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2016 年至 2020 年香港的創新活動統計數字
Statistics on Innovation Activities in Hong Kong, 2016 to 2020

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Statistics on Innovation Activities in Hong Kong, 2016 to 2020

創新是推動經濟增長及發展的主要動力。創新活動不單包括研究及發展（研發）活動，亦涉及產品和業務程序創新的活動，以提升競爭力和業務表現。

創新活動統計數字反映一個經濟體的創新活動普及情況，有助各界探討具發展潛力的範疇。本文旨在描述香港創新活動的最新情況，並分別就研發及其他創新活動進行分析。

Innovation is a key impetus to economic growth and development. Innovation activities include not only research and development (R&D) but also product and business process innovation which help enhance competitiveness and business performance.

Statistics on innovation activities shed light on the prevalence of innovation activities in an economy and are useful in offering insight into potential development areas. This article aims at portraying the latest situation of innovation activities in Hong Kong, with separate analyses on R&D and other innovation activities.

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2016 年至 2020 年香港的創新活動統計數字

Statistics on Innovation Activities in Hong Kong, 2016 to 2020

1. 引言

1.1 創新是推動經濟增長及發展的主要動力。創新活動不單包括研究及發展（研發）活動，亦涉及產品和業務程序創新的活動，以提升競爭力和業務表現。創新活動統計數字反映一個經濟體的創新活動普及情況，有助各界探討具發展潛力的範疇。

1.2 政府統計處為評估香港創新活動的發展情況而編製各類統計指標，當中尤與研發活動相關的至為重要。本文中的研發活動統計數字涵蓋三個機構類別，即工商機構、高等教育機構及政府機構，而其他創新活動統計數字則只涉及工商機構。

2. 資料來源

2.1 工商機構的研發和其他創新活動統計數字是透過「創新活動統計調查」搜集得來的資料編製而成，這是政府統計處自 2001 年統計年度開始就此課題進行的專項統計調查。高等教育機構的研發活動統計數字則主要根據大學教育資助委員會（教資會）所提供的行政記錄¹編製而成，而政府機構的研發活動統計數字則根據從各政府決策局、部門和半政府機構（包括公共科技支援機構）搜集得來的資料編製而成。

1. Introduction

1.1 Innovation is a key impetus to economic growth and development. Innovation activities include not only research and development (R&D) but also product and business process innovation which help enhance competitiveness and business performance. Statistics on innovation activities shed light on the prevalence of innovation activities in an economy and are useful in offering insight into potential development areas.

1.2 The Census and Statistics Department (C&SD) has been compiling various statistical indicators for gauging the development of innovation activities in Hong Kong, among which those on R&D activities are the most important ones. In this article, statistics on R&D activities cover three institutional sectors, viz. business, higher education and government sectors, while statistics on other innovation activities only relate to the business sector.

2. Data sources

2.1 Statistics on R&D and other innovation activities for the business sector are compiled from data collected through the Survey of Innovation Activities (SIA), which is a dedicated survey on this subject conducted by C&SD since the reference year of 2001. Statistics on R&D activities for the higher education sector are compiled mainly based on administrative data provided by the University Grants Committee (UGC)¹, while those for the government sector are based on data collected from various government bureaux, departments and quasi-government organisations (including public technology support organisations).

1 數字包括教資會資助的大學在有關學年的資料。高等教育機構的學年由每年的 7 月至翌年的 6 月。

1 Figures refer to data in the respective academic year of the universities funded by the UGC. The academic year of the higher education sector starts in July of a year and ends in June of the following year.

