with no forwarding address available. About 1100 firms responded with usable information, providing an effective response rate of about 55 percent. That response rate and the probability sampling process are sufficient to statistically support inferences about the population (the 725,000 firms) from the sample data.

### DETAILED FINDINGS

#### Why Do Small Businesses Choose to Convert or Not Convert?

Most conversion is found among the manufacturing, wholesale, and retail businesses. The factors influencing conversion are summarized in Table 3. The most important reason for converting is compliance with industry directions or pressures. The most important reason for not converting is a lack of demand from customers. The desire to increase foreign trade and its opposite, a fear of sales lost to foreign imports, are of very little concern in contemplating conversion.

Table 3 - Reasons for Converting or Not Converting

<u>Reason</u>	<u>Percent<sup>a</sup> of Small Businesses Giving Specified Reasons For</u>		
	<u>Having Converted</u>	<u>Thinking About Converting</u>	<u>Refusing to Convert</u>
Industry Compliance	29	25	NA <sup>b</sup>
Customer Interest	24	16	56
Supplier Interest	16	13	28
Government Pressure	NA	22	NA
Foreign Trade	NA	2	2
New Markets	16	0	NA

<sup>a</sup> Reasons not mutually exclusive, therefore, percentages not additive.

<sup>b</sup> Not available.

With respect to planning for conversion, almost 80 percent of the firms with no plans to convert cite lack of demand from customers, industry, or suppliers as the reason they have no plans. (Lack of interest in planning for conversion is not necessarily a function of small business' lack of interest in planning per se: Over 70 percent of the firms plan for at least one year in the future while only 11 percent indicate that they do no planning at all; more than a third of the companies plan for at least three years in the future.) It is possible that metric conversion, contrary to other business decisions (e.g., new markets, new locations or new construction) may not require much planning effort.

The possibility of differences in the costs of providing goods and services in metric units might be a factor in considering conversion. Figure 1 displays data representing the three most metricated groups, within the business groups examined. More than half of the manufacturing firms see costs for metric products as greater than the costs of customer products. For the other two industry groups, most firms believe costs of the two classes of products are about the same.

What is the relationship between overseas sales and metric products? About 12 percent of the small business firms have overseas sales; manufacturing, wholesale trade, and transportation (to a lesser degree) dominate, with about 25 percent of the manufacturing firms doing business abroad. About 40 percent of the firms with overseas business deal with metric products. (In comparison, as noted below, overall, about 23 percent of the small businesses in this study deal with metric products.)

#### How Much Use is There of Metric Measurements in Small Businesses?

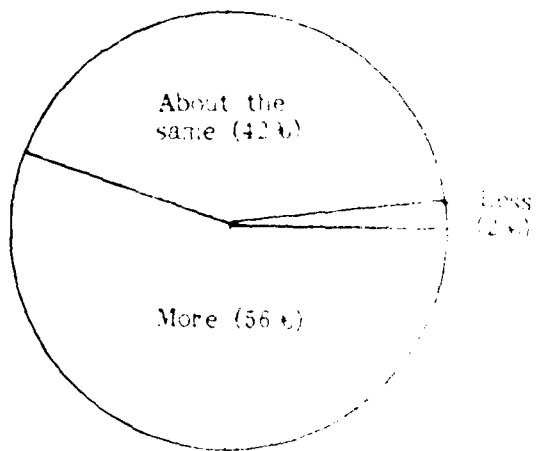
The answers to three subordinate questions collectively respond to the general status question:

- How many small business firms are involved in metric activities?
- What portion of the products and services are in metric measurements?
- What types of metric conversions are prevalent?

