SPECIAL SECTION
THE RISE OF DESIGN IN INNOVATION AND INTELLECTUAL PROPERTY - DEFINITIONAL AND MEASUREMENT ISSUES

Introduction

Intellectual Property (IP)-related disputes among companies in the high-technology industry have drawn significant attention to design in 2012.

Frequently, these disputes focus on the infringement of patents and the underlying technological inventions.[1] Yet some of the highest profile conflicts relating to smartphones and tablet computers have centered on product designs. Courts worldwide are making decisive judgments on which designs can be protected and what constitutes infringement of a design right.

Design plays an increasingly important role in the world economy. Industrial design filings worldwide have seen continued growth over the last decade, often at double-digit rates, notwithstanding the global economic downturn. The look and feel of devices – their design – helps drive consumer choice, as it determines the ease of use and influences consumer experience of a product. Design enables firms to differentiate their products and foster a particular brand image, ultimately establishing a competitive edge in the marketplace. Firms are therefore sensitive to the copying of their designs, as it may lead consumers to purchase other products and result in a loss of market share.

This special section discusses the importance of design in innovation and as a form of IP. It first explores key conceptual and measurement questions, and then provides a global statistical overview of the formal use of industrial design protection.

1 WIPO (2012a)

Quantifying the importance of design: conceptual and measurement challenges

Historically, innovation studies and efforts to analyze the impact of IP have focused on other forms of IP – especially patents. Yet today, evidence on the role of design as a source of innovation and economic growth is slowly emerging.[2]

An increasing, albeit still limited, number of analytical studies and policy discussions assert the importance of design in the innovation process.[3] The fact that firms' design efforts are a growing and sizeable investment in their intangible assets is well established in high-income countries.[4] In innovation studies, design is sometimes treated on the same footing as a firm's expenditure on research and development (R&D), software, training and other knowledge-based investments. As a result of this emerging evidence and the above-mentioned court cases, policymakers have shown greater interest in "industrial designs" as a form of IP.

2 See the following studies, mostly from the United Kingdom (UK), in particular with the support of the UK Design Council or the UK Intellectual Property Office: DTI (2005), HM Treasury (2005), Design Council (2005), European Commission (2009), BIS (2010), Design Council (2010), Pesole *et al.* (2011), Thompson *et al.* (2012) and OECD (2012a). The Barcelona Design Centre is considering a new project on "Measuring Design: Developing Strategies for Improving the Evidence Base", see BCD (2012).

3 Ibid.

4 Awano et al. (2010), Hargreaves (2011) and WIPO (2011), Box 1.6. According to Gil and Haskell (2008), for instance, estimates for the UK put spending on new engineering and architectural design at GBP 44 billion, or 30 percent of all intangible investments. This represents one and a half times firms' expenditure on training and five times their spending on R&D.

Analyzing the economic role of design involves non-trivial conceptual and measurement challenges. First, no official statistical definition exists for the term "design". The professional design community's definition of design has not been fully integrated into contemporary innovation metrics and concepts. It is also significantly broader than the legal definition of an "industrial design" (see Box 1 for both definitions), which raises important questions on how best to measure design activity.

Box 1: Contrasting definitions of design

Designers' definition

According to the International Council of Societies of Industrial Design (ICSID), *"Design is a creative activity whose aim is to establish the multi-faceted qualities of objects, processes, services and their systems in whole life cycles. Therefore, design is the central factor of innovative humanization of technologies and the crucial factor of cultural and economic exchange."*

"Thus, design is an activity involving a wide spectrum of professions in which products, services, graphics, interiors and architecture all take part. [...] Therefore, the term designer refers to an individual who practices an intellectual profession, and not simply a trade or a service for enterprises."[5]

A paper for the UK Design Council defines design as *"the bridge between the consumer questing for the experiential and the company trying to meet that appetite with an offer that presents the new in a user-friendly and innovative way."*[6]

Industrial Design rights: a legal perspective

According to WIPO, *"an industrial design is the ornamental or aesthetic aspect of an article. The design may consist of three-dimensional features, such as the shape or surface of an article, or of two-dimensional features, such as patterns, lines or color."*[7]

In most countries, an industrial design must be registered in order to be protected under industrial design law. As a general rule, to be registrable the design must be "new" or "original". Once a design is registered, the term of protection is generally five years, with the possibility of further periods of renewal for up to, in most cases, 15 years. In most countries, protecting a product design is relatively inexpensive and easier to obtain than a patent.

5 International Council of Societies of Industrial Design definition at: *www.icsid.org/about/about/articles31.htm*
6 Design Council (2010)
7 "Industrial Designs - What is an Industrial Design?" *www.wipo.int/designs/en/*

The design community's definition covers an ever-growing array of economic and social aspects. Although often associated with the 'look" and physical design of goods, for the design profession the concept of design is much broader.[8] Design involves not only aesthetic elements but also functional ones, as well as considerations such as ease of manufacture sustainability reliability and quality, and business processes themselves.[9]

Design is not preoccupied solely with the physical aspects of goods. In the case of high-technology products, for instance, it increasingly also relates to the design of graphical user interfaces, such as the form of icons on tablet computer screens and other intangible attributes of high-technology products. Furthermore, design is not only relevant for goods; it also matters to services and processes within firms, governments and other entities – in fields as diverse as the check-in at hotels, online ordering in supermarkets, design of electoral systems and polling processes.

8 European Commission (2009)
9 DTI (2005)

Accordingly, the task of the designer relates to aesthetics and functional product features, but also to improving industrial processes and systems, overall quality of life and environmental protection.[10] The definition on Wikipedia specifies that, "industrial design is the use of a combination of applied art and applied science to improve the aesthetics, ergonomics, functionality and usability of a product, but it may also be used to improve the product's marketability and production. The role of an industrial designer is to create and execute design solutions for problems of form, usability, physical ergonomics, marketing, brand development, and sales."[11]

However, this broad understanding of design has not yet been fully integrated into internationally agreed innovation metrics and concepts. The latter would need to clearly set out how design relates to products, processes and other forms of innovation; what its main inputs and outputs are; and its impact on firm performance and innovation more broadly.

