

PropTech Global Trends 2021

Annual Barometer



Gouvernement Princier
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Executive Summary

The 2021 PropTech Annual Barometer presents a detailed analysis of the international PropTech industry. It illustrates the evolution of PropTech over time, across markets and company categories using graphs of historical and recent trends to highlight critical relationships. To better understand the market dynamics, we classify all PropTech companies into four business categories and identify the companies with the highest valuations per category, allowing us to compare the composition of the categories in different countries.

The Barometer particularly emphasizes the sector's changes in the past year in regard to mergers and acquisitions. It also visualizes the sector's geography using spatial graphs of the whole world and specific regions. Finally, we present a detailed analysis of investment trends across time, markets, companies, and investors. The barometer also includes case studies and numerous insights from top PropTech leaders. We identify the most active investors and companies in the sector and provide projections for future investments across markets and companies.



This barometer has been produced by **Professor Jaime Luque** at the ESCP Business School as part of the Real Estate Tech Innovation program sponsored by the Government of Monaco

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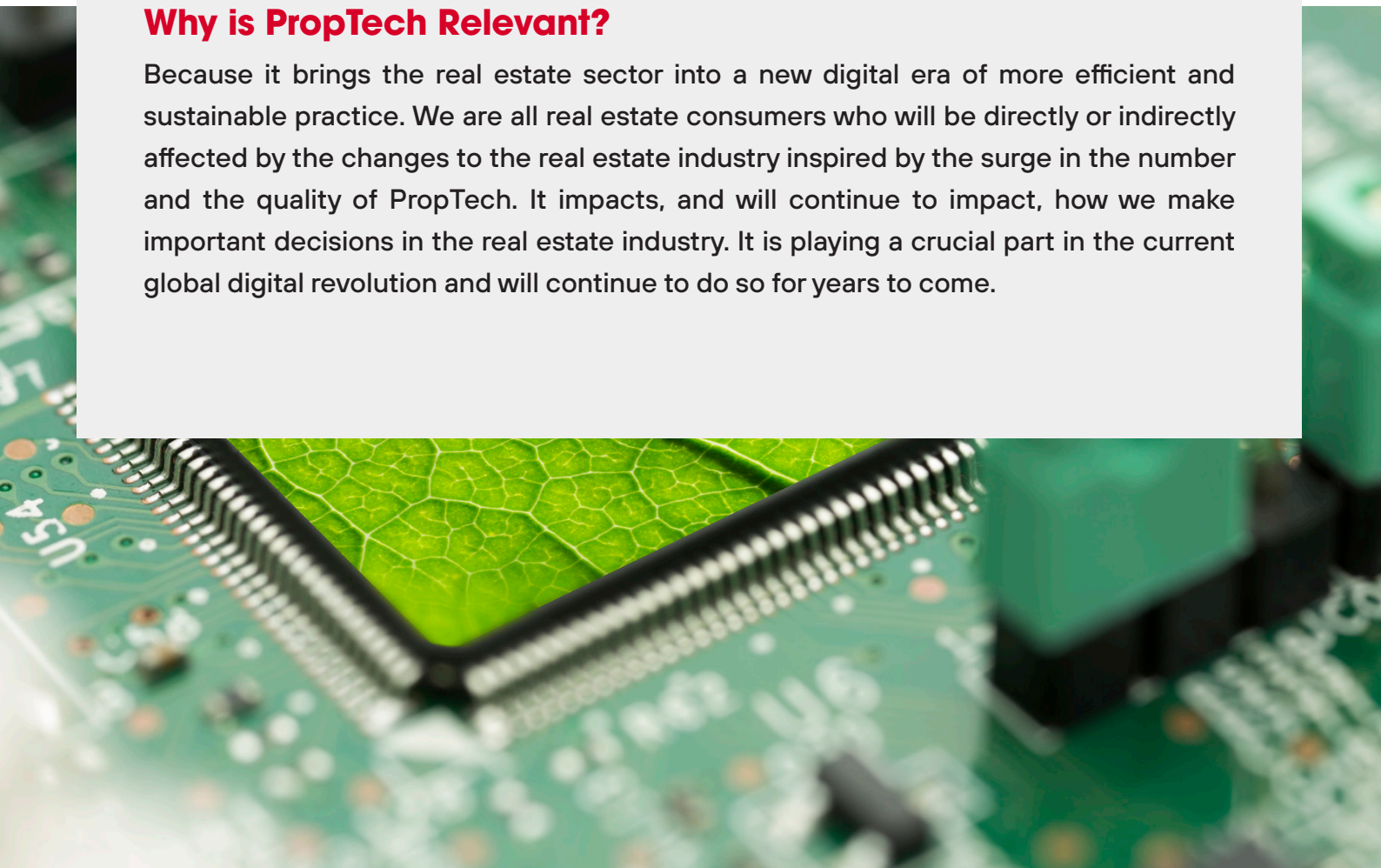
Chapter 1: Introduction to PropTech

What is PropTech?

PropTech (also called Real Estate Tech, Retech, Estech, or RealTech) is short for “property technology.” The term refers to the software, tools, platforms, apps, websites, and other digital solutions that real estate practitioners employ, from brokers and appraisers to architects and construction managers. It encompasses Contech (construction technology) and CREtech (commercial real estate technology) and overlaps with Fintech (financial technology). PropTech improves efficiency and facilitates Real Estate activities, including buying, selling, leasing, managing, appraising, financing, marketing, developing, designing, building, and investing.

Why is PropTech Relevant?

Because it brings the real estate sector into a new digital era of more efficient and sustainable practice. We are all real estate consumers who will be directly or indirectly affected by the changes to the real estate industry inspired by the surge in the number and the quality of PropTech. It impacts, and will continue to impact, how we make important decisions in the real estate industry. It is playing a crucial part in the current global digital revolution and will continue to do so for years to come.



Why Now?

The application of technology and innovation to real estate came late compared to all the other industries involved in the global digital revolution. The reason for this delay was the success and profitability of the old commission-based business model, added to the hyper-local nature of the industry and high real estate market regulation, which primarily involved private assets. Additionally, homebuyers were wary of using new and unaccustomed methods for what is likely to be the acquisition of their most valuable asset. Above all, the illiquidity of properties made it hard for the real estate market to keep up with the era of fast-paced liquid transactions online.

All the reasons mentioned above contributed to the resistance by the different stakeholders in the real estate market. Finally, the generational changes sparked by the digital revolution triggered the arrival of PropTech. With the modernization of the world around them, millennials require everything to operate quickly and efficiently, including the real estate market. Thus, the delay in innovation has led to an incredibly dynamic change in PropTech. As a result, this property technology is catching up with the other digital industries and taking over the investment world.

PropTech Opportunities

PropTech provides massive opportunities to make money through 3 primary means: accessibility of information, efficient transactions, and simplified management and control.



Information

The digitalization of data is facilitating access to mass market information quickly and cheaply. Thanks to advances in technology, the times of bulky physical data sheets are over. Instead, everything can be digitally recorded and retrieved online, from public records to office lease data, from market fluctuations to real-time boiler temperatures.



Transactions

People are becoming increasingly accustomed to using fast, secure, and straightforward platforms to get a mortgage, lease workspace, sign contracts, and sell houses, among other things.



Management and control

Mobiles phones and other technological devices are becoming more sophisticated and used as dashboards that allow easy management and control of everything.

PropTech Company Categories

In this study, all PropTech companies are classified into 12 different categories to better understand the wide range of PropTech company typologies and analyse their market performance.

INVESTING

The Investing category primarily comprises startups and companies that provide investment services to various stakeholders in the real estate sector. These services include identifying and evaluating multiple investment options and securing the funding for those investments.



Portfolio Management

These are tools that real estate investors employ to analyze real estate investment opportunities and make more well-informed decisions to maximize their expected return within an appropriate level of risk exposure and platforms to make such investments. E.g. Cadre, Fundrise, HouseCanary, LendInvest, Money360, PropertyPartner, Rootstock.



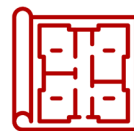
BUILDING

The Building category comprises companies and startups which provide construction management and indoor mapping services to interested parties in the real estate sector.



Construction Management

Includes cutting-edge technologies that aim to facilitate and improve planning, design, management, and construction of new buildings, such as construction visualization tools and management platforms for blueprints. E.g. BuildingConnected, EquipmentShare, Katterra, PlanGrid, ProCore.



Indoor Mapping

Software that helps and improves the visualization of a building and provides spatial data on a digital 2D or 3D map. It helps project and optimize buildings' future design and flow. Also, it enables users to create 3D and virtual reality models of real-world spaces that can be experienced, changed, and shared online. E.g. 3vjia, HOVER, Matterport, Modsy, NavVis.

PropTech Company Categories

MANAGING

The Managing category includes all the companies and startups that provide search-related services for rentals and sales of properties in the real estate sector.



Short-term rentals/ vacation search

Consumer tools that help arrange and offer short-term homestays and holiday rentals. These include platforms offering individuals real estate rental listings and the well-known traditional holiday rental search engines. E.g. Airbnb, ClearTrip, Expedia, HomeAway, HotelTonight, Tujia.