3. 概念及定義

3.1 政府統計處根據經濟合作與發展組織（經合組織）所倡議的國際指引搜集資料及編製創新活動統計數字。

研發活動

3.2 研發活動是指具創造性及有系統性的工作。這些工作的目的是為增進知識以發明嶄新和改良的產品、程序或用途，以及為改進現有的產品、程序或用途。它們通常都帶有相當程度的新穎或創新元素，以及能夠解決科學及／或技術方面的疑難，並可於自然科學、工程及科技、醫療及健康科學、社會科學和人文科學及藝術等範疇進行。

3.3 本地研發總開支²及研發人員數目是量度一個經濟體研發表現的主要統計指標。本地研發總開支涵蓋用於進行研發活動的資本和經常開支。「研發人員」是指直接從事研發活動的人員，包括研究員、技術員及其他輔助人員。為了反映投放於研發活動的實際人力資源，研發人員數目是以「相當於全日制的人數」計算，即根據有關統計年度內已投放於研發活動的工作年總數作估算。

3. Concepts and definitions

3.1 C&SD follows the international guidelines promulgated by the Organisation for Economic Cooperation and Development (OECD) in collecting data and compiling statistics on innovation activities.

R&D activities

3.2 R&D activities refer to creative and systematic work undertaken so as to increase the stock of knowledge for devising new and improved products/processes/applications and to improve the existing products/processes/applications. They usually carry an appreciable element of novelty or innovation and the resolution of scientific and/or technological uncertainty. They can be conducted in such fields as natural sciences, engineering and technology, medical and health sciences, social sciences and humanities and arts.

3.3 The gross domestic expenditure on R&D (GERD)² and the number of R&D personnel are the major statistical indicators to measure the R&D performance of an economy. GERD covers both capital and current expenditures on R&D activities. “R&D personnel” refers to persons directly engaged in R&D activities, covering researchers, technicians and other supporting staff. In order to depict the actual amount of manpower resources deployed to R&D activities, the number of R&D personnel is measured in terms of full-time equivalent (FTE), which is estimated on the basis of the total number of person-years deployed to R&D activities during the reference year.

2 **本地研發總開支** 指在某段期間在一個國家或地區內進行的內部研發活動的開支總額，包括由境外機構資助在該國家或地區內進行的研發活動開支，但不包括支付給境外機構進行的研發活動的開支。

2 **GERD** is the total expenditure on in-house R&D activities performed within a country or territory during a given period. It includes expenditure on R&D activities performed within a country or territory and funded from abroad but excludes payments made abroad for R&D activities.

創新活動

3.4 創新活動在數字經濟中扮演著重要的角色，並不局限於技術的開發和使用。工商機構單位亦可以透過與研發無直接關係的其他創新活動（例如研發成果商品化），以提升其競爭力及業務表現。根據經合組織所倡議的國際指引，創新活動包括研發、產品及業務程序創新的活動。

3.5 產品創新是指機構單位在市場上推出一個嶄新或經改良的產品（貨品或服務），這些產品在其功能、便於使用程度、部件、子系統或外觀設計上與該機構單位過往所推出的產品顯著不同。

3.6 業務程序創新是指機構單位推行一個嶄新或經改良的業務程序，包括生產程序、分銷方法、市場推廣方式、行政管理模式，以及支援貨品或服務的工序，並與該機構單位過往所推行的顯著不同。

4. 研發活動的主要統計數字

4.1 香港的本地研發總開支〔即工商機構、高等教育機構及政府機構（包括公共科技支援機構）在本地所進行的內部研發活動的開支總額〕一直平穩增長。在 2020 年，本地研發總開支較 2019 年上升 1% 至 265.54 億元，而同期相對本地生產總值的比率由 0.93% 上升至 0.99%。（表 1）

4.2 在 2020 年，工商機構的內部研發活動總開支（包括研發活動所涉及的勞工成本、其他經常開支和資本開支）較 2019 年下跌 5% 至 110.44 億元，而同期相對本地生產總值的比率則維持 0.41%。（表 1）

Innovation activities

3.4 Innovation activities play an important role in a digital economy and are not just confined to the development and use of technology. Business establishments can also enhance competitiveness and business performance through other innovation activities not directly related to R&D (e.g. commercialisation of R&D output). According to the international guidelines promulgated by OECD, innovation activities comprise R&D, product and business process innovation activities.

