

INTERNATIONAL COMPARISONS

Chapter FIVE

5.1 INTRODUCTION

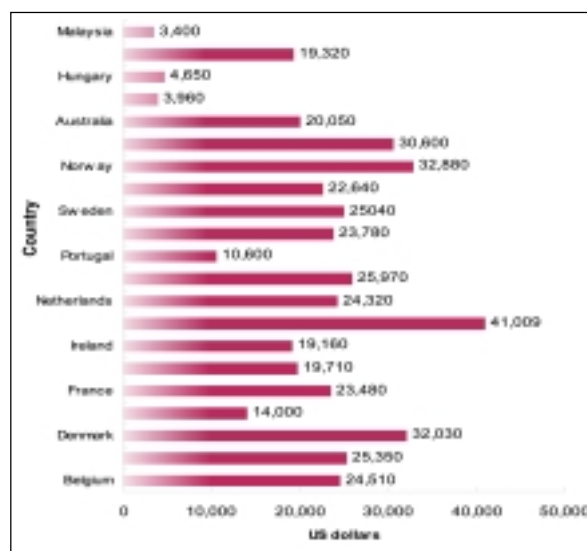
Technological innovation is a crucial ingredient of economic competitiveness in this era of globalization and rapid technological change. The economic fate of nations will depend heavily on the extent of technological innovation they can generate and harness for commercial activities. There is therefore an increasing need for countries to keep track of the status of its technological innovation vis-à-vis other countries around the world. Benchmarking technological innovation provides policy makers with an opportunity to assess the technological gap between their country and others. This provides the impetus and guide for policies and actions that can be undertaken to remedy the current technological gap.

This chapter provides a comparison between Malaysia and selected countries in terms of the level and pattern of technological innovation. The data available for comparison is very much limited to countries that have conducted innovation surveys in recent years. Data from other countries that are used for such comparisons are primarily obtained from the Second Community Innovation Survey (CIS-2) carried out by countries in the European Economic Area (EEA). As explained in Chapter 2 of this report, the methodology underlying the Malaysian National Innovation Survey (NIS) is very similar to that employed in the CIS-2. Besides the EEA countries, a few other countries have also conducted national innovation surveys. They include Australia, Canada, Hungary, Poland and the United States.

5.2. ECONOMIC CHARACTERISTICS OF COUNTRIES COMPARED

Most of the survey-based information on innovation comes from developed countries. Countries in the European Economic Area (EEA), in particular, feature prominently in the national innovation database. These countries pioneered and continue to collect innovation survey data on a systematic basis. Most of these countries have GDP per capita that are three to four times the size of GDP per capita for Malaysia (Figure 5.1).

Figure 5.1 : GDP Per Capita of Selected Countries, 1999



Source: Table 5.1

Typically, these developed countries have a substantial services sector that accounts for more than 60% of their gross domestic product (GDP). The agriculture sector in these countries accounts for less than 5% of GDP. Malaysia's industrial sector's share of GDP is about 10-20% higher than the sector's share in other countries selected for comparison.

Figure 5.2 : Output Structure of Selected Countries



Source: Table 5.2

It is important to keep in mind the differences in the economic structure of countries being compared to Malaysia (Figure 5.2).

5.3 CHARACTERISTICS OF INNOVATION SURVEYS FROM OTHER COUNTRIES

Most of the countries from the European Economic Area (EEA) carried out their innovation surveyed around the same time under the Second Community Innovation Survey (CIS-2). For most of the surveys under the CIS-2 the reference period is 1994-96. A few other non-EEA countries such as Australia and Poland carried out surveys around the same time. The United States carried out their innovation survey to coincide with the first Community Innovation Survey in the early 1990s.