This does not imply that the economic value of designs has not been recognized. International measurement efforts in the area of R&D and innovation already perceive design as an integral part of R&D and the development and implementation of product innovations.[12] Yet, the definitions used in the two key international measurement manuals – the Frascati Manual and the Oslo Manual – are not aligned, and the international guidelines currently do not propose a unified measurement framework for design.[13] Work is ongoing in this field, however, within the relevant international statistical bodies, at the national level and in the design community.[14]

Turning to design as a form of IP, there is an important difference between the broad design concept and what is protected by an "industrial design" from a strictly legal point of view. Specifically, industrial designs are only afforded legal protection for the aesthetic aspect of a product (see Box 1 for the legal definition). Contrary to the broader design concept, an industrial design does not protect any technical or functional features of the product to which it is applied.

10 See, on the role of design for sustainability, "The Contribution of Design to Sustainable Development", Francis Gurry, Director General, WIPO, July 6, 2011, on the occasion of World IP Day, *uncsd.iisd.org/guest-articles/the-contribution-of-design-to-sustainable-development/*

11 *http://en.wikipedia.org/wiki/Industrial_design* Following these broad definitions, various national studies have sought to better define what constitutes the "design industry" and the "design profession", aiming to identify the industry and profession in official industry and employment classifications. See Thompson and Montgomery (2012), Gertler and Vinodrai (2004) and the other studies mentioned in footnote 2.

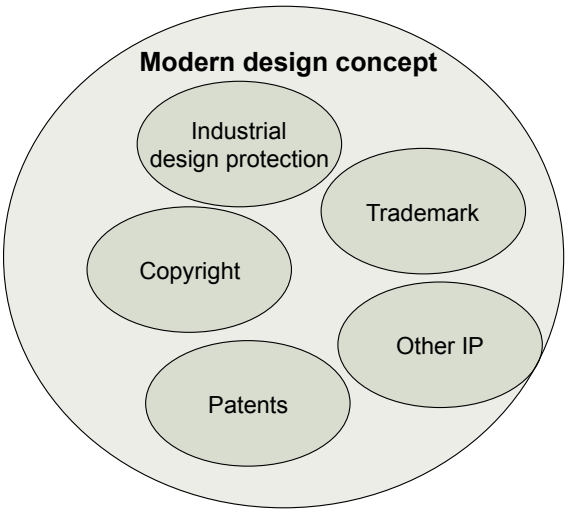
12 See the *Frascati Manual* – the standard reference tool for R&D statistics – and the *Oslo Manual* – the standard reference tool for developing innovation surveys. See also OECD (2012a).

13 The *Frascati Manual* describes the scope of design as a specific activity within R&D. In this context, design is limited to the creation of plans or drawings aimed at defining mainly "functional" issues. The *Oslo Manual* describes design as part of the development and implementation of product innovation, limited to aesthetic/form elements and as part of marketing innovation.

14 The competent body for revising the international definitions as they relate to innovation and R&D is the OECD National Experts on Science and Technology Indicators. The design community has also started complementary work in this field. See, for example, BCD (2012) and the work of the UK Design Council. The BCD analyzes and defines the conceptual framework of design in the economic context, in order to measure it as a tool for user-centered innovation and as an economic factor of production. The initiative is part of the first Action Plan of the European Design Innovation Initiative to exploit the potential of design for innovation and to reinforce the links between design, innovation and competitiveness.

Hence, industrial design rights only cover a subset of the designs falling within the modern design concept. Other forms of IP play an equally important role. Technical or functional design features may be eligible for patent, utility model or trade secret protection. If designs distinctively identify products or companies, they may also qualify for trademark protection. Finally, copyright law may protect certain designs as works of art. Figure 1 illustrates how different forms of IP can represent a subset of the professional community's broad design definition. Table 1 similarly shows that a design can be protected by various IP rights, but also illustrates that certain types of knowledge investment may lead to industrial design protection.

Figure 1: The broad design concept and different forms of intellectual property rights



Note: The graph illustrates that the modern design concept is broader than the collection of different IP rights. It also illustrates that one and the same design can be protected by different IP forms at the same time. For instance, design rights could protect the ornamental aspects while patents protect the functional aspects of a design.

Source: WIPO

Table 1: Knowledge investment and different forms of intellectual property rights

Investment type	Patent	Copyright	Industrial design	Trademark
R&D	X		X	
Software development	X	X	X	
Design	X	X	X	X
Creative outputs		X	X	
Market research & advertising		X		X

Note: The shading indicates: (i) the types of knowledge investment that can be protected by industrial design rights; and (ii) the different forms of IP that can be used to protect designs according to the broader design concept.

Source: Adapted from Gill and Haskel (2008)

Due to the complex interrelationship between different knowledge investments and forms of IP, it is difficult to accurately capture the level of design activity. Also, the interaction between design activity and the formal protection of designs by different forms of IP is hard to quantify.[15] For instance, there are no data on the share of designs covered by industrial design rights. Differences across countries in the propensity to file for industrial design rights often seem to reflect institutional, legal and cultural differences. Furthermore, the extent to which the existence of narrower industrial design rights spurs investment in better design in the broad sense and enables firms to protect market share have not been studied.[16]

Putting figures on the uptake of industrial design protection

To help improve our understanding of design activity, this section reviews the statistics on global industrial design filings. It complements Section C of this report.

15 WIPO (2011)
16 Ibid.

As discussed above, statistics on industrial design filings do not capture the broad understanding of design.[17] Yet, these data are the only pertinent and internationally comparable source of information when it comes to identifying how active firms, individuals or others are in seeking formal IP protection for designs.

WIPO collects aggregate industrial design data through its annual IP questionnaires. A few key challenges relating to data availability and comparability complicate the interpretation of statistics on industrial design filings worldwide (see Box 2).

The data presented below refer to industrial design application data, excluding registration data.[18] Time series analysis is based on application counts as there are insufficient historical design count data (see Box 2).

Application trend worldwide by income group

The total number of industrial design applications filed worldwide increased from around 344,700 in 2004 to 775,700 in 2011. Table 2 presents the shares of global industrial design applications by income group. For comparison, the equivalent patent and trademark shares are also shown.

Designs are the only form of IP for which offices of high-income countries do not account for the largest share of IP filings. Upper middle-income countries accounted for the majority of industrial design filings, followed by high-income countries and a small share of lower middle- and low-income countries. However, if one excludes China, the upper middle-income countries accounted for only around 4% of design filings. Compared to other forms of IP, the increased share of the State Intellectual Property Office of the People's Republic of China (SIPO) was particularly pronounced, accounting for 68% of design filings worldwide in 2011. The rapid growth of Chinese filings also explains the marked decrease in the overall share of high-income countries – from 52.5% in 2004 to 24.5% in 2011. The lower middle-income and low-income groups accounted for less than 4% of all applications, and their combined share declined between 2004 and 2011.

