

Knowledge-based Industries (KBI)

Knowledge based firms are considered the backbone of the “new economy.” They have been considered to be consistently outperforming the total economy in terms of growth and job creation since the 1970s. Because of their smaller size and the nature of their activities, they imply different challenges for traditional suppliers of finance. Typically, firms involved in pharmaceuticals, health biotech, new materials, telecommunications, information technology, software, medical equipment and avionics are considered to be in the knowledge-based industries. They have long product development cycles and their comparative advantage usually comes from innovative and creative people who make up the development team. These companies face particular financing challenges because of their lack of fixed assets, the difficulty that traditional lenders have in assessing their potential, and the unique operational risks they face. As a result of challenges faced by these firms in obtaining financing, we have been asked to undertake collection of data related to the knowledge based industries to see the extent of financing activities related to firms in these industries.

Definition:

In 1996, based on research undertaken by Industry Canada and the Business Development Bank of Canada, a definition of knowledge-based industries (KBI) was developed using the Standard Industrial Classification (SIC). This has since been converted to the North American Industrial Classification System (NAICS). Since there was no single definition of KBI, Industry Canada proposed the use of a two-tiered categorization of industries that would be appropriate for identifying industries as KBI.

- Tier I - a narrow band of science and technology-based firms, composed of knowledge producers; and
- Tier II - a broad band of "high knowledge" firms which, based on measures of research and development and knowledge worker inputs, could be considered to be business innovators and high-knowledge users.

These are some examples of the industries in the Tier I group:

NAICS 2002	Industry
325410	Pharmaceutical and Medicine Manufacturing
333310	Commercial and Service Industry Machinery Manufacturing
334110	Computer and Peripheral Equipment Manufacturing
334210	Telephone Apparatus Manufacturing
334220	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing
334290	Other Communications Equipment Manufacturing
334310	Audio and Video Equipment Manufacturing
334410	Semi-Conductor and Other Electronic Component Manufacturing
334511	Navigational and Guidance Instruments Manufacturing
334512	Measuring, Medical and Controlling Devices Manufacturing
335920	Communication and Energy Wire and Cable Manufacturing
336410	Aerospace Products and Parts Manufacturing
511210	Software Publishers
512110	Motion Picture and Video Production
512190	Post-Production and Other Motion Picture and Video Industries
515210	Pay and Specialty Television
517110	Wired Telecommunications Carriers
517210	Wireless Telecommunications Carriers (Except Satellite)
517310	Telecommunications Resellers
517410	Satellite Telecommunications
517510	Cable and Other Program Distribution
517910	Other Telecommunications
518210	Data Processing, Hosting and Related Services
541360	Geophysical Surveying and Mapping Services
541370	Surveying and Mapping (Except Geophysical) Services

NAICS 2002	Industry
541380	Testing Laboratories
541510	Computer Systems Design and Related Services
541620	Environmental Consulting Services
541690	Other Scientific and Technical Consulting Services
541710	Research and Development in the Physical, Engineering and Life Sciences

These are some examples of the industries in the Tier II group:

NAICS 2002	Industry
221111	Hydro-Electric Power Generation
221112	Fossil-Fuel Electric Power Generation
221113	Nuclear Power Generation
221119	Other Electric Power Generation
221121	Electric Bulk Power Transmission and Control
221122	Electric Power Distribution
324110	Petroleum Refineries
324121	Asphalt Paving Mixture and Block Manufacturing
324190	Other Petroleum and Coal Products Manufacturing
325110	Petrochemical Manufacturing
325120	Industrial Gas Manufacturing
325130	Synthetic Dye and Pigment Manufacturing
325181	Alkali and Chlorine Manufacturing
325189	All Other Basic Inorganic Chemical Manufacturing
325190	All Other Basic Organic Chemical Manufacturing
325210	Resin and Synthetic Rubber Manufacturing
325313	Chemical Fertilizer (except Potash) Manufacturing
325314	Mixed Fertilizer Manufacturing
325320	Pesticide and Other Agricultural Chemical Manufacturing
325520	Adhesive Manufacturing
325910	Printing Ink Manufacturing
325920	Explosives Manufacturing
325991	Custom Compounding of Purchased Resins
325999	All Other Miscellaneous Chemical Product Manufacturing
332991	Ball and Roller Bearing Manufacturing
333110	Agricultural Implement Manufacturing
333120	Construction Machinery Manufacturing
333130	Mining and Oil and Gas Field Machinery Manufacturing
333210	Sawmill and Woodworking Machinery Manufacturing
333220	Rubber and Plastics Industry Machinery Manufacturing
333291	Paper Industry Machinery Manufacturing
333299	All Other Industrial Machinery Manufacturing
333413	Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing
333416	Heating Equipment and Commercial Refrigeration Equipment Manufacturing
333611	Turbine and Turbine Generator Sets Units Manufacturing
333619	Other Engine and Power Transmission Equipment Manufacturing
333910	Pump and Compressor Manufacturing
333920	Material Handling Equipment Manufacturing
333990	All Other General-Purpose Machinery Manufacturing
335311	Power Distribution and Specialty Transformers Manufacturing
335312	Motor and Generator Manufacturing
335315	Switchgear and Switchboard, and Relay and Industrial Control Apparatus Manufacturing
336320	Motor Vehicle and Electronic Equipment Manufacturing
486110	Pipeline Transportation of Crude Oil
486210	Pipeline Transportation of Natural Gas
486910	Pipeline Transportation of Refined Petroleum Products
486990	All Other Pipeline Transportation

NAICS 2002

Industry

- 541310** Architectural Services
- 541320** Landscape Architectural Services
- 541330** Engineering Services
- 541340** Drafting Services