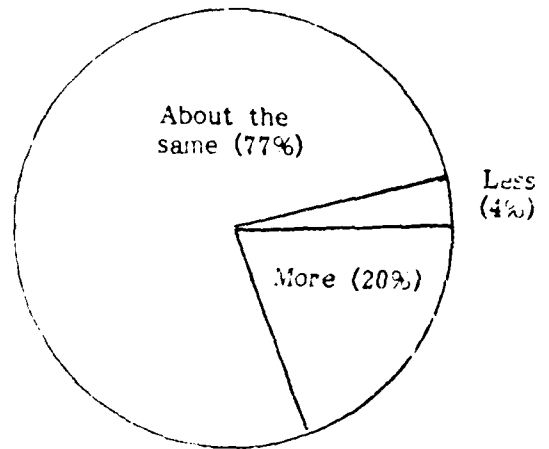
As with the GAO study\* and the Metric Board survey of large firms,\*\* this study assumed that there are specific orderly processes that firms undertake as part of a conscious decision to start using metric measurement. (As a result of findings of both the present study and the Metric Board's study of the Fortune magazine 1000 firms,\*\* that assumption is being re-examined.) For purposes of this study, planning and coordination

\* Comptroller General, Getting a Better Understanding of the Metric System — Implications if Adopted by the United States, U.S. General Accounting Office, Washington, D.C., October 1978, Report Number CED-78-128.

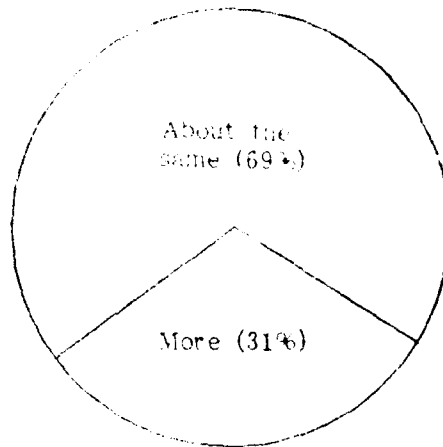
\*\* L. King, U.S. Metric Board 1979 Survey of Selected Large U.S. Firms and Industries, King Research, Inc., Rockville, Maryland, May 1980; National Technical Information Service Accession Number AD-A-091-618.



Manufacturing Firms



Wholesale Trade Firms



Retail Trade Firms

Figure 1. Comparisons Between the Costs of Designing, Manufacturing or Providing Metric Products and the Costs of Designing, Manufacturing or Producing Customary Products. (Percentages do not total 100 because of rounding.)

activities were classified into structured and unstructured. Structured are those activities that necessitate formal and explicit metric-focussed acts (e.g., issue a metric policy statement for the firm or develop a timetable for conversion). Unstructured activities are the more informal and perhaps more casual acts (e.g., talk with customers about conversion or consider costs and benefits of conversion). No more than 3 percent of the small business firms are involved in structured activities, while 14 to 20 percent, depending on the specific acts, are involved in unstructured activities.

Overall, about 23 percent of small business firms (manufacturing, wholesale and retail trade, transportation, and construction) design, manufacture, or provide some goods or services in metric dimensions. No more than 6 percent of transportation and construction firms deal in metric products or services, while between 24 and 26 percent of the three other groups of firms do so.

Three classes of metric products and services are defined:

- soft metric products: those that are labelled in metric units which are the equivalent of the customary units used for the design or manufacture of the products; often the products are dual-labelled, showing the original customary units and the metric equivalents;
- hard metric products: those that are designed or manufactured to metric dimensions, rather than substituting equivalent metric units for the customary measurements; and
- hybrid metric products: those that are composed of both metric and customary parts or components.

Table 4 summarizes data indicating the extent to which the various types of metric products are made or distributed by the three most metrically active business groups. Most of the metric product activity represents less than 25 percent of the firms' products, but 13 percent of the firms show a high proportion (at least 75 percent) of their products as hard metric. On the average, about 25 percent of the products are hard metric, 17 percent are soft metric, and 10 percent are hybrid.

Table 4 - Percent of Small Business Firms<sup>a</sup> Designing, Manufacturing or Distributing Metric Products

Fraction of Total Products That Are Metric (%)	Type of Metric Product		
	Hard Metric	Soft Metric	Hybrid Metric
0-24	79	86	93
25-49	5	6	2
50-74	3	5	2
75-100	<u>13</u>	<u>3</u>	<u>3</u>
Total	100	100	100

<sup>a</sup> Manufacturing, wholesale trade and retail trade.

#### How Good are the Representational Mechanisms for Small Business in Metric Planning?

First of all, is there a perceived need among small business for representation in the industry conversion planning process? About two-thirds of the small businesses see a need for representation in the planning process.