The pattern for the income groups described above holds true where the analysis is based on available design count data. However, design count data are not available for a number of offices, mostly from middle- and low-income groups, hence their true shares are bound to be higher. The 2011 design count data (Table 2, last column) show that upper middle-income countries accounted for 59.6% of total design count filings reported – a lower share than for application count data (72%). High-income countries accounted for around 37% of the 2011 reported total, which is higher than for application count data (24.9%). The difference between application and design count data shares can be explained by the fact that China – the office receiving the largest number of applications – allows only one design per application while IP offices in a large number of high-income countries permit applications to contain more than one design.

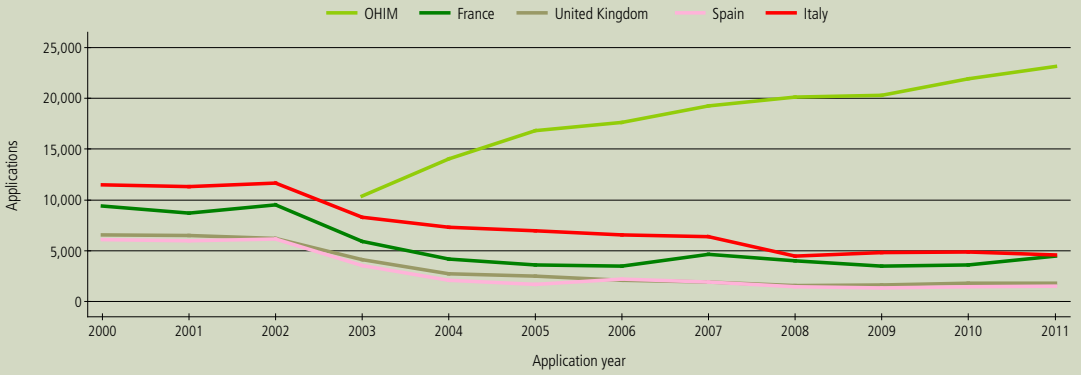
17 The single existing effort to compile a representative index on countries' different design capacities shows that industrial designs, though important, are only one among many variables. See Moultrie and Livesey (2009).

18 Application data are most often used to measure the level of IP activity. Statistics for industrial design registrations tend to mirror those for applications, since, at many offices, registration of an industrial design involves only a formality examination.

Box 2 – Challenges in interpreting global industrial design statistics

The four following key data challenges complicate the interpretation of industrial design statistics:

Figure 2: Industrial design applications for selected offices



Note: OHIM = Office for Harmonization in the Internal Market

Source: WIPO Statistics Database, October 2012

(i) Institutional differences: To protect industrial designs, some offices permit only one design per application (e.g., the IP office of China), while other offices allow applications to contain more than one design for the same product or same class (e.g., the IP office of Germany). To enable better cross-country comparability, industrial design indicators should report the number of designs contained in applications (i.e., design counts) rather than the number of applications.[19] WIPO has made substantial progress in recent years in improving design count data coverage. For 2011, design count data were available for 55 offices. However, design counts for a significant number of countries are only available from 2008 onwards, rendering long-term historical comparison difficult.

(ii) Regional office data: In 2003, the Office for Harmonization in the Internal Market (OHIM) of the European Union (EU) began issuing the Registered Community Design (RCD). This procedure enables applicants to file a single application for protection across all EU member states. Since the introduction of the RCD, a number of European IP offices have experienced decreases in applications received (see Figure 2). This clearly indicates changes in applicant behavior, with applicants preferring to use the OHIM system to seek protection for their designs across all EU countries rather than filing separate applications with all or even some national offices. The downward trend in filings at national offices in Europe therefore reflects institutional changes rather than a decrease in the demand for design rights. This factor should be taken into consideration when compiling data for residents of EU countries.

(iii) Absence of fully representative data on international registrations: In patent and trademark studies, researchers can rely on data from international IP systems such as the Patent Cooperation Treaty (PCT system) and the Madrid System for the International Registration of Marks (Madrid system). Membership and use of the PCT and, increasingly, the Madrid system have attained wide coverage. The data available from these WIPO systems are representative and meaningful for statistical and economic analysis.[20] In the case of designs, however, the international IP registration system is only now reaching the level of the PCT and Madrid systems. Presently, the volume of design filings through the WIPO-administered Hague System for the International Registration of Industrial Designs is growing strongly but remains limited. This is due to the fact that the Hague system has fewer members than the PCT and Madrid systems. In 2011, the Hague system comprised 60 members, mostly from Europe. Thus, the underlying statistics are not sufficiently representative to be used for detailed analysis, and researchers must rely mainly on national/regional IP filing data. The coming years are likely to see significant expansion of the Hague system's membership – a welcome statistical development. Countries such as China, Japan, the Republic of Korea, the United States of America (US) and others are currently considering joining the Hague system. Hague system data will then become more meaningful for statistical analysis.

(iv) Lack of an industrial design unit record database with global coverage: WIPO's statistical database contains aggregate data collected from national and regional IP offices via annual questionnaires and individual application data (unit record data) for international registrations through the Hague system. At present, a database with global coverage containing individual applications filed at national IP offices is lacking.

19 See WIPO (2012b) and Section C of this report.

20 It is often argued that IP data based on WIPO registration systems are more reliable than national IP data. The latter are impacted by country-specific institutional differences, such as single- versus multi-class systems for trademarks, making comparison across countries tricky. In contrast, international IP data from the PCT and Madrid systems are comparable across member countries without caveat. Consequently, key IP- or innovation-related publications rely heavily on data on patents filed under the PCT system in analyzing patenting behavior across countries. See, for instance, OECD (2012b).