In terms of sector coverage, almost all of the countries that have carried out national innovation surveys have done so for both the manufacturing sector and the services sector. Countries that have a significant mining sector have also included this

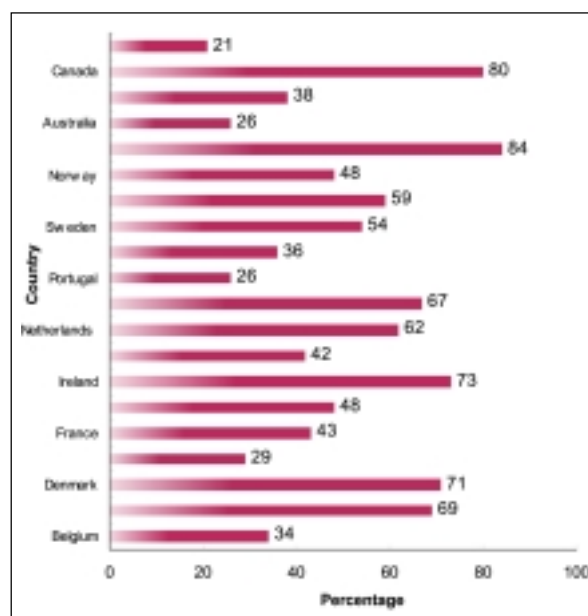
sector in their survey (for example, Australia and Poland). The sample size for the manufacturing sector ranges from 319 (Luxembourg, manufacturing) to 10,453 (Spain, manufacturing).

5.4 COMPARING INNOVATION IN THE MANUFACTURING SECTOR

(a) Overall

About 51% of all firms in the manufacturing sector in the 12 EEA Member States were innovative in the period 1994-96 (Figure 5.3). This is considerably higher than the figure of 21% that was reported in the Malaysian Innovation Survey for the manufacturing sector between 1997-99. However the innovation gap between Malaysia and other countries is smaller. Such countries include Poland (38%), Australia (26%), Portugal (26%), and Spain (29%).

Figure 5.3 : Number of Innovating Firms (Percentage)

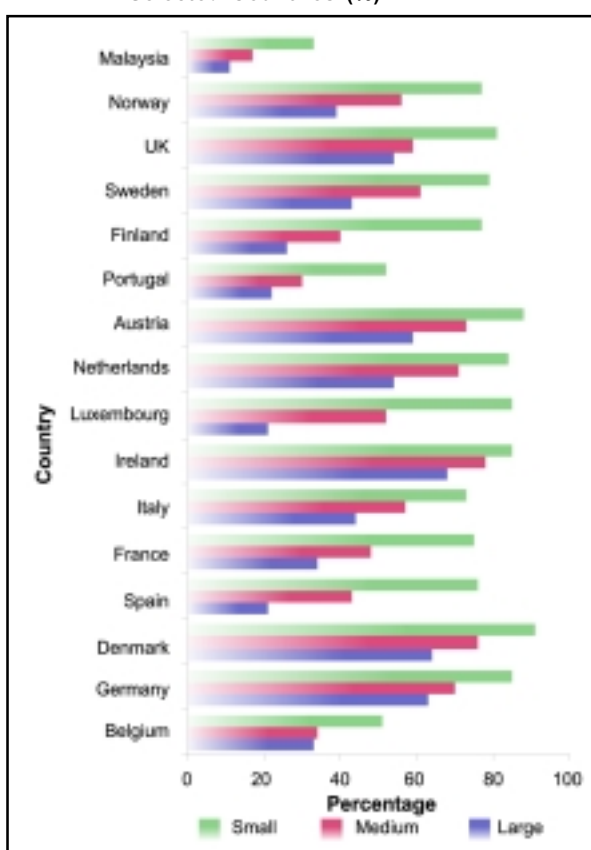


Source: Table 5.4

(b) Size

In general, the proportion of large manufacturing firms that are innovative is higher than the proportion of medium or small firms that are innovative in the manufacturing sector. This is true in the case of EEA countries that have carried out innovation surveys (Figure 5.4). In the EEA countries, about 44% of small firms (20-49 employees) are innovators. This is about three times higher the rate observed for Malaysia (15%). For medium-