Long-term rentals/ Sale search

Companies that help arrange and offer long-term homestays and help consumers sell or purchase listed properties. These companies receive a commission for every transaction they facilitate. E.g. ApartmentList, Compass, Idealista, Opendoor, Quikr, VivaReal, Zillow.



Commercial Real Estate

Tools that allow individual clients and businesses to rent or buy commercial real estate. These range from traditional commercial real estate search engines to coworking space search engines that rent out coworking space to companies or individuals who can obtain leases by the hour, day, week, month, or year. E.g., The We Company (WeWork), Kr Space, breather, Industrious, Lmeet, Ucommune.



Real Estate Agent Tools

Tools that benefit real estate agents within the property industry in terms of speed, efficiency, quality, and technologies that automate their roles. These can include real estate specific CRMs, real estate agent review platforms, and marketing tools. E.g., HomeLight, ribbon, Yopa, Pacester, Opacity, Qualia.



Property Management

Technologies that help oversee, preserve, and enhance the management and the value of rental income-properties, such as tenant and payment management, as well as cutting-edge communication, design, and servicing tools. E.g., ResMan, BuildingEngines, Buildium, Cozy, Appfolio, Hostmaker.

PropTech Company Categories

LIVING

The Living category is a large one because it includes all companies and startups providing services that help tenants, owners, and property managers with numerous aspects of improving the quality of life. These services range from facility management, including insurance and personal home services to the internet of things (IoT).



Facility Management

These tools employ proprietary energy intelligence software and energy-efficient technology to measure, control, and optimize energy usage and efficiency. They reduce energy costs and the carbon footprint of several property types. E.g. Aquicore, Budderfly, Entouch, SMSAssist, Verdigris.



Life, Home, P&C Insurance

Includes PropTech companies that offer homeowners and tenants life, home, and property insurance, some of which are powered by artificial intelligence and behavioral economics. E.g. Jetty, Kin, Lemonade, Microensure, Neos, TheGuarantors.



Home services

Refers to platforms and technologies that help homeowners manage and maintain their homes, as well as complete renovations by connecting them with quality home improvement professionals. E.g. Clutter, Handy, Houzz, Porch, ServiceTitan, Thumbtack.



IoT Home

The Internet of Things (IoT) are devices specialized in providing solutions and improving management in the home, such as home security, home automation, and energy management. E.g. Eero, EightSleep, KeyMe, Netatmo, Trado, View.

Chapter 2: Recent Developments in the PropTech Market

4

CATEGORIES

2,045

COMPANIES

1,809

INVESTORS

66

COUNTRIES

\$12.05

BILLION

RAISED (2020-2021)

Overview

This first chapter focuses on the recent developments in the PropTech market over the past fiscal year. The period goes from July 1, 2020, to June 30, 2021. During the last year, there were a total of 2,045 companies operating in the global PropTech sector. These companies are classified into four categories: "Investing", "Building", "Managing", and "Living".

With regards to investments over the last year, we saw a total of \$12.05 Billion invested in the PropTech sector, and the total number of investors reached 1,809. The adoption of PropTech has spread further across the world to a total of 66 countries.

With the advances in technologies and the ever-changing nature of the global economy, the PropTech industry has experienced some restructuring in terms of mergers and acquisitions. Therefore, in this chapter we highlight the specific trends in the activity of mergers and acquisitions and identify the top-performing PropTech companies, investors, categories, and geographic markets.



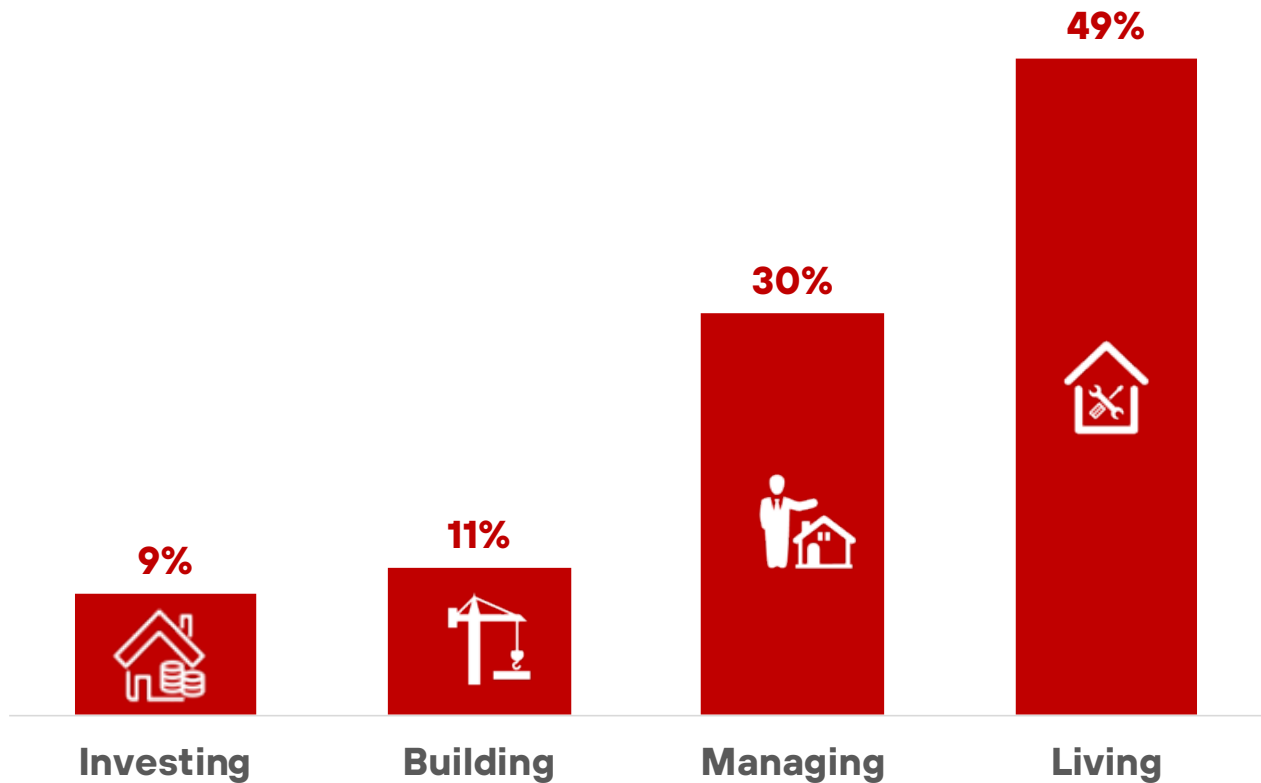
“ Real estate is a great industry to be in at the moment, especially on the PropTech side because there is a lot of funding and companies being created. I believe the industry will change considering there is so much work to do and many RD possibilities in the field. I think it is very exciting and interesting on both sides, on the start-up side but also on the big corporate side. ”

Gilles Bourcy,
Cofounder of Homepilot

Quote from an interview at ESCP
PropTech Leader's Insights

Industry Trends

Figure 1: Acquisitions by Category (2020-2021)