How should the need for representation be met? About 44 percent of those making suggestions state "better representation through trade and business associations." About 18 percent suggest a better voice in government policymaking and legislation.

How well is the need being met at present? This question is answered by the responses to two subordinate questions: (1) to what extent are small businesses involved in trade and business associations (since associations are seen as prime candidates for representation in the planning process), and (2) to what extent does small business see itself as adequately represented, through whatever mechanisms are available?

About half the small businesses are members of at least one association; association membership is directly related to firm size, measured in sales volume (e.g., with volume of one million dollars or more, the chance of membership is greater than 70 percent; firms with sales volumes of less than \$50,000 have about a 20 percent chance of being an association member). About three quarters of those firms that have association membership are members of national organizations (they may be members of regional, state, and local associations, as well). However, only 5 percent of all the businesses (whether or not they are association members) are aware of any association metric planning activity. Only 7 percent report that either they or their association are involved in metric planning. It

is not surprising, therefore, that almost nine out of ten firms feel that small business does not have a forum for representation in metric conversion planning.

#### How Much of What Kind of Help is Needed—If Any?

Again, we have two related questions:

- what kinds of help have been required by small business in converting and where did the help come from, and
- what kinds of help are seen as needed for the future and where is it best obtained?

The first question represents the normal market process; the questions asked focussed on needs for help that occurred in the course of converting some products under the normal market conditions. The second question represents a forced situation; it refers to circumstances under which market factors (extreme pressure from suppliers, customers, industry, or elsewhere in the business environment) require the small business to convert.

To set the stage, it is important to recall that about one-fourth of the small businesses have converted some products. Of that fraction, about half say that problems were encountered in the process of metricating. The prevalent problems were maintenance of dual inventories, employee training, and financial. About one-third of the firms with some conversion activities (less than 10 percent of all firms) actually received help with their problems. The most often provided assistance was for "general information." Training, technical assistance, and financial assistance were obtained by 8 percent or less of the converting firms.

By far, most of the help was provided by suppliers; about 55 percent of the converting firms received assistance from suppliers while about 6 percent received help from trade associations. Suppliers provided assistance principally in the areas of general information, technical assistance, and personnel training, and less so in the area of financial aid; customers (the next major source of help) provided most of the financial assistance requested.

If the situation is viewed from the perspective of help required under conditions of extreme pressure (by market circumstances), the picture changes considerably.

About half the firms feel that educational assistance (e.g., literature, employee training, and conversion charts) would be needed (in comparison with less than 20 percent requesting educational assistance while converting); financial assistance would be needed by almost 25 percent of the firms (in comparison with about 1 percent under actual conversion circumstances). About 30 percent of the firms feel that no help at all would be required (in comparison with almost half under actual conditions).

Requests for help from all sources (except customers) would increase under the hypothetical condition of conversion under extreme pressure, with



the greatest change coming in the number of firms looking to the government as a source of aid. While less than 1 percent of converting companies actually called upon the government, almost 40 percent would call upon the government under the extreme pressure conditions. Similarly, about twice as many firms would call upon trade associations as actually did. Under the extreme pressure condition, apparently firms would not call upon their customers for help.

## IMPORTANT NOTE

There is some confusion about the role of the U.S. Metric Board and the national policy on metric conversion.

Congress established the Board to plan and coordinate the voluntary increasing use of the metric system. It is not, however, the role of the Board to promote metric usage.

The Board is an independent Federal agency responsible for conducting public information and education programs and appropriate research, coordination and planning activities.

Metric Conversion in this country is voluntary. When Congress passed the Metric Conversion Act in 1975 it did not make conversion mandatory; nor did it establish a target date or deadline for conversion.

The Board has no compulsory power. It is a public service agency consisting of citizen representatives from all walks of American life. Its 17 members are appointed by the President and confirmed by the Senate. Members are nominated to represent labor, retailing, small business, industry, construction, state and local governments, science, engineering, consumer groups and the public at large.

Please contact us if you have any questions about the role of the Board or the national policy on metric conversion.



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