3.5 A product innovation is the market introduction of a new or improved product (goods or services) with respect to its capabilities, user friendliness, components, sub-systems or aesthetic design, which differs significantly from the products introduced by the establishment previously.

3.6 A business process innovation is the implementation of a new or improved business process, including production process, distribution method, marketing approach, administration and management practice and supporting activity for goods or services, which differs significantly from those implemented by the establishment previously.

4. Key statistics on R&D activities

4.1 GERD of Hong Kong [i.e. total expenditure on in-house R&D activities performed locally in the business, higher education and government sectors (including public technology support organisations)] has been growing steadily. It increased by 1% to \$26,554 million in 2020 as compared with 2019, while its ratio to the Gross Domestic Product (GDP) rose from 0.93% to 0.99% during the same period. (Table 1)

4.2 The total expenditure on in-house R&D activities (including labour cost, other current expenditure and capital expenditure on R&D activities) in the business sector decreased by 5% to \$11,044 million in 2020 as compared with 2019, while its ratio to GDP maintained at 0.41% during the same period. (Table 1)

4.3 高等教育機構的內部研發活動總開支一直有上升的趨勢。在 2020 年，高等教育機構的內部研發活動總開支達 141.29 億元，較 2019 年上升 5%。政府機構（主要是公共科技支援機構）在 2020 年的內部研發活動總開支達 13.80 億元，較 2019 年上升 8%。高等教育機構及政府機構在 2020 年的內部研發活動總開支相對本地生產總值的比率分別為 0.53% 及 0.05%。（表 1）

4.3 The total expenditure on in-house R&D activities in the higher education sector has been on a rising trend. In 2020, the total expenditure on in-house R&D activities in the higher education sector reached \$14,129 million, up by 5% when compared with 2019. The total expenditure on in-house R&D activities in the government sector (mainly public technology support organisations) amounted to \$1,380 million in 2020, up by 8% when compared with 2019. The ratios of total expenditure on in-house R&D activities to GDP in the higher education sector and that in the government sector were 0.53% and 0.05% respectively in 2020. (Table 1)

表 1 2016 年至 2020 年按進行研發活動的機構類別劃分的本地研發總開支
Table 1 Gross domestic expenditure on R&D by performing sector, 2016 to 2020

機構類別 Sector	本地研發總開支（百萬元） Gross domestic expenditure on R&D (\$ million)				
	2016	2017	2018 ⁽¹⁾	2019 ⁽¹⁾	2020 ⁽¹⁾
工商 Business	8,528.1 (43%) [0.34%]	9,412.3 (44%) [0.35%]	10,992.5 (45%) [0.39%]	11,616.5 (44%) [0.41%]	11,043.9 (42%) [0.41%] [@]
高等教育 Higher education	10,270.9 (52%) [0.41%]	10,837.1 (51%) [0.41%]	12,337.9 (50%) [0.44%]	13,432.4 (51%) [0.47%]	14,129.3 (53%) [0.53%] [@]
政府 Government	914.1 (5%) [0.04%]	1,031.0 (5%) [0.04%]	1,148.0 (5%) [0.04%]	1,283.8 (5%) [0.05%]	1,380.4 (5%) [0.05%] [@]
總計 Total	19,713.1 (100%) [0.79%]	21,280.4 (100%) [0.80%]	24,478.4 (100%) [0.86%]	26,332.6 (100%) [0.93%]	26,553.6 (100%) [0.99%][@]

註釋：由於數字經四捨五入，分項總和未必與總數相等。

Notes : Figures may not add up to the total due to rounding.

圓括號內數字為相應數值佔總計的百分比。

Figures in round brackets refer to percentages of corresponding values in respect of total.

方括號內數字為相應開支相對 2022 年 2 月發表以開支面編製並以當時市價計算的本地生產總值估算的比率。

Figures in square brackets refer to the ratios of corresponding expenditure to expenditure-based GDP estimates at current market prices released in February 2022.