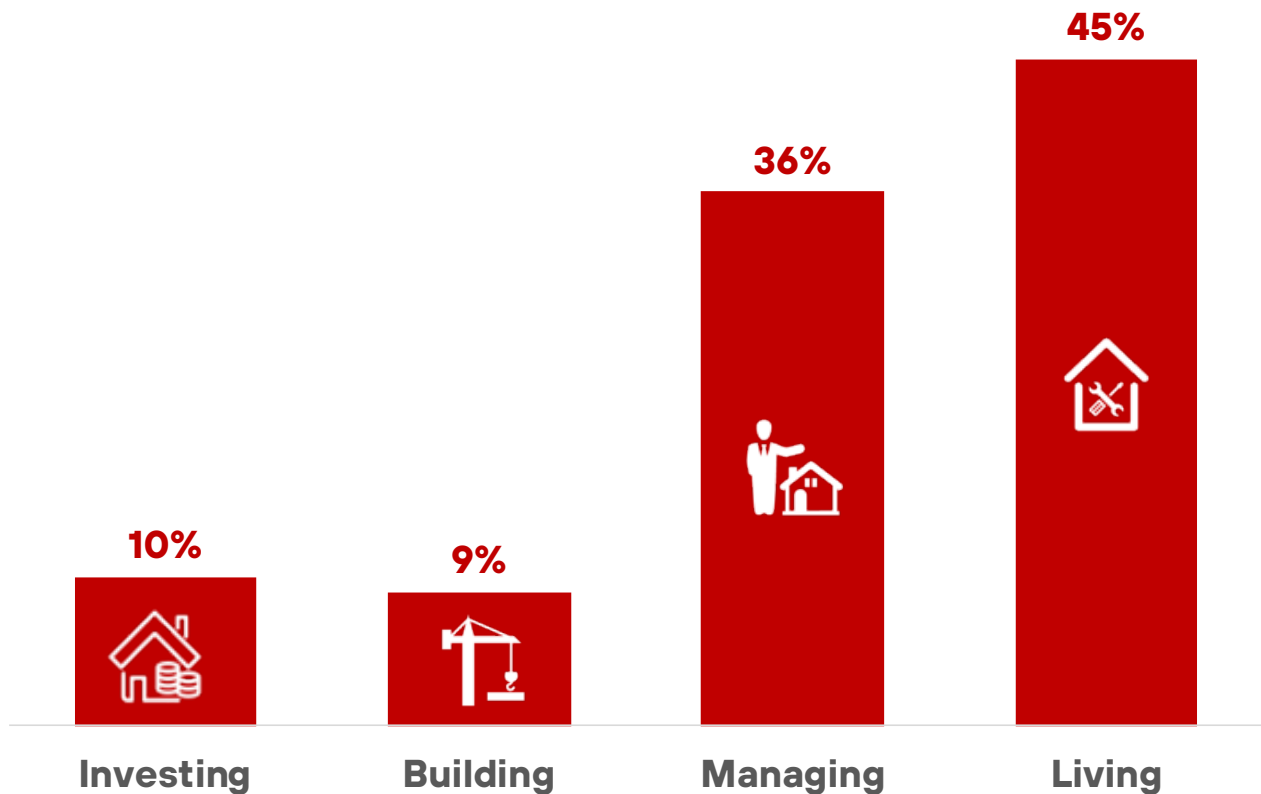


The ranking of our four PropTech categories in terms of percentage of company acquisitions documented in our database is the following: “Living” at the top with 49% of all company acquisitions, followed by “Managing” with 30%, “Building” represents 11%, and lastly “Investing”, with 9% of all acquisitions (see [Figure 1](#)).

Compared to the previous fiscal year, the ranking of categories in PropTech acquisitions remains the same (see our 2020 PropTech Barometer). However, we noticed an even more significant disparity between the biggest category (“Living”) and the smallest category (“Investing”). As shown in [Figure 1](#), the “Living” category is almost one half of all acquisitions. Conversely, the relative proportions of «Investing» and «Living» PropTech firms have not significantly changed, and the «Managing» category has decreased by 6%.

As might be expected, the “Living” category is at the top of all company acquisitions since it is the largest category of all. Additionally, its increasing role in advancing sustainability throughout the real estate industry is prioritizing sustainable development and operational practices that can help to achieve a more environmentally and socially conscious society.

Figure 2: Mergers and Acquisitions by Category (2003-2021)



According to **Figure 2**, “Living” is the dominant category in terms of the number of acquisitions of PropTech companies for the period of 2003 to 2021. It accounts for 45% of all company acquisitions, representing four times the proportion of company acquisitions for the “Investing” and “Building” categories. The “Managing” category accounts for more than one third of all company acquisitions, making it the second most popular category.

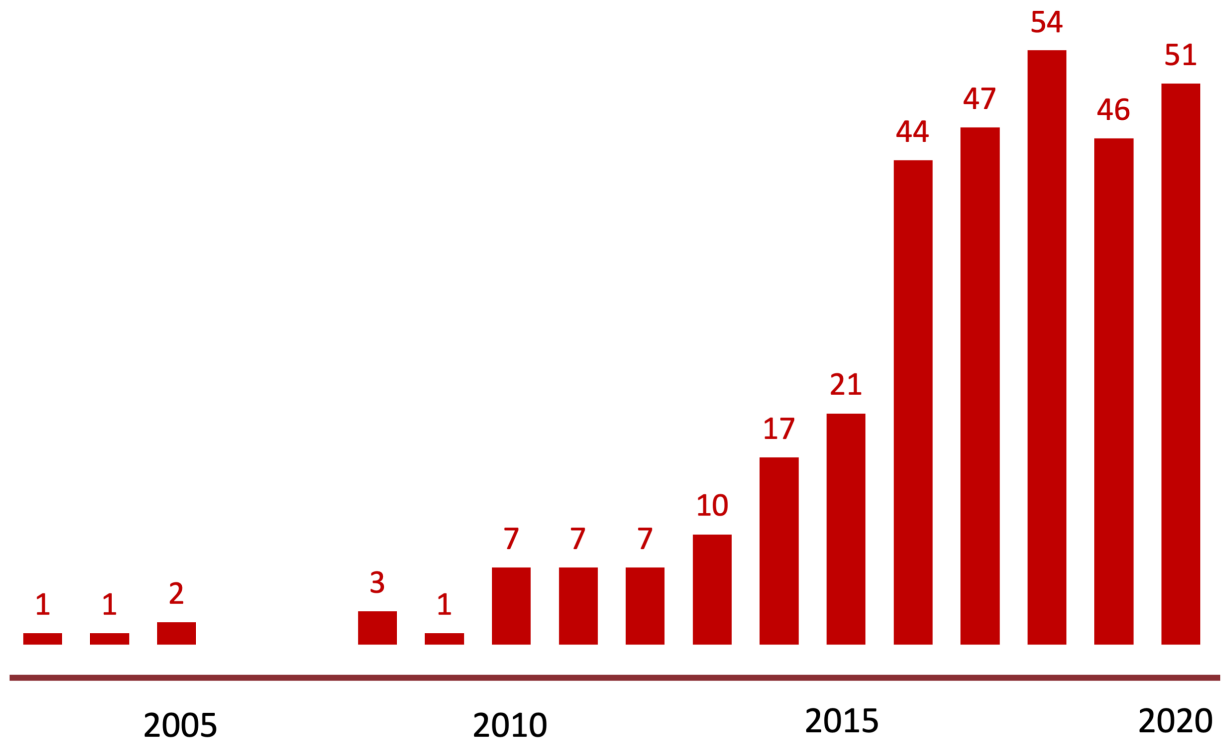


“ There is a lot of money now in the real estate market – incredibly, every venture capitalist is raising too much money. There is probably a bubble and the question is: when and how will it reduce? As an entrepreneur, it is your job to understand it and leverage the moment. Additionally, a lot of money means a lot of competition between venture capitalists and, as an entrepreneur, you have a lot of power to get the best VC competing to join your company and to create the best conditions. **”**

Raphaël Vullierme
CEO & Co-founder Luko

Quote from an interview at ESCP
PropTech Leader’s Insights

Figure 3: Mergers and Acquisitions over time (2003-2021)



Over the last two decades, the number of PropTech company mergers and acquisitions (M&A) was relatively low. It was not until 2010 that we started seeing an average of 3-4 firms acquired each year. There was a significant peak in M&A between 2013 and 2014 (17 firms acquired). Still, the most significant growth of PropTech M&A happened during the last five years, with an average of 48 PropTech firms acquired every year. The peak was in 2018, with a total number of 54 acquisitions.

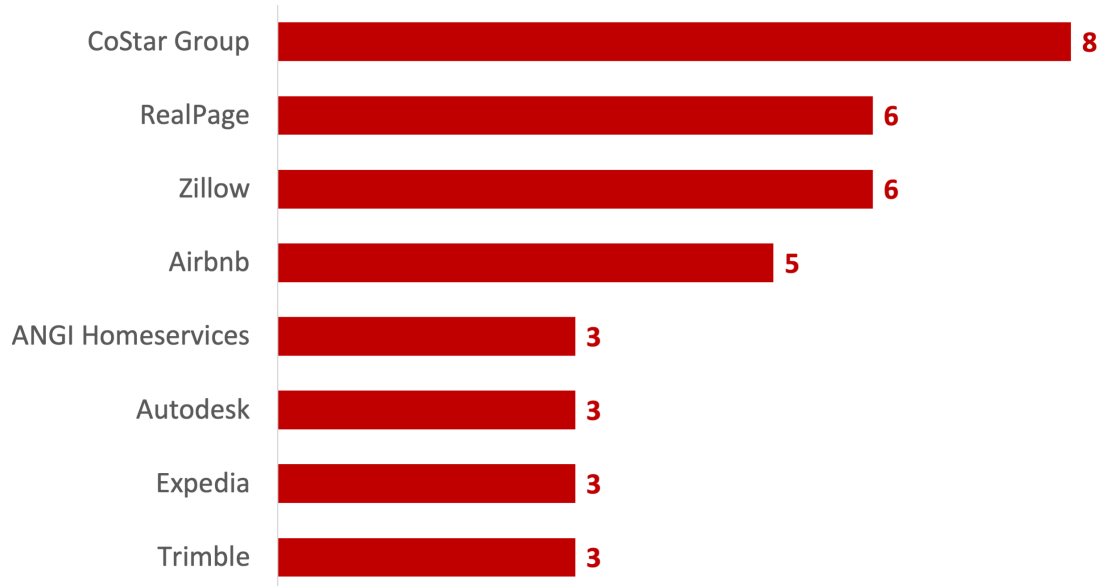


“ The real estate market cannot be disrupted overnight. It takes time and it is not a simple play but rather a complex play. ”

Giorgio Tinacci
Founder & CEO Casavo

Quote from an interview at ESCP
PropTech Leader's Insights

Figure 4: Top 10 Acquiring Companies (2003-2021)



As shown in **Figure 4**, CoStar Group is the leading acquiring company with eight other PropTech companies during the period from 2003 to 2021. RealPage and Zillow have each acquired six other firms, followed by Airbnb with five acquisitions.