Table 2: Shares of global IP applications by income group

Income group	Patents (applications)		Trademarks (class count)		Designs (applications)		Designs (design count)
	2004	2011	2004	2011	2004	2011	2011
High-income	82.7	67.0	55.5	45.1	52.5	24.9	37.1
Upper middle-income	14.9	29.8	34.2	43.9	42.4	72.0	59.6
… China	*8.3*	*24.6*	*13.4*	*22.8*	*33.4*	*68.1*	*53.2*
Lower middle-income	2.3	3.2	9.2	9.9	4.6	2.9	3.2
Low-income	0.1	0.0	1.1	1.0	0.6	0.3	0.2

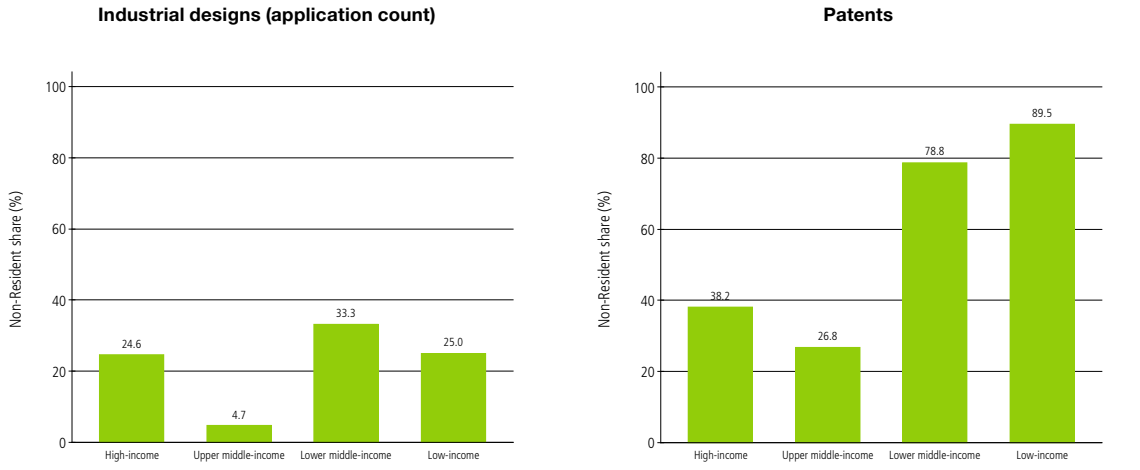
Note: Design count data for 2004 are not available. The design count share of middle- and low-income countries shows a downward bias due to a lack of data for a number of offices.

Source: WIPO Statistics Database, October 2012

In all income groups, resident applicants accounted for the majority of industrial design applications filed in 2011. For the high-income group, the non-resident share of total applications was 24.6%. The upper middle-income group had the lowest non-resident share (4.7%); however, excluding China yields a share of around 41%. Moreover, non-resident share by income group masks the differences across offices (see Table 3).

The distribution of resident versus non-resident applications for industrial designs differed markedly from that of patents. In particular, for all income groups the non-resident share of industrial design applications was smaller than the non-resident share of patent applications. In addition, for low- and lower middle-income countries, non-residents accounted for a minority of industrial design applications, whereas they accounted for a majority of patent applications (Figure 3).

Figure 3: Comparison of non-resident shares in total applications for industrial designs and patents (%), 2011



Note: Office coverage of industrial design and patent data is not identical across income groups. Despite this, the resulting bias is likely to be limited as all the major offices are included.

Source: WIPO Statistics Database, October 2012

Rapid increase in filings in recent years

Applications by office

Industrial design filings have increased each year from 2000 to 2011 (see Section C, Figure C.1.1.1). In 2000, roughly 290,800 applications were filed. By 2011, the number of applications filed in a single year increased to around 775,700, representing 16% growth on 2010. Figure 4 shows industrial design application counts for selected offices from 1965 to 2011. Except for Japan, all offices saw modest growth until the mid-1990s, after which growth picked up considerably. Applications received by SIPO and the IP offices of Turkey, Bangladesh and Thailand increased by 23.6%, 11.8%, 9.4% and 9.3% per year, respectively, between 1995 and 2011. OHIM saw 10.5% growth between 2003 and 2011.[21]

Table 3 presents data on the number of designs contained in applications for all national and regional offices for which data are available. SIPO, with 521,468 designs, received by far the largest number of applications in 2011, most of which were filed by resident applicants. Non-resident applicants accounted for only 2.7% of the total. Of all the reported offices, SIPO, along with the offices of Cyprus, Spain and Portugal had the lowest non-resident shares.

OHIM received the second highest number of design filings in 2011, with 87,225 designs contained in applications. This represents a 5.4% increase over 2010. Its non-resident share was around 26.2%. The possibility to seek protection throughout the EU via a single application at OHIM meant its non-resident share was above that of most high-volume European offices. As can be seen, France, Italy and Spain each had low shares of non-resident filings. By contrast, Germany, with 23.3%, had a relatively high share of non-resident designs contained in applications. Of the top 10 offices, the US had the largest non-resident share (42.5%) in 2011.

Apart from SIPO, a number of middle- and low-income offices received a large number of designs contained in applications. For example, Turkey's design count was 41,218, which is considerably higher than that of Japan or the US. The share of non-resident applications varied widely, however, for the majority of the reported offices, with non-resident applicants accounting for the largest share of applications at many middle- and low-income offices. However, for offices of middle-income countries with high design counts, such as Brazil, China, India, Morocco and Turkey, resident applicants accounted for the largest shares of total applications. The table shows that the use of the design system varies widely within and across income groups.

21 Growth rate refers to average annual growth.

Figure 4: Trend in industrial design applications (application count) for selected offices, 1965-2011

Note: OHIM = Office for Harmonization in the Internal Market

Source: WIPO Statistics Database, October 2012

Table 3: Number of designs contained in applications (design counts) by office, 2011