(1) 按照國際指引，自 2018 年統計年度開始，研發設施的隱含使用成本估計數字已被納入研發開支的估算當中。2018 年及以後的研發開支數字不能與較早前的數字作直接比較。2017 年的研發開支亦以改良的估算方法重新編製為 22,213 百萬元。詳情請參閱《2019 年香港創新活動統計》報告內的附件。

(1) Following international guidelines, the estimates of implicit user cost of R&D facilities have been included in the estimation of R&D expenditure as from the reference year of 2018. The R&D expenditure figures from 2018 onwards are not directly comparable with those of earlier years. The R&D expenditure for 2017 has also been re-compiled to \$22,213 million according to the enhanced estimation method. Please refer to the Annex given in the report *Hong Kong Innovation Activities Statistics 2019* for details.

@ 數字將於日後修訂。

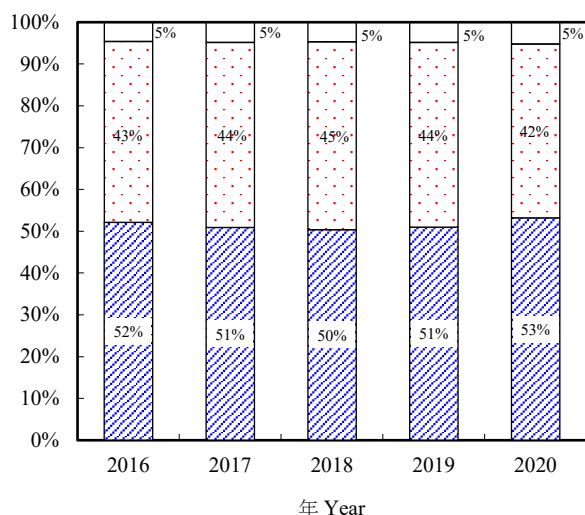
@ Figures are subject to revision later on.

4.4 在 2020 年，工商機構、高等教育機構和政府機構的研發活動開支分別佔本地研發總開支的 42%、53% 及 5%。雖然政府機構（主要是公共科技支援機構）的研發活動開支佔本地研發總開支的比重相對較小，須注意的是，政府一直以來透過提供研究設備、基礎建設和資金援助，致力推動工商機構及高等教育機構在研發、提升科技以及創新等方面的發展。按資金來源分析，在 2020 年的本地研發總開支中，政府提供了 134.31 億元，佔 51%。（圖 1，表 1 及 2）

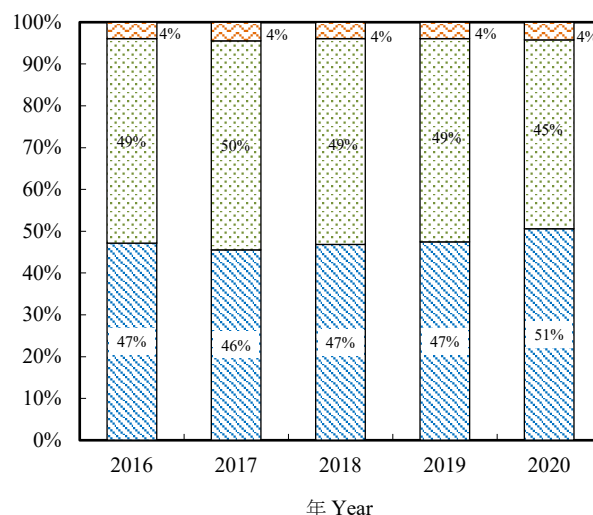
4.4 Expenditure on R&D activities in the business, higher education and government sectors constituted 42%, 53% and 5% respectively of GERD in 2020. While expenditure on R&D activities in the government sector (mainly public technology support organisations) represented a relatively smaller share of GERD, it should be noted that the Government plays an instrumental role in facilitating R&D, technology upgrading and innovation through the provision of research facilities, infrastructure as well as funding support to business and higher education sectors. Analysed by source of funds, R&D expenditure financed by the Government amounted to \$13,431 million or 51% of GERD in 2020. (Chart 1, Tables 1 and 2)