CoStar Group, founded in 1987, was the first company to offer real estate firms comprehensive, objective, and reliable information. Their clients represent the largest community of CRE (corporate real estate) dealmakers, and it is considered the leading provider of commercial real estate information, analytics, and online marketplaces.



Today, CoStar Group is behind some of the most well-known brands in the commercial real estate industry, including CoStar, the largest provider of CRE research and real-time data; LoopNet, the most heavily trafficked mobile and online real estate marketplace; Apartments.com, the premier rental home resource for renters, property managers and owners; and STR, the leading provider of performance benchmarking and comparative analytics to the hotel industry.



Instant Buyer

Instant Buyer, also known as iBuyer, is a new market category that aims to provide a faster cash offer on a property than traditional real estate brokers using computer-generated analysis of market data, the information supplied by sellers, and in some cases input from local real estate agents. This property Instant Buying model is changing the paradigm and removing one step from the process which is the one of finding a buyer. Casavo, a leading Italian PropTech company, brought this new market category into the European real estate industry.



An asset class such as residential real estate will go through a dramatic change similar to what happened to financial asset classes years ago. In a very long term, thanks to technology and the evolution of capital markets an asset class such as residential real estate could move from a commission-based brokerage model to a discount-based trading model where you are just selling and buying from a platform.



Giorgio Tinacci
Founder & CEO Casavo

Quote from an interview at ESCP
PropTech Leader's Insights

Investment

Figure 5: PropTech Investment over Time (2010-2021) in USD billion

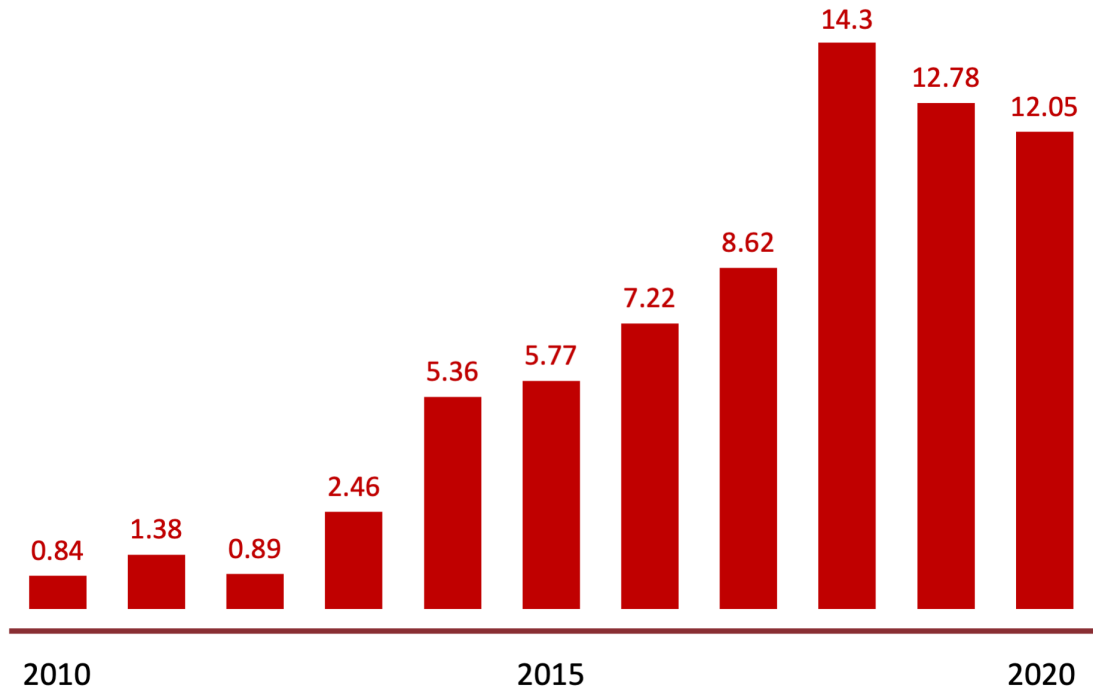


Figure 5 shows a smooth increase of investments in the PropTech sector between the fiscal years 2010 and 2020. There is an upward trend consistent for most of the years, reaching its peak at \$14.3 billion in the fiscal year 2018. This increase of investments from 2017 to 2018 represents a 66% growth (\$5.68 billion in US Dollar terms). It was not until 2019 when the PropTech sector experienced a decline in investment although the investment amount remained above a healthy \$12 billion, an amount 40% higher than its 2017 counterpart.

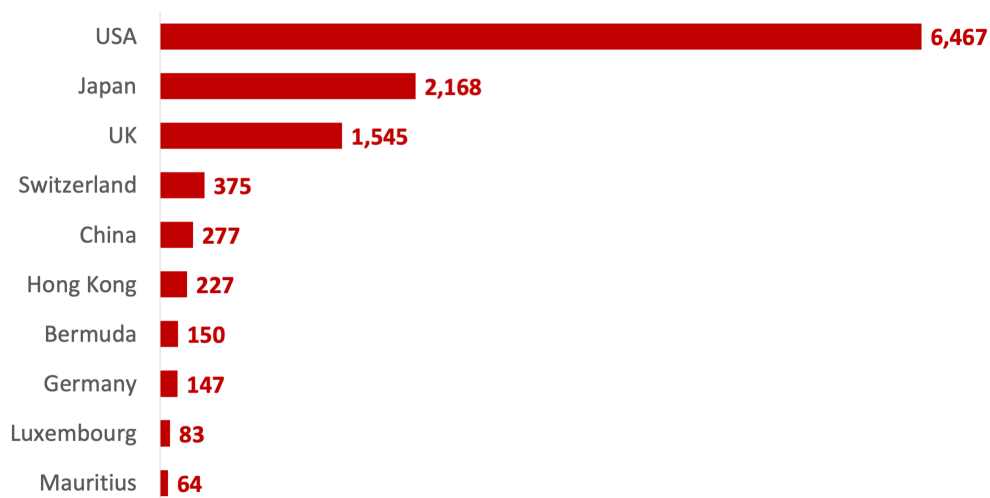


I think this is a great time to start a company. It has never been easier to have access to technology and to get funding. Interest rates are incredibly low, there is a lot of capital in the market and people are very willing to take risks today



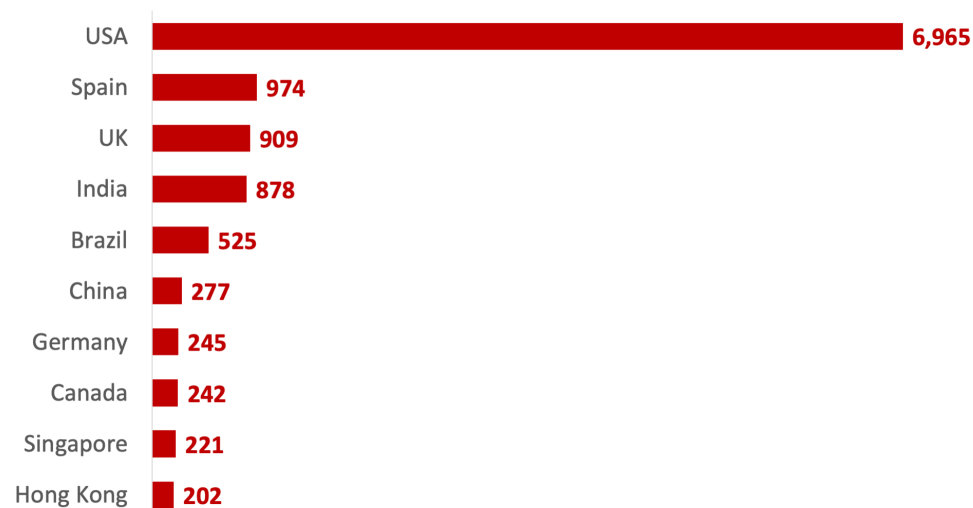
Gilles Bourcy
Cofounder of Homepilot

Quote from an interview at ESCP
PropTech Leader's Insights

Figure 6 : Top 10 investment origin countries (investment in USD million, 2020-2021)

When it comes to the origin of investment funds raised between 2020-2021, unsurprisingly, the USA is at the top with a huge gap compared to any other country (Figure 6). The USA maintains a strong dominance, raising more than \$6.4 billion during the last fiscal year. Japan (JPN) holds second position with more than \$2.1 billion, followed by Great Britain with over \$1.5 billion in investment funds raised.

Thanks to these investments and VC funding coming forward to support entrepreneurial PropTech companies, the real estate sector is becoming more efficient and sustainable.