Office	Resident	Non-Resident	Total	Growth rate (%): 2010-11	Non-Resident Share (%)	Income Group
China	507,538	13,930	521,468	23.8	2.7	UM
OHIM	64,343	22,882	87,225	5.4	26.2	H
Republic of Korea	54,300	4,271	58,571	-1.1	7.3	H
Germany	41,441	12,600	54,041	6.2	23.3	H
Turkey	35,488	5,730	41,218	17.6	13.9	UM
Japan	26,658	4,147	30,805	-3.0	13.5	H
United States of America	17,443	13,024	30,467	4.8	42.7	H
Italy	28,306	968	29,274	-9.8	3.3	H
Spain	18,540	454	18,994	24.3	2.4	H
France	14,795	1,411	16,206	-11.1	8.7	H
India	5,156	3,060	8,216	16.7	37.2	LM
Ukraine	3,444	3,291	6,735	17.5	48.9	LM
Russian Federation	2,887	3,190	6,077	8.2	52.5	UM
Australia	2,664	3,302	5,966	1.8	55.3	H
Brazil (2)	3,863	1,638	5,501	3.9	29.8	UM
Morocco	3,457	1,937	5,394	-10.4	35.9	LM
China, Hong Kong SAR	1,818	3,021	4,839	14.0	62.4	H
Mexico	1,909	2,240	4,149	17.2	54.0	UM
Singapore	663	3,322	3,985	3.9	83.4	H
Croatia	622	2,101	2,723	-8.3	77.2	H
Viet Nam	1,367	737	2,104	7.1	35.0	LM
Greece (2)	1,526	415	1,941	-23.6	21.4	H
Republic of Moldova	936	918	1,854	42.5	49.5	LM
Argentina (2)	..	..	1,676	18.7	..	UM
Portugal	1,598	25	1,623	1.4	1.5	H
Monaco	29	1,562	1,591	-10.3	98.2	H
T F Y R of Macedonia	87	1,372	1,459	7.5	94.0	UM
Egypt (1)	..	1,445	1,445	5.6	..	LM
New Zealand (2)	449	849	1,298	0.0	65.4	H
Liechtenstein (1)	24	1,256	1,280	-11.1	..	H
Czech Republic	1,189	49	1,238	-15.2	4.0	H
Serbia	107	1,109	1,216	43.6	91.2	UM
Romania	1,030	134	1,164	-14.5	11.5	UM
Georgia	206	943	1,149	-3.4	82.1	LM
Bosnia and Herzegovina	25	1,069	1,094	18.7	97.7	UM
Montenegro	14	1,037	1,051	4.6	98.7	UM
Hungary	755	138	893	12.0	15.5	H
Albania	16	832	848	11.6	98.1	LM
Armenia	27	791	818	23.2	96.7	LM
Algeria	699	104	803	0.0	13.0	UM
Mongolia	182	583	765	-25.2	76.2	LM
Saudi Arabia	246	506	752	0.0	67.3	H
Oman (1)	..	697	697	-6.1	..	H
Bulgaria	614	50	664	19.2	7.5	UM
Azerbaijan	27	605	632	790.1	95.7	UM
Sweden	583	23	606	-25.0	3.8	H
OAPI (1)	..	595	595	132.4	..	L
Belarus	236	337	573	81.9	58.8	UM
Slovenia (2)	..	..	566	26.3	..	H
Lithuania	61	472	533	16.6	88.6	UM
Belize (1)	..	450	450	-7.2	..	LM
Slovakia	362	54	416	-29.4	13.0	H
Colombia	147	237	384	-4.0	61.7	UM
Peru	86	248	334	-11.4	74.3	UM
Uzbekistan	301	26	327	22.0	8.0	LM
Iceland	52	274	326	-4.1	84.0	H
D. P. R. of Korea (1)	..	311	311	51.0	..	L
Denmark	209	102	311	-15.7	32.8	H
Finland	258	51	309	-4.9	16.5	H
Guatemala	35	205	240	6.2	85.4	LM
Cyprus	206	0	206	0.0	0.0	H
Syrian Arab Republic (1)	..	200	200	3.6	..	LM
Latvia	117	77	194	-14.5	39.7	UM
Namibia (1)	..	168	168	75.0	..	UM
Botswana (1)	..	166	166	104.9	..	UM
Ecuador (2)	52	110	162	28.6	67.9	UM
China, Macao SAR	7	151	158	116.4	95.6	H
Ghana (1)	..	139	139	139.7	..	LM
Suriname (1)	..	125	125	247.2	..	UM
Ireland (2)	110	14	124	0.0	11.3	H
Gabon (1)	..	89	89	43.5	..	UM
Mali (1)	..	85	85	66.7	..	L
Niger (1)	..	85	85	97.7	..	L
Sao Tome and Principe (1)	..	83	83	118.4	..	LM
Benin (1)	..	79	79	364.7	..	L
Dominican Republic (2)	..	..	79	0.0	..	UM
Senegal (1)	..	79	79	17.9	..	LM
Jordan	9	68	77	-26.0	88.3	UM
Panama	0	70	70	0.0	100.0	UM
Costa Rica (2)	10	57	67	0.0	85.1	UM
Côte d'Ivoire (1)	..	51	51	-27.1	..	LM
Rwanda (1)	..	5	5	0.0	..	L
Tajikistan	0	5	5	0.0	100.0	L

Note: ".." = not available; OHIM = Office for Harmonization in the Internal Market; OAPI = African Intellectual Property Organization; D.P.R. of Korea = Democratic People's Republic of Korea; H = High-income; UM = Upper middle-income; LM = Lower middle-income and L = Low-income. (1) = Only Hague designation data are available; therefore, data on application design count by office may be incomplete; (2) = 2010 data; and growth rate refers to 2009-10.

Source: WIPO Statistics Database, October 2012

As mentioned above, not all offices report design count data. Table 4 provides industrial design application data (application counts) for offices for which data on the number of designs contained in applications (design counts) are unavailable. A number of middle- and low-income offices received a large number of applications in 2011. For example, the offices of Indonesia (4,196), Thailand (3,749), South Africa (2,044) and Malaysia (1,871) received large numbers of applications in 2011. Resident applicants accounted for the bulk of applications in Thailand. In contrast, the majority of the applications filed at the offices of Malaysia and South Africa came from non-resident applicants. This reflects intensive use of the design system at offices in middle-income countries. However, the resident and non-resident breakdown shows that at some offices residents accounted for a high share of total applications, while in others the opposite holds true. The majority of the reported offices saw growth in applications in 2011 compared to the previous year.