圖 1 2016 年至 2020 年的本地研發總開支分布
Chart 1 Distribution of gross domestic expenditure on R&D, 2016 to 2020

(A) 按進行研發活動的機構類別劃分
 By performing sector



(B) 按資金來源劃分
 By source of funds



工商機構
 Business sector

政府機構
 Government sector

高等教育機構
 Higher education sector

本地工商機構
 Local business parties

政府
 Government

香港以外機構及其他本地機構
 Parties outside Hong Kong and other local parties

表 2 2016 年至 2020 年按資金來源劃分的本地研發總開支
Table 2 Gross domestic expenditure on R&D by source of funds, 2016 to 2020

資金來源 Source of funds	本地研發總開支 (百萬元) Gross domestic expenditure on R&D (\$ million)				
	2016	2017	2018 ⁽¹⁾	2019 ⁽¹⁾	2020 ⁽¹⁾
本地工商機構 Local business parties	9,641.3 (49%)	10,640.5 (50%)	12,052.9 (49%)	12,815.7 (49%)	11,991.8 (45%)
政府 Government	9,298.4 (47%)	9,697.2 (46%)	11,465.1 (47%)	12,487.2 (47%)	13,430.7 (51%)
香港以外機構及其他本地機構 Parties outside Hong Kong and other local parties	773.5 (4%)	942.7 (4%)	960.4 (4%)	1,029.7 (4%)	1,131.2 (4%)
總計 Total	19,713.1 (100%)	21,280.4 (100%)	24,478.4 (100%)	26,332.6 (100%)	26,553.6 (100%)

註釋：由於數字經四捨五入，分項總和未必與總數相等。

Notes : Figures may not add up to the total due to rounding.

括號內數字為相應數值佔總計的百分比。

Figures in brackets refer to percentages of corresponding values in respect of total.

(1) 按照國際指引，自 2018 年統計年度開始，研發設施的隱含使用成本估計數字已被納入研發開支的估算當中。2018 年及以後的研發開支數字不能與較早前的數字作直接比較。2017 年的研發開支亦以改良的估算方法重新編製為 22,213 百萬元。詳情請參閱《2019 年香港創新活動統計》報告內的附件。

(1) Following international guidelines, the estimates of implicit user cost of R&D facilities have been included in the estimation of R&D expenditure as from the reference year of 2018. The R&D expenditure figures from 2018 onwards are not directly comparable with those of earlier years. The R&D expenditure for 2017 has also been re-compiled to \$22,213 million according to the enhanced estimation method. Please refer to the Annex given in the report *Hong Kong Innovation Activities Statistics 2019* for details.

4.5 在 2020 年，研發人員總數（以相當於全日制的人數計算）為 36 106 人，而 2019 年的相對人數為 35 416 人。大部分的研發人員從事高等教育機構和工商機構，分別佔 2020 年研發人員總數的 60% 及 37%。（表 3）

4.5 In 2020, there were 36 106 R&D personnel (in FTE) in total, as compared with 35 416 in 2019. Most of them were engaged in the higher education and business sectors, which accounted for 60% and 37% respectively of the total number of R&D personnel in 2020. (Table 3)

表 3 2016 年至 2020 年按進行研發活動的機構類別劃分的研發人員數目（以相當於全日制的
人數計算）

Table 3 Number of R&D personnel (in full-time equivalent) by performing sector, 2016 to
2020

機構類別 Sector	研發人員數目（以相當於全日制的 人數計算） Number of R&D personnel (in full-time equivalent)				
	2016	2017	2018	2019	2020
工商 Business	12 318 (39%)	12 792 (40%)	13 156 (39%)	13 748 (39%)	13 335 (37%)
高等教育 ⁽¹⁾ Higher education ⁽¹⁾	18 134 * (58%)	18 655 * (58%)	19 482 (58%)	20 643 (58%)	21 715 (60%)
政府 Government	830 (3%)	908 (3%)	938 (3%)	1 025 (3%)	1 056 (3%)
總計 Total	31 282 * (100%)	32 355 * (100%)	33 577 (100%)	35 416 (100%)	36 106 (100%)

註釋：由於數字經四捨五入，分項總和未必與總數相等。

Notes : Figures may not add up to the total due to rounding.