Figure 7: Top 10 Investment Destination Countries (2020-2021)

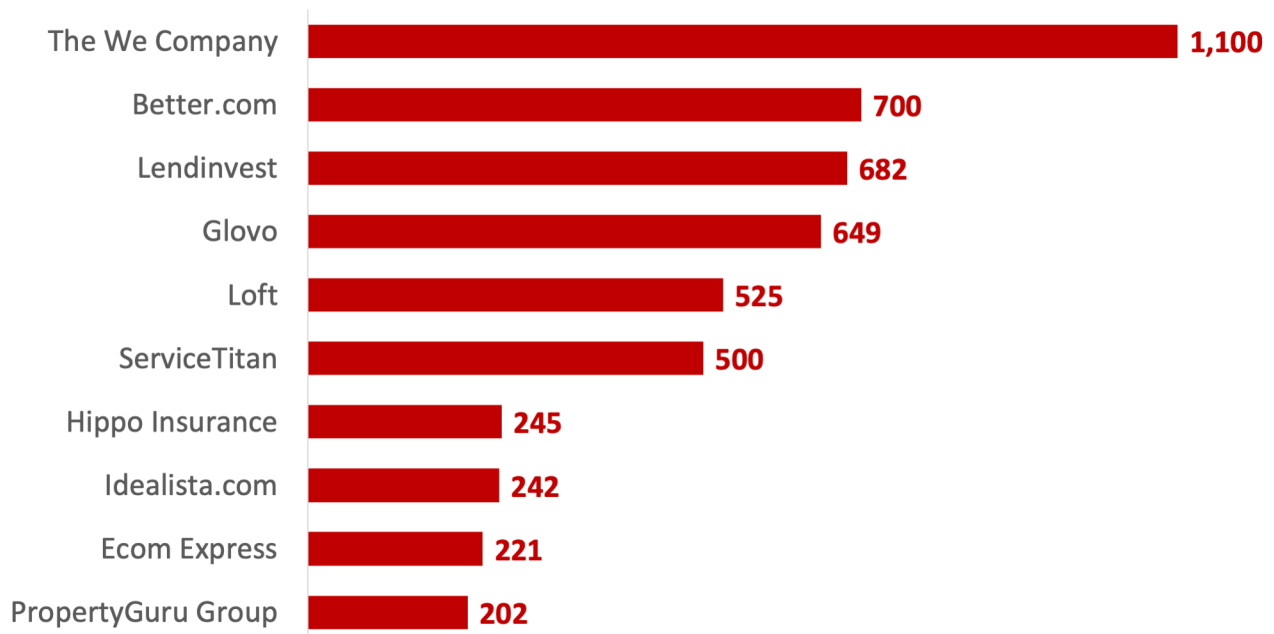
Regarding the PropTech investment funds destinations, as shown in Figure 7, the USA ranks as the top destination country with almost \$7 billion. Besides being the global leader in raising investment funds, the USA is also the top destination country for attracting foreign investment in the PropTech sector.

All other countries shown in the figure raised less than \$1 billion, with Japan (JPN) surprisingly absent from the figure, indicating that most of the investment funds raised were invested in companies outside Japan. The same is true of Switzerland (CHE), Bermuda (BMU), Mauritius (MUS), and Luxemburg (LUX); in fact, all of these countries are net exporters of PropTech investment funds.

Spain (ESP) ranks as the second top world PropTech investment destination, followed by Great Britain (GBR), India (IND), and Brazil (BRA). Finally, China (CHN) appears as the only country raising and investing all its PropTech funds domestically (\$277 million) with no foreign investment received.

The United States is considered an attractive country for investment due to its strong and well-developed financial services sector. This transforms the US into an established center for innovative tech companies and startups, allowing synergies in the real estate market to happen.

Figure 8: Top 10 Companies receiving investment (2020-2021) in USD billion



The We Company was the top company receiving PropTech investment funds in the fiscal year ending in June 2021 (Figure 8). It attracted more than \$1 Billion in US dollars in investment funds.

Additionally, three other USA-based PropTech firms, better.com (\$700 million in US dollars), Service Titan (\$500 million in US dollars), and Hippo Insurance (\$500 million in US dollars), also ranked in the top ten companies receiving investment. LendInvest, a UK-based company, claims third spot with almost \$700 million in US dollars in investment funds attracted. Also, two Spanish firms, Glovo and Idealista, made it into the top 10, successfully attracting \$649 million in US dollars and \$304 million in US dollars of investment funds, respectively.



“ The future of workspace. ”



“ A simpler way to buy or refinance your home. ”



“ The UK's leading platform for property finance ”



“ Glovo is the app that allows you to get your city's best products in a few minutes ”



“ The world's leading all-in-one software for commercial and residential HVAC, plumbing, electrical, and other field service businesses. ”



“ More Than Home Insurance: Home Wellness. ”

Case Study:

How has WeWork (The We Company) Impacted the Office Market ?¹

WeWork was a disruptor and key catalyst to the evolution of coworking. It has made functional (but old-fashioned) office space obsolete and has supported the growth of the new coworking sector. Coworking spaces are offices where knowledge workers can work independently or as part of a community; "working-alone-but-together", the perfect solution for young freelancers. **It is estimated that in 2020 half of the US workforce will be freelance in some capacity and that 50% will be fully independent workers by 2030.**

Technology and digitalization of work have allowed people to work anywhere with the internet and a phone. It is likely many will not find traditional office cubicles as comfortable as their parents did. Furthermore, the marked cultural shift in consumer preferences from private ownership (legal possession) to on-demand services has encouraged the growth of coworking, Pay-per-use, and space as a service ("SaaS") companies.

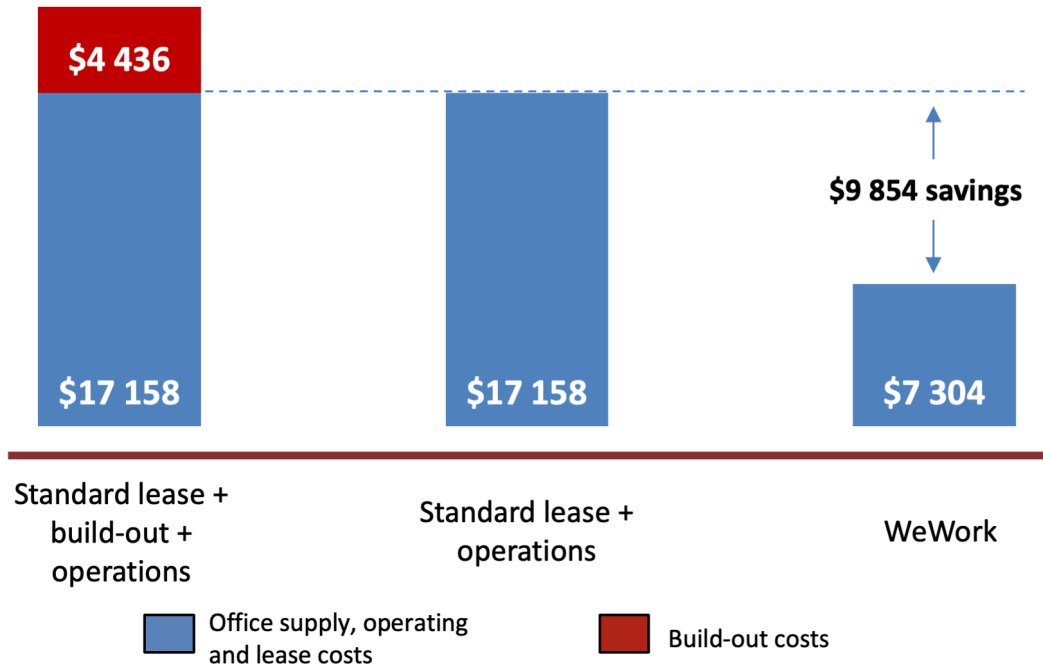
WeWork was founded in New York in 2010 based on a business model that included flexible spaces with amenities, services, and a sense of community. It used private backing to fund an aggressive expansion strategy, opening locations in all major US cities. This disrupting idea attracted venture capital for further expansionary plans and exponential growth.

The implied post-money valuation was \$97 Million at the time of Series A financing. This valuation grew significantly after each successive round of funding. By Series G1, the valuation had grown to over \$48 Billion.

Its business model is based on four key pillars: rent arbitrage, increased density, branding, and network of locations. However, it is exposed to the risk that the short-term fees aren't sufficient to cover its obligations and faces the risk of having leases as leverage, and in the event of a recession, rents fall below the break-even point, suffering significant losses.

¹ In collaboration with Simon Harry Blaxland Ferre, as part of the ESCP-Monaco Real Estate Technology Innovation research program. The investigation of the rise (and fall) of the company on the office market through analysis of 14 interviews with real estate professionals representing a variety of stakeholder groups.

Figure 9: Difference in cost per employee with respect to standard leases



WeWork makes up for the lack of private space per employee by ensuring that members have access to a large set of different and well-designed common areas, such as conference rooms, break areas and communal working areas, and telephone booths. By centralising these often-underutilised spaces, the efficiency of the building is maximised without sacrificing too much comfort (Figure 9).