Table 4: Number of industrial design applications (application counts) by office, 2011

Office	Resident	Non-Resident	Total	Growth rate (%): 2010-11	Non-Resident Share (%)	Income Group
Canada	790	4,437	5,227	1.7	84.9	H
United Kingdom	4,290	221	4,511	25.2	4.9	H
Indonesia	..	..	4,196	3.2	..	LM
Thailand	2,905	844	3,749	3.7	22.5	UM
Switzerland	1,114	1,411	2,525	0.4	55.9	H
South Africa	853	1,191	2,044	17.0	58.3	UM
Malaysia	743	1,128	1,871	11.6	60.3	UM
Poland	1,548	31	1,579	-10.0	2.0	H
Israel	1,030	481	1,511	-6.6	31.8	H
Barbados	142	1,229	1,371	14.6	89.6	H
Bangladesh	1,155	142	1,297	44.8	10.9	L
Philippines	533	579	1,112	31.3	52.1	LM
Benelux	917	170	1,087	-16.7	15.6	H
Norway	288	772	1,060	11.0	72.8	H
Pakistan	755	159	914	66.5	17.4	LM
Austria	494	243	737	-24.9	33.0	H
Chile	57	472	529	7.3	89.2	UM
Madagascar	307	2	309	8.0	0.6	L
Sri Lanka (2)	233	51	284	-9.3	18.0	LM
Paraguay (2)	121	150	271	-11.4	55.4	LM
Kyrgyzstan	17	150	167	12.1	89.8	L
Kyrgyzstan	17	150	167	12.1	89.8	L
Uruguay	46	64	110	1.9	58.2	UM
Lebanon	..	..	109	-3.5	..	UM
Kenya (2)	69	7	76	-15.6	9.2	L
Estonia	51	20	71	-24.5	28.2	H
Jamaica	41	23	64	45.5	35.9	UM
Bahrain (1)	..	53	53	..	..	H
Honduras	11	33	44	..	75.0	LM
Tunisia (1,2)	..	20	20	..	..	UM
Yemen	13	4	17	-72.6	23.5	LM
Cuba	8	5	13	..	38.5	UM
Netherlands Antilles (1,2)	..	10	10	..	..	H
Malta	7	1	8	100.0	12.5	H
Mauritius (2)	..	..	7	-30.0	..	UM
San Marino	..	..	6	-25.0	..	H
Burkina Faso (2)	4	0	4	..	0.0	L

Note: See note for Table 3.

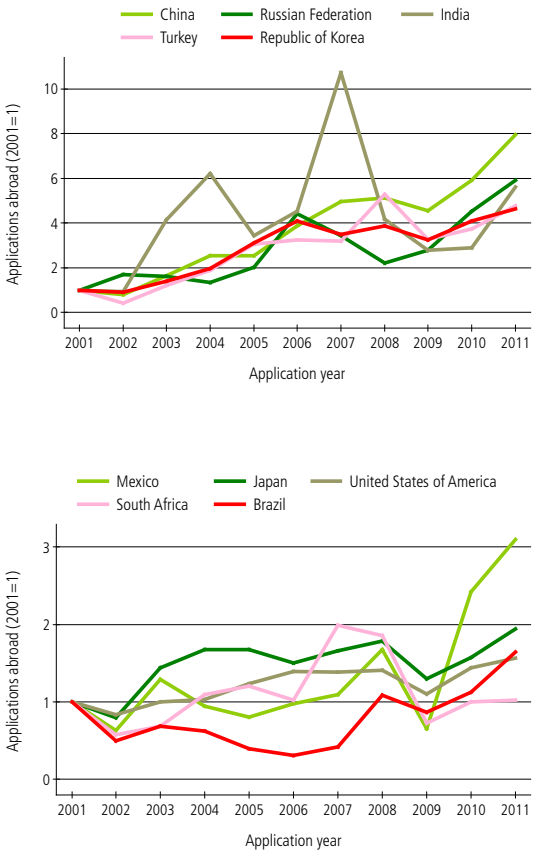
Source: WIPO Statistics Database, October 2012

Applications abroad

Figure 5 shows growth in applications abroad for selected origins. Data are based on application counts rather than equivalent application counts.[22] In terms of absolute numbers, residents of the US (15,593) filed the largest number of applications abroad in 2011, followed by residents of Japan (14,384) and the Republic of Korea (4,388).

However, the numbers of applications filed abroad by residents of China, India and the Russian Federation – all middle-income countries – have grown at faster rates than those of Japan and the US. Despite substantial growth, residents of these origins filed only a small proportion of their applications abroad. Figure 6 shows applications abroad as a percentage of resident applications. For example, Chinese residents filed 0.5% of their applications abroad. In contrast, around 90% of US resident applications were filed abroad.

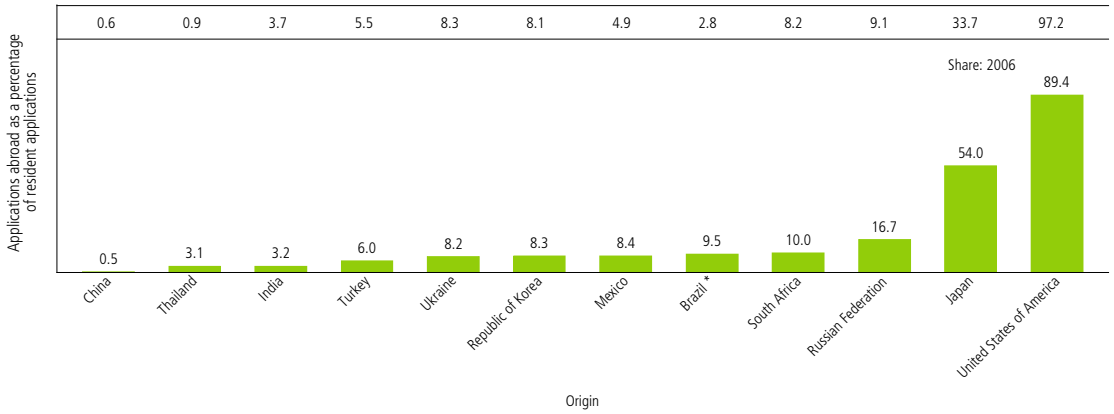
Figure 5: Applications abroad (application count with no regional multiplier) for selected origins, 2001-11



Source: WIPO Statistics Database, October 2012

22 To derive equivalent count data, applications filed at regional offices, such as OHIM, are multiplied by the number of member states party to the regional system. See the Glossary of this publication for the definition of equivalent counts.