Figure 5.4 : Number of Innovators and Firm Size for Selected Countries (%)



Source: Table 5.4

sized manufacturing firms (50-249 employees) in EEA countries, the average proportion of firms that are innovators is 58%. The corresponding figure for Malaysia is 19%. In the case of large firms (250 or more employees), about 79% of such firms in the EEA countries are innovators. This is 2.5 times the proportion of large firms in Malaysia that are innovators. The innovation gap between Malaysia and the EEA countries appears to narrow when we move across firms of different sizes from small-sized firms to large-sized firms.

(c) Industry

If we examine the number of innovators (%) across different industries it is evident that some industries are more innovative than others in that a higher proportion of firms in these industries are innovators (Figure 5.5). Industries with a high number of innovators (%) include:

- Coke and chemicals
- Electrical and optical equipment
- Machinery and equipment

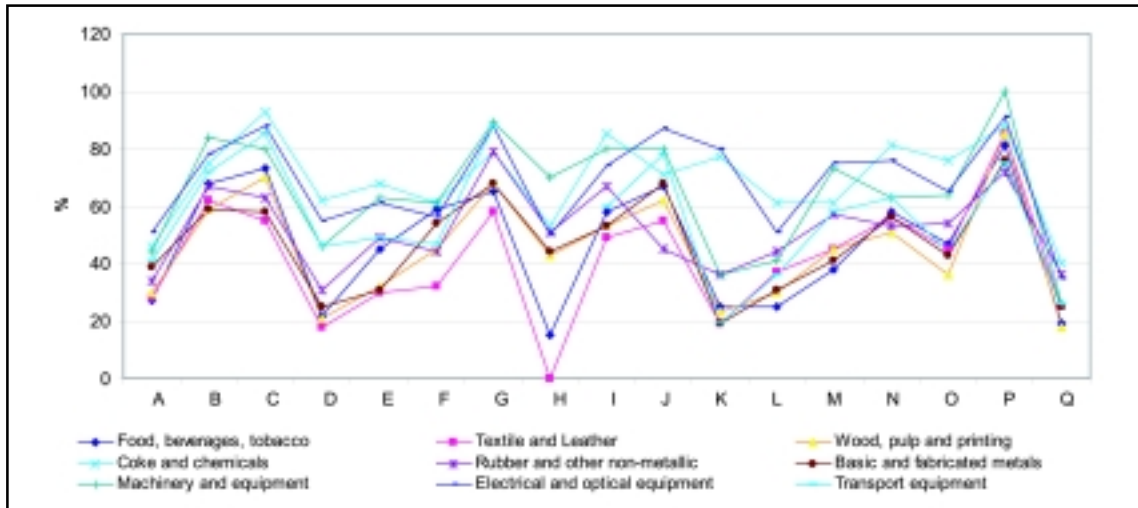
In contrast, industries with a lower number of innovators include:

- Food, beverages and tobacco
- Textile and leather
- Wood, pulp, and printing
- Basic and fabricated metals
- Rubber and non-metallic products
- Transport equipment

The degree of variation (as measured by standard deviation) in innovation incidence across EEA countries in each of the industry is fairly large (standard deviation Table 5.5).

The relative rankings of various industries by incidence of innovation in Malaysia is very similar to that observed in the EEA countries. However, the incidence of innovation in each of these industries is lower in Malaysia compared to the EEA countries (Table 5.4 and Table 5.5).

Figure 5.5 : Number of Innovators Across Industries for Selected Countries (%)



- | | |
|---------------|------------|
| A Belgium | J Austria |
| B Germany | K Portugal |
| C Denmark | L Finland |
| D Spain | M Sweden |
| E France | N UK |
| F Italy | O Norway |
| G Ireland | P Canada |
| H Luxembourg | Q Malaysia |
| I Netherlands | |

Source: Table 5.4