Figure 10: Main advantages coworking offers tenants (unprompted)

Advantage	Frequency	Proportion
Flexibility	14	100%
Convenience	8	57%
Community / Network	4	29%
Environment	3	21%
Brand / Image	2	14%

WeWork had a very meaningful impact on the office market; it took the serviced office industry to a higher level in terms of member experience, social acceptability, and public awareness. Business drivers and technological changes are creating a demand for flexibility and convenience while psychological drivers are creating a need for community (Figure 10).

Figure 11: Attitude towards a coworking/flexible space operator as a major tenant

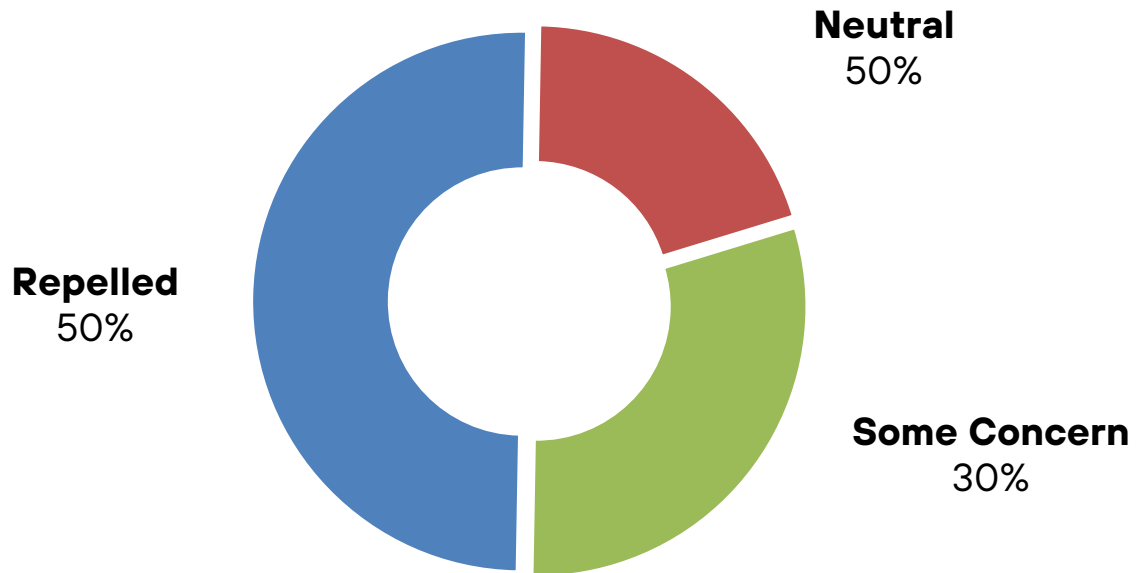


Figure 11 shows the heterogeneity of the coworking industry and the number of factors considered by real estate investors. The intrinsic duration gap, leading to an economically flawed business model and higher risk during downturns, was enough to repel some respondents (some investors reportedly reject deals where coworking tenants represent over 35% of the rent-roll). Others would flag an added risk but still pursue an acquisition through analysis of the operator itself.

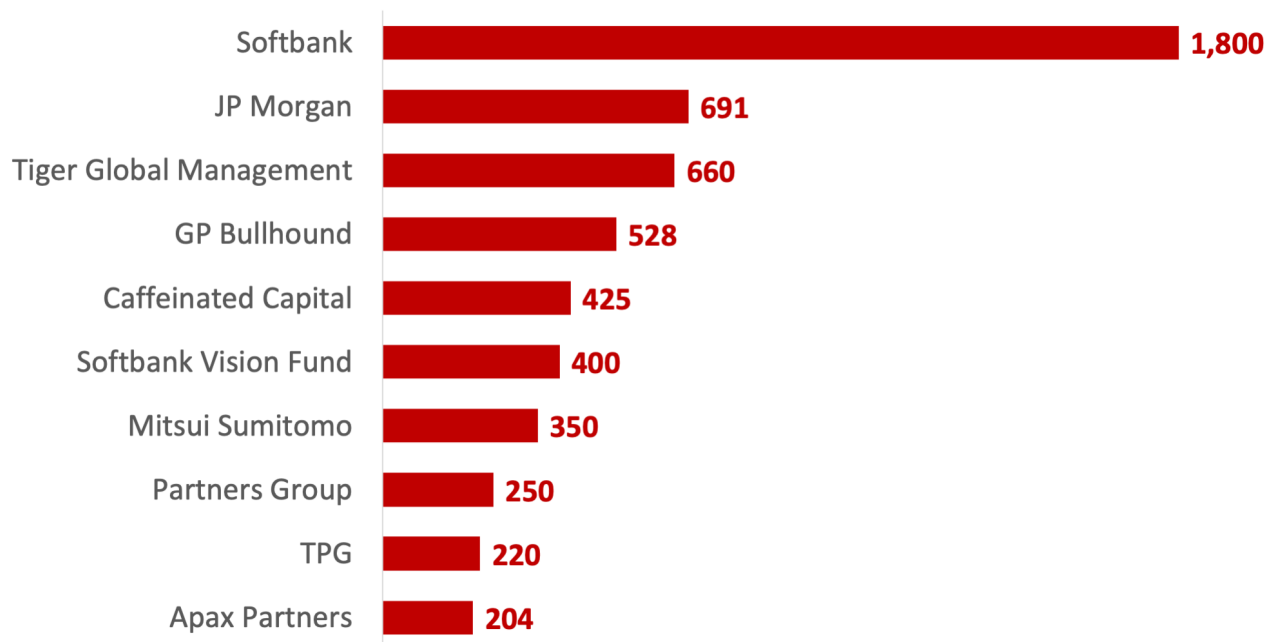
WeWork's meltdown was ignited in August 2019 after the publication of the mandatory S-1 file which revealed less profitability than expected, even excluding costs of the rapid expansion, marketing, and corporate overheads.

Its dramatic fall and canceled IPO were some of the most dramatic financial events of 2019.

WeWork's private market valuation was cut from c. \$47bn down to c. \$8bn, raising doubts about how genuine the progress really was. Clearly, the market is learning from previous mistakes and new hybrid business models have appeared.

While one hopes WeWork's catastrophic devaluation will calm VC fund managers and re-align investment banks' interests, the negative impact of the IPO on the broader coworking space is broadly expected to be short-term.

Actually, as reported in this 2021 barometer, we work was the most attractive PropTech company in the world for investors, raising more than \$1 Billion in US dollars during the fiscal year ending in June 2021.

Figure 12: Top 10 Investors (2020-2021) in USD billion

When it comes to the top ten investors in the fiscal year ending June 2021, Softbank leads the list having invested more than \$1.8 Billion in US dollars, representing four times more than the average amount invested by the remaining top investors. JP Morgan, Tiger Global Management, and GP Bullhound invested more than \$500 million in US dollars each (Figure 12).

SoftBank was founded in 1981 as a telecommunications company. Today it is the seventh-largest company in Japan and took over different areas including domestic telecommunications, Sprint, Yahoo Japan, e-commerce, finance, broadband, marketing, and more. The company has a portfolio including SoftBank BB, GungHo Online Entertainment, IDC Frontier, and more.

SoftBank invests in startups with interests in everything from robotics to satellites, artificial intelligence to computerized enhancements for human bodies. During the last few years, the company has accomplished an aggressive investment campaign, acquiring multiple startups and investing in others.