Figure 6: Applications abroad as a percentage of resident applications (application count with no regional multiplier) for selected origins, 2011 (%)



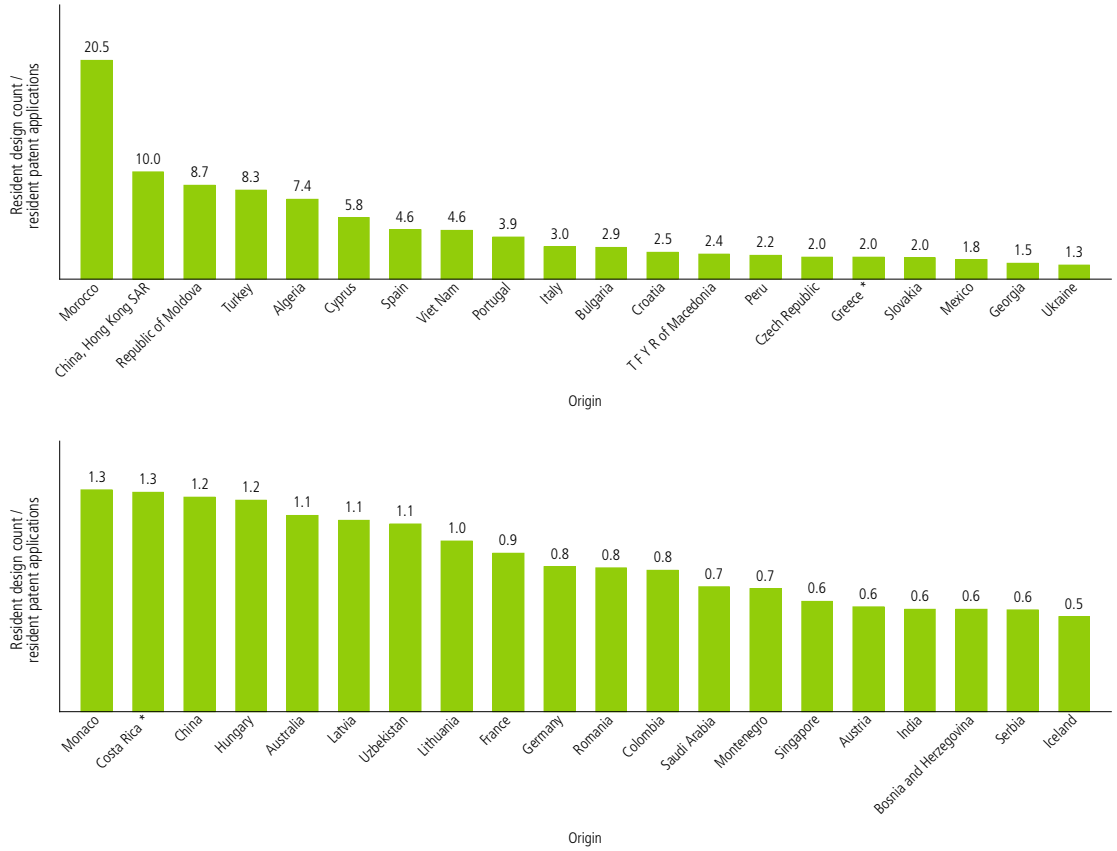
Note: *2010 data

Source: WIPO Statistics Database, October 2012

Comparison of resident design counts and resident patent applications

Figure 7 shows the ratio of design count for resident applications to number of resident patent applications for the top origins. Origins with resident design counts that are higher than resident patent applications will have a ratio greater than 1. The list includes high- and middle- as well as low-income origins. Of the reported origins, residents of Morocco filed 20 times more designs (design counts) than patents in 2011. Large high-income origins – such as France, Germany, Japan, and the US – had lower resident design counts than resident patents.

Figure 7: Resident application design count to resident patent application ratios for selected origins, 2011



Note: *2010 data. Origins with a design count or with patent applications of less than 10 are not shown in this figure.

Source: WIPO Statistics Database, October 2012

Top industrial design applicants at selected major offices

Table 5 shows the list of the top 10 industrial design applicants in 2011 for eight selected offices in high-income countries and in China. In the case of the United States Patent and Trademark Office (USPTO), data refer to the number of industrial designs registered in 2011.

The electronics and the information and communication technology (ICT) industries featured prominently in most of these rankings. At all the offices experiencing intense filing behavior listed in Table 5, firms such as Samsung (Republic of Korea), LG (Republic of Korea), Research in Motion (Canada), Panasonic (Japan), Sony (Japan), Electrolux (Sweden), Philips (Netherlands), Microsoft (US) and Foxconn (Taiwan, Province of China) consistently emerged as the top users in the electronics, ICT and software industries. Apple (US) ranks 21st at the USPTO and 13th at OHIM.

The other prominent sectors in the top filer lists are the automotive industry, clothing and fashion (including shoes and sportswear), interior design and decoration (including lighting) and – to a lesser extent - firms in the consumer product industry, namely Procter & Gamble (US) and Colgate-Palmolive (US). In the automotive sector, Kia (Republic of Korea), Honda (Japan), Goodyear (US), Toyota (Japan) and firms such as Nissan (Japan), mainly Asian firms, made the top 10 list at these IP offices. In the clothing and fashion industry, top filers included Nike (US), Sketchers (US) and Rieker (Germany), all three being shoe manufacturers, and firms in the fashion industry.

However, differences exist across offices with respect to sector affiliation in the top 10 rankings for these offices. In the Asian offices covered (China, Japan and the Republic of Korea), firms in the electronics and ICT industries - and to some extent the automotive industry – ranked among the most intensive users of the industrial design system. Singapore was the exception among the Asian offices, with jewelry companies being their most active filers. In the case of China, for the most part foreign firms occupied the top 10 ranks. Interestingly, the only entity of Chinese origin in these rankings is a university.

For OHIM, a mix of mainly electronics and textile and fashion industry firms were among the top 10 filers. In France, however, firms belonging to the fashion industry emerged as the top users of the design system. In the US, Canada and Singapore, the top user lists reflected a more diverse mix of industries.

A look at the top 30 list shows the presence of firms in the apparel and tools and the tobacco industries – sectors that do not feature in the top 10 lists – in particular for OHIM, the USPTO, SIPO and the Korean Intellectual Property Office (KIPO). The use of the design system considerably varies across sectors and countries (see Section C of this report for further details).