括號內數字為相應數值佔總計的百分比。

Figures in brackets refer to percentages of corresponding values in respect of total.

(1) 高等教育機構的研發人員數字包括教資會資助的大學在有關學年的「與研究有關的人員」及全日制「研究課程研究生」數目。「與研究有關的人員」是指 80% 或以上的工作時間是用於進行與研究有關工作的人員，而全日制「研究課程研究生」則指由教資會資助大學運用教資會撥款及外部資金資助修讀研究院研究課程的學生。

(1) Figures on R&D personnel in the higher education sector cover the number of “research related staff” and full-time “research postgraduate (RPg) students” in the respective academic year of the UGC-funded universities. “Research related staff” refer to staff having deployed 80% or more of their working time to research related activities, while full-time “RPg students” refer to RPg students financed by UGC-funded universities using both UGC and external funds.

* 經修訂的數字

* Revised figures

5. 工商機構的創新活動的主要統計數字

5. Key statistics of innovation activities in the business sector

5.1 工商機構的創新活動橫跨不同行業及規模的機構單位，一般於資訊及通訊業及大型機構單位較普及。（圖 2）

5.1 Innovation activities straddle different industries and establishments of different sizes in the business sector. They are generally more prevalent in the information and communications sector and among large establishments. (Chart 2)

圖 2 按選定行業組別／機構單位規模劃分的在 2020 年有進行創新活動的工商機構單位百分比

Chart 2 Percentage of business establishments having undertaken innovation activities in 2020 by selected industry grouping/size of establishment

按行業組別劃分
By industry grouping

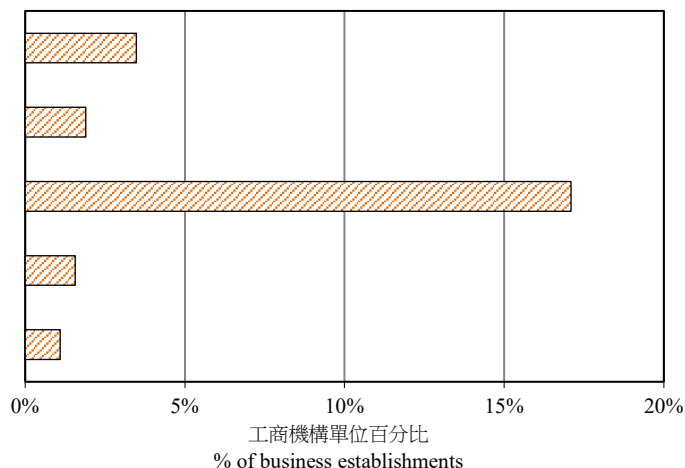
製造
Manufacturing

進出口貿易、批發及零售以及住宿及膳食服務
Import/export, wholesale and retail trades, and accommodation and food services

資訊及通訊
Information and communications

金融及保險、地產、專業及商用服務
Financing and insurance, real estate, professional and business services