Figure 13: Investment by Category (2020-2021) in USD billion

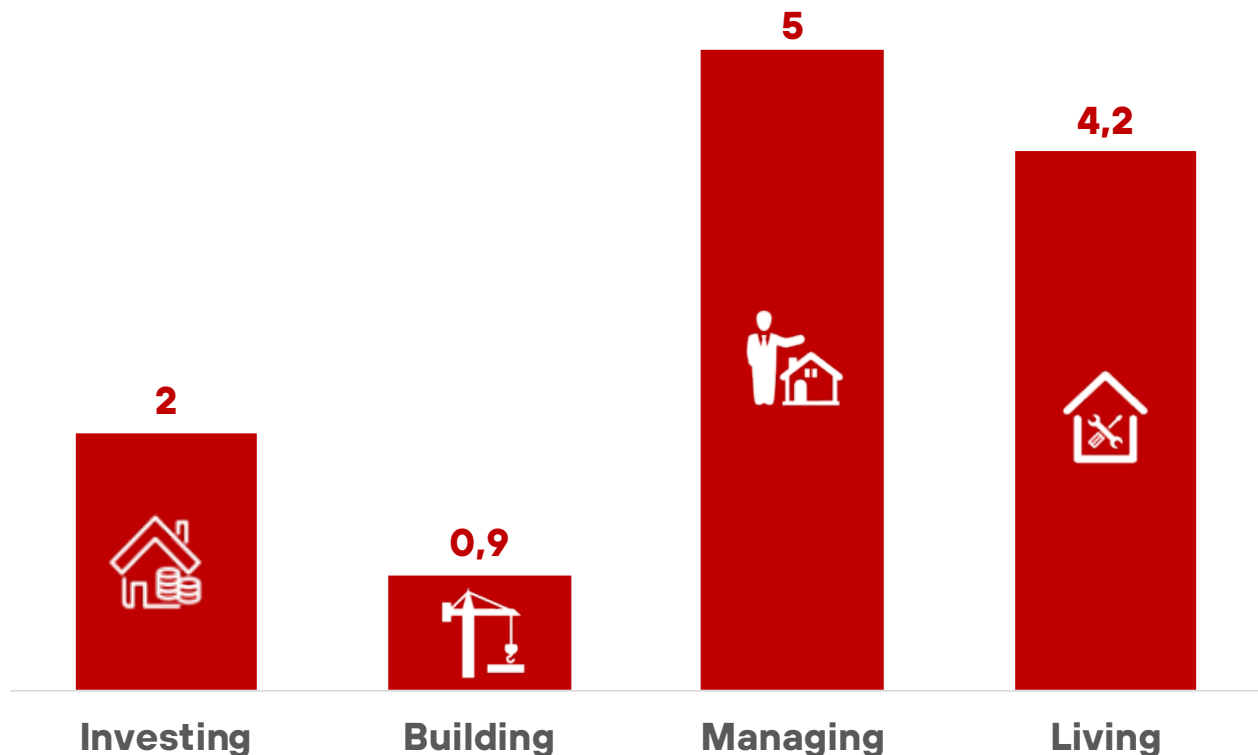


Figure 13 shows how in the fiscal year ending 2021, the "Managing" and "Living" category firms raised about \$9.2 Billion in US dollars (76%) of the PropTech investment funds, while the "Investing" and "Building" category firms raised \$2.9 Billion in US dollars (24%). These amounts put into context the relative demand for services provided by "Managing" and "Living" firms compared to "Investing" and "Building" firms.



“ The pandemic has been a great accelerator; it exposed the shortcomings of the real estate industry, it humbled a lot of its large players, and it effectively made technology the savior of the industry. Today governments are implementing regulations regarding climate change, and the only way to become compliant is to integrate technology into our operations. Capital markets are a lot more demanding; your cost of funding and the interest of equity investors will change. The real estate industry is becoming consumer-centric as opposed to being landlord-centric

”

Gregory Dewerpe
Founder of A/O PropTech

Quote from an interview at ESCP
PropTech Leader's Insights

Chapter 3 : The Global PropTech Industry

4

CATEGORIES

2,045

COMPANIES

1,809

INVESTORS

66

COUNTRIES

\$74.2

BILLION
RAISED (1999-2021)

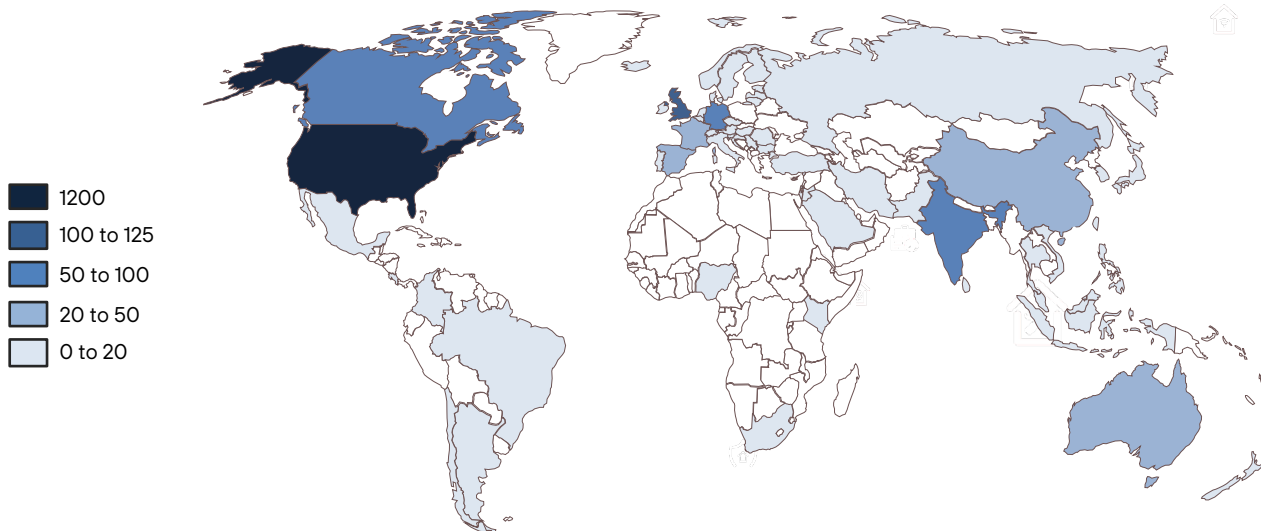
Overview

This chapter covers the historical trends and distribution of PropTech companies and their investment. It also identifies the top performing companies, investors and countries historically. At the end of the fiscal year June 2021, 2,045 companies operated in the PropTech sector across 66 countries. The total investment these companies attracted during the period starting in 1999 to 2021, was approximately \$17.2 Billion made by 1,809 investors.

These investors are private equity funds, venture capitals, and many other institutional, state, and individual investors. The type of funding also varied from series financing, to angel investment and loans. This chapter also highlights the spatial patterns, time series trends, and cumulative distributions of key variables that summarize the PropTech industry.

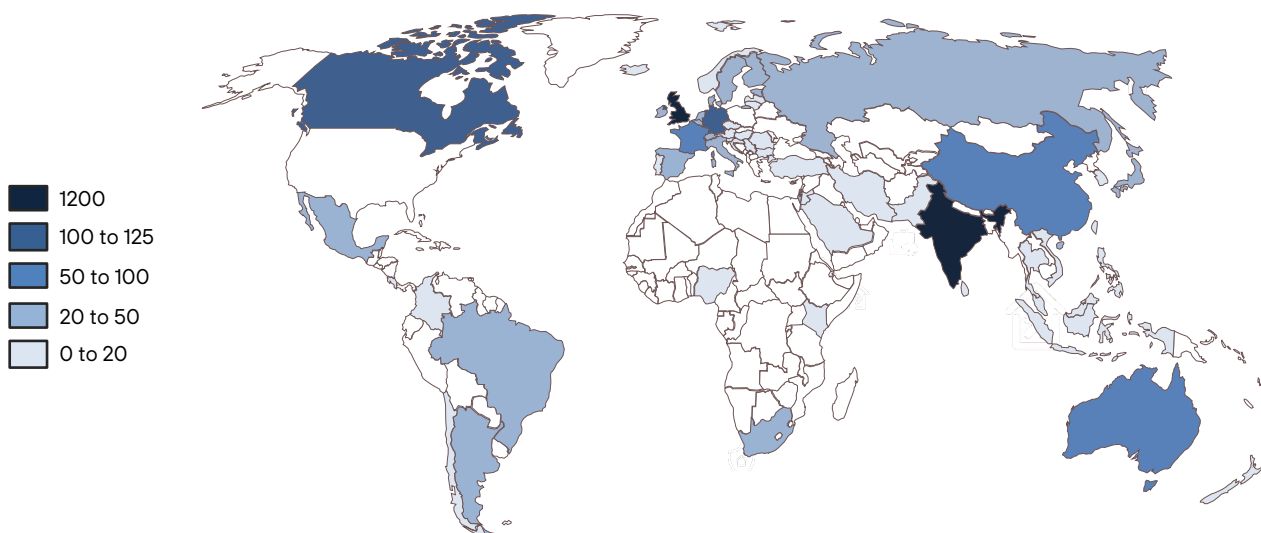
Industry Trends

Figure 14: Global Distribution of PropTech Companies



According to **Figure 14**, which shows the global distribution of PropTech companies, the United States is leading the change with most companies. The gap to the rest of the world is significant.

Figure 15: Global Distribution of PropTech companies excluding USA



This is why **Figure 15** shows a distribution of all countries except the United States. In Figure 15, we can see India, the UK, Canada, and Germany ranking as the most prominent active markets, followed by China, Australia, and France.

Even though member countries of the European Union are present on this list, individual EU states have not become as significant for real estate tech investment as the US and UK.