Table 5: Top 10 industrial design applicants for selected offices, 2011

Rank	Name	Applications
Office: Canada		
1	THE PROCTER & GAMBLE COMPANY	253
2	MICROSOFT CORPORATION	158
3	PHILIPS ELECTRONICS LTD.	106
4	NIKE INTERNATIONAL, LTD.	60
5	RESEARCH IN MONTION LIMITED	55
6	SPIN MASTER LTD.	54
7	COLGATE-PALMOLIVE COMPANY	52
8	HONDA MOTOR CO., LTD.	48
9	VICTAULIC COMPANY	41
10	LG ELECTRONICS INC.	40
Office: China		
1	PANASONIC	3,634
2	SAMSUNG	3,335
3	LG ELECTRONIC	2,844
4	JIANGNAN UNIVERSITY	2,074
5	HONDA INDUSTRIAL	2,041
6	TOYOTA AUTOMOBILE	1,695
7	SONY CORP.	1,549
8	SANYO ELECTRIC., LTD	1,494
9	PHILIPS ELECTRONICS	1,314
10	NISSAN AUTOMOBILE	1,172
Office: France		
1	THE KOOPLES PRODUCTION	585
2	CREATION NELSON	522
3	COLINE DIFFUSION	271
4	CARVEN SAS	256
5	SIMOENS	156
6	SWAMEE SARL	149
7	OLIVIER DE SAINT LOUP	114
8	SOCIETE INNOVATION DU BATIMENT	113
9	COTON BLANC	100
10	SOCIETE M COLLECTIONS	95
Office: OHIM		
1	RIEKER SCHUH AG	947
2	MICROSOFT CORPORATION	644
3	ELECTROLUX HOME PRODUCTS CORPORATION N.V.	500
4	SONY CORPORATION	485
5	EGLO LEUCHTEN GMBH	476
6	PIERRE BALMAIN, SOCIETE ANONYME	437
7	CREATION NELSON	403
8	SAMSUNG ELECTRONICS CO., LTD.	350
9	NIKE INTERNATIONAL LTD.	319
10	KONINKLIJKE PHILIPS ELECTRONICS N.V.	318

Rank	Name	Applications
Office: Republic of Korea		
1	CJ CORP.	833
2	SAMSUNG ELECTRONICS CO., LTD.	804
3	LG ELECTRONICS INC.	791
4	AMOREPACIFIC CORPORATION	526
5	LG HAUSYS, LTD.	293
6	DECO TRADE CO.,LTD	224
7	ALUTEK CO., LTD.	205
8	LG HOUSEHOLD & HEALTH CARE LTD.	201
9	DAE AN TEXTILE., LTD	194
10	KIA MOTORS CORPORATION	182
Office: Singapore		
1	SK JEWELLEY SINGAPORE PTE LTD	175
2	ASPIAL-LEE HWA JEWELLERY SINGAPORE PTE LTD	99
3	SOO KEE JEWELLERY	85
4	ELECOM CO, LTD	54
5	LOVE & CO	52
6	TOYOTA JIDOSHA KABUSHIKI KAISHA	42
7	SONY COMPUTER ENTERTAINMENT INC	28
8	DAIKIN INDUSTRIES LTD	27
9	HONDA MOTOR CO, LTD	27
10	EITAGOLD MANUFACTURERS SDN BHD	26
Office: United Kingdom		
1	AVIRUTH SACHDEV	64
2	SHOFOO LTD	56
3	BAILEY WOOD LIMITED	55
4	AHMET EROL	53
5	SUSAN HARDING	44
6	REGISTERED DESIGNS LIMITED (SUTTON COLDFIELD)	43
7	DG INTERNATIONAL HOLDINGS LTD	40
8	YANWEI SHOU	32
9	ADNAAN SOLOMON	31
10	RUBBERATKINS LTD	28
Office: United States of America		
1	SAMSUNG ELECTRONICS CO., LTD.	328
2	PROCTER + GAMBLE COMPANY	270
3	LG ELECTRONICS INC.	236
4	MICROSOFT CORPORATION	182
5	KONINKLIJKE PHILIPS ELECTRONICS N.V.	148
6	CHENG UEI PRECISION INDUSTRY CO., LTD.	130
7	APPLE, INC	122
8	NIKE, INC.	120
9	HON HAI PRECISION IND. CO., LTD. (FOXCONN)	114
10	HONDA MOTOR CO., LTD.	107

Note: For all offices, except the USPTO, data refer to applications filed. USPTO data refer to the number of registrations in 2011. OHIM = Office for Harmonization in the Internal Market

Source: Data were obtained from the respective national/regional IP offices.

Conclusion

Today, design accounts for a substantial share of firms' investments in intangible assets and innovation. There has been marked growth in the use of IP to protect product designs. Product designs and electronic user-interfaces are also at the center of legal disputes in the high-technology industry.

As a result, policymakers have shown greater interest in better understanding the role of design in innovation and economic growth. This special section has discussed a number of the conceptual and definitional challenges that exist on this front. For a start, there is need to agree on a statistical definition of design for the purposes of innovation measurement; such a definition would need to capture the economic relevance of design activity. New measurement tools could then be developed based on that definition.

Despite the absence of adequate definitions and metrics, IP statistics can nevertheless provide valuable information on design activity, even if this information is invariably partial. The data presented here show that the bulk of design filing activity occurs in the offices of middle-income countries. In particular, China has seen tremendous growth in design applications over the past few years. Offices of other middle-income countries, such as Bangladesh, India, Mexico, Pakistan, the Philippines and Turkey, have also seen strong filing growth. However, there are considerable differences across offices in the use of the design system by resident and non-resident applicants. For the majority of offices, non-resident applicants accounted for the largest share of total applications at many middle- and low-income offices. However, for offices of middle-income countries with high design counts, such as Brazil, China, India, Morocco and Turkey, resident applicants accounted for the largest share of total applications. In the future, it would be instructive to undertake a detailed analysis – data permitting – of why use of the system differs so much across countries.

Although the numbers of design applications abroad have increased over time, resident applications constitute the vast majority of total applications at the global level. Residents of high-income countries tend to file high shares of their total applications abroad. However, applications filed abroad by residents of middle-income countries, such as China, the Russian Federation and India, have grown at faster rates than those of Japan and the US. Despite substantial growth, residents of these origins filed only a small proportion of their applications abroad.

The data presented on the top applicants show that the electronics and ICT, automotive, clothing and fashion, interior design and decoration industries and – to a lesser extent - firms in the consumer product industries use the industrial design system most intensively. Due to a lack of data, it is not yet possible to investigate sectoral differences (smartphones versus handicrafts, etc.) across developed and developing countries.

In order to deepen our understanding of the use of the design system and shed light on how its use affects innovation and economic growth, a better data infrastructure is needed. In particular, the creation of unit record design rights databases would enable refined analysis and new insights into the behavior of applicants and their economic performance. It would also reveal how industrial design activity, in the legal sense, and the design activity undertaken by firms relate to one another.

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