其他
Others

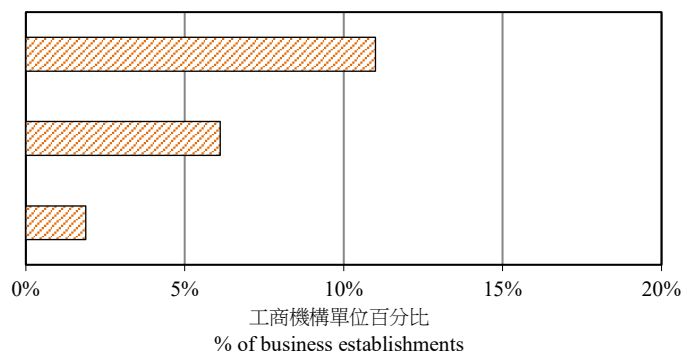


按機構單位規模劃分
By size of establishment

大型
Large

中型
Medium

小型
Small



創新活動的開支

5.2 2020 年工商機構的創新活動總開支為 270.08 億元，當中以資訊及通訊業所佔的百分比最大（45%），其次是進出口貿易、批發及零售以及住宿及膳食服務業（25%），和金融及保險、地產、專業及商用服務業（23%）。（表 4）

Expenditure on innovation activities

5.2 The total expenditure on innovation activities in the business sector in 2020 was \$27,008 million, of which the information and communications sector accounted for the largest share (45%), followed by the import/export, wholesale and retail trades, and accommodation and food services sectors (25%), and financing and insurance, real estate, professional and business services sectors (23%). (Table 4)

表 4 2016 年至 2020 年按選定行業組別劃分的工商機構的創新活動總開支
Table 4 Total expenditure on innovation activities in the business sector by selected industry grouping, 2016 to 2020

行業組別 Industry grouping	創新活動總開支(百萬元) Total expenditure on innovation activities (\$ million)				
	2016	2017	2018	2019 ⁽¹⁾	2020 ⁽¹⁾
製造 Manufacturing	727.2 (4%)	607.7 (2%)	1,383.1 (4%)	951.4 (4%)	904.1 (3%)
進出口貿易、批發及零售以及住宿及膳食服務 Import/export, wholesale and retail trades, and accommodation and food services	6,459.3 (32%)	7,045.4 (24%)	7,317.8 (23%)	7,124.9 (27%)	6,719.5 (25%)
資訊及通訊 Information and communications	6,665.1 (33%)	14,263.2 (48%)	14,447.5 (45%)	11,918.4 (44%)	12,070.5 (45%)
金融及保險、地產、專業及商用服務 Financing and insurance, real estate, professional and business services	4,350.6 (22%)	4,542.6 (15%)	5,485.0 (17%)	5,923.1 (22%)	6,261.3 (23%)
其他 Others	1,758.0 (9%)	3,083.5 (10%)	3,681.9 (11%)	895.5 (3%)	1,052.3 (4%)
總計 Total	19,960.2 (100%)	29,542.4 (100%)	32,315.3 (100%)	26,813.4 (100%)	27,007.7 (100%)

註釋：由於數字經四捨五入，分項總和未必與總數相等。

Notes : Figures may not add up to the total due to rounding.

括號內數字為相應數值佔總計的百分比。

Figures in brackets refer to percentages of corresponding values in respect of total.