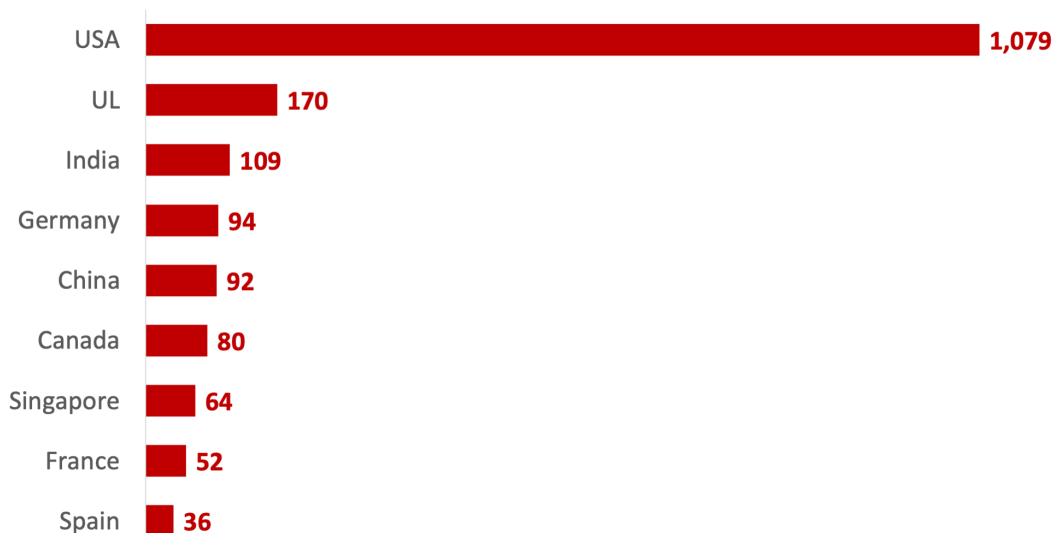
“ Technology is healing the world. The changes we have seen in the last 10-20 years will be even more noticeable in the next five years. These are the early stages of an exponential explosion in how technology is enabling the world. We are evolving from a type of traditional industry where everything was vertically integrated and centralized to a horizontally distributed and decentralized world ”

Gregory Dewerpe
Founder of A/O PropTech

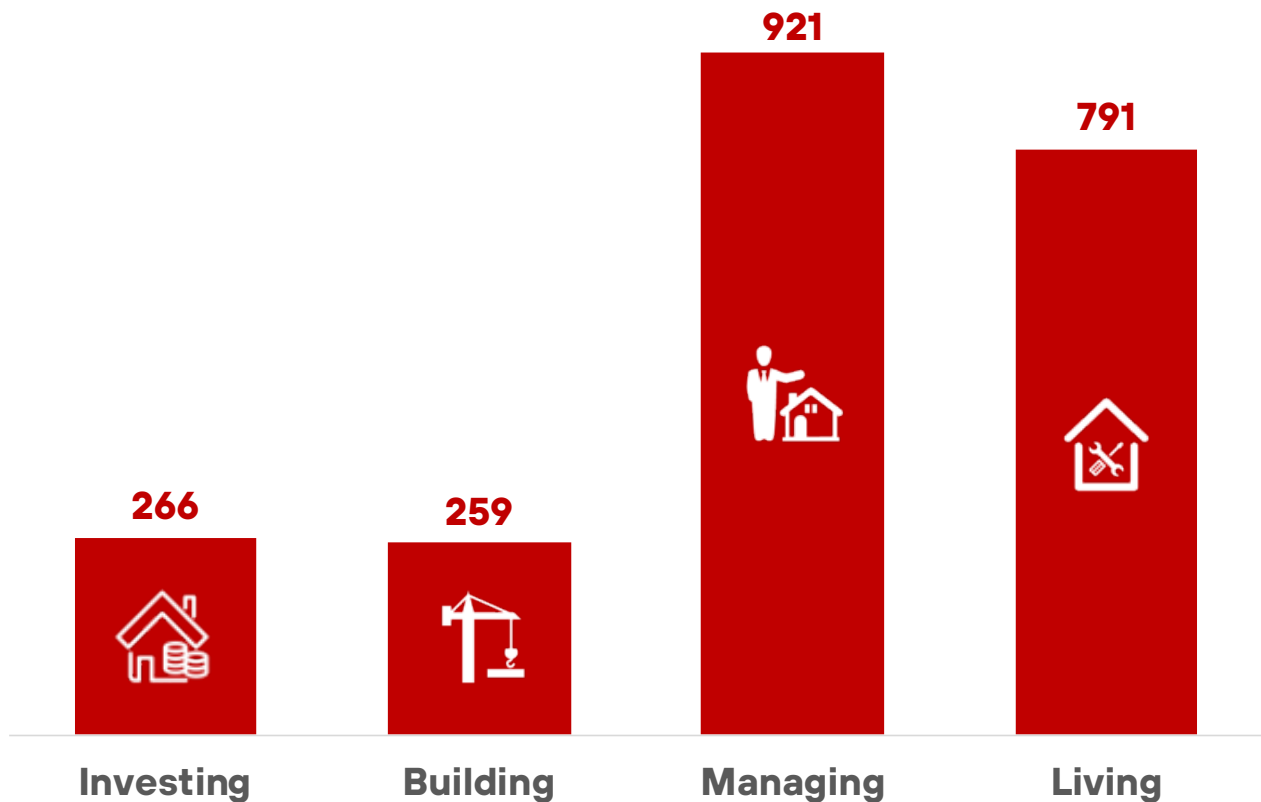
Quote from an interview at ESCP
PropTech Leader's Insights

As home to the largest PropTech sector in the world, it is not surprising that the United States also leads the number of investors. Great Britain and India follow in this ranking. India and China are the countries with the most interest from investors in Asia, the vast majority of which are domestic. Lately, Singapore has been attracting significant interest from investors.

Figure 16 : Total number of investors in top countries



India is the highest-ranked country outside of the established and developed markets of North America and Europe in the PropTech sector. It is relevant to highlight that homeownership has increased in India over the last few years due to a growing population with increased social mobility. India-based real estate tech companies should benefit from a flourishing home market in years to come (Figure 16).

Figure 17: Total Number of Investors by Category

Regarding the total number of investors by category, as shown in **Figure 17**, both the “Living” and “Managing” categories are at least three times more attractive as measured by the total number of investors. This outcome is because each of these two categories – “Living” and “Managing” - attracts more than 750 investors worldwide. The other two categories – “Investing” and “Building”- are not considered unpopular but only attract about 250 investors each.

Figure 18: Investment Received by Company Category and Company

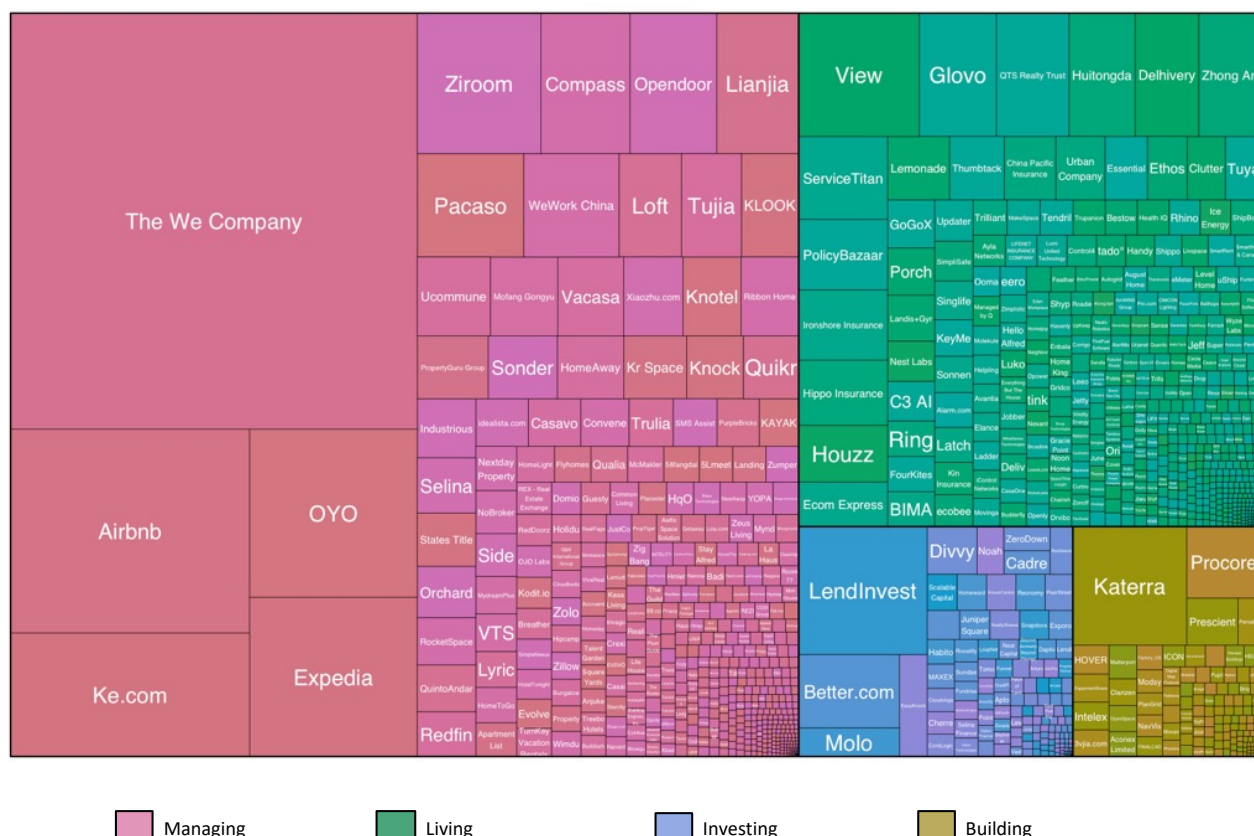


Figure 18 shows the relative share of investments received in each PropTech category and, within