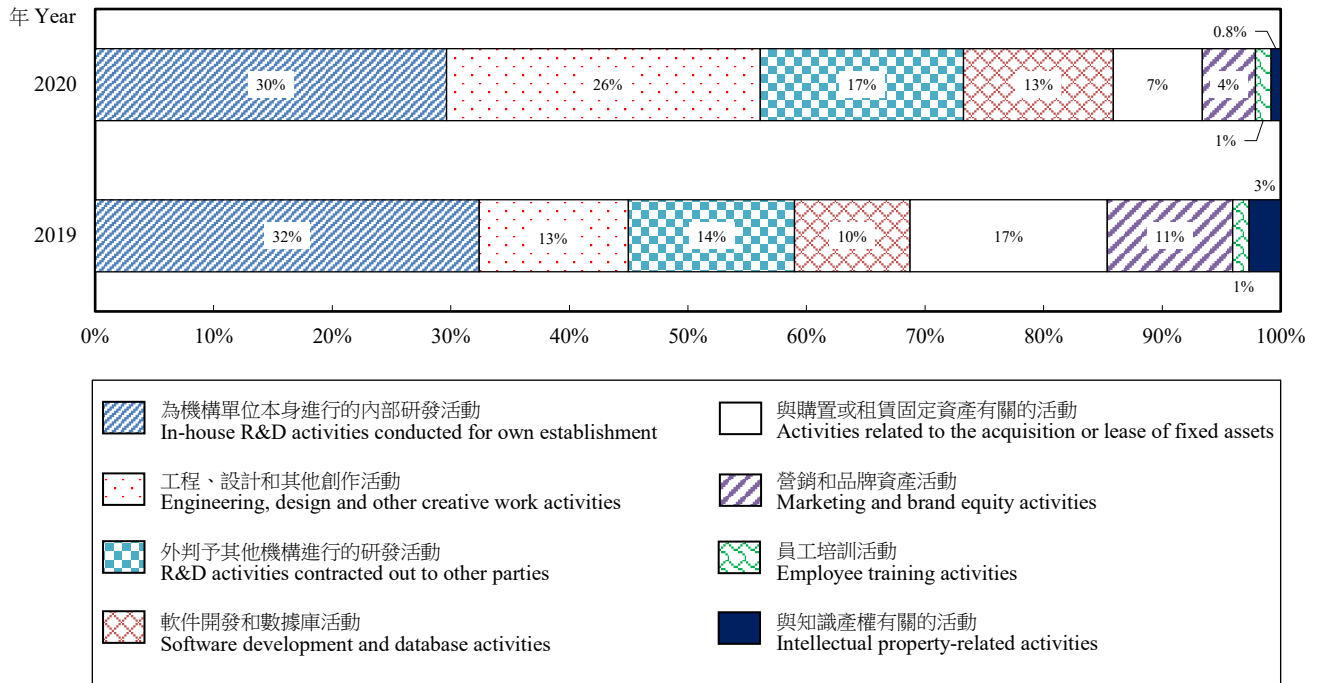
(1) 經合組織於 2018 年 10 月發布有關工商機構創新類別的最新修訂，重組過往的四類創新（即產品、程序、組織和市場推廣）為兩大類別，名為「產品創新」和「業務程序創新」。基於這項修訂，2019 年統計年度及以後所涵蓋的創新活動範圍與較早年發布的有所不同。

(1) OECD announced the latest revision on types of innovation in the business sector in October 2018, i.e. regrouping of the previous four types of innovation (viz. product, process, organisational and marketing) into two main types, namely “product innovation” and “business process innovation”. Owing to this revision, the coverage of innovation activities for the reference year of 2019 onwards is different from that of earlier years.

5.3 按創新活動類別劃分，2020 年工商機構的創新活動總開支主要涉及為機構單位本身進行的內部研發活動（30%），其次是工程、設計和其他創作活動（26%），以及外判予其他機構進行的研發活動（17%）。（圖 3）

5.3 Analysed by type of innovation activity, the total expenditure of innovation activities in the business sector in 2020 was mainly engaged in in-house R&D activities conducted for own establishment (30%), followed by engineering, design and other creative work activities (26%) and R&D activities contracted out to other parties (17%). (Chart 3)

圖 3 2019 年至 2020 年按創新活動類別劃分的工商機構的創新活動總開支分布
Chart 3 Distribution of total expenditure on innovation activities in the business sector by type of innovation activity, 2019 – 2020



6. 可供參考刊物

6.1 有關香港在 2020 年的創新活動情況的詳細分析刊載於《2020 年香港創新活動統計》內 (www.censtatd.gov.hk/tc/EIndexbySubject.html?pcode=B1110010&scode=580)。

6. Further reference

6.1 Detailed analyses on the innovation activities in Hong Kong in 2020 are set out in the publication *Hong Kong Innovation Activities Statistics 2020* (www.censtatd.gov.hk/en/EIndexbySubject.html?pcode=B1110010&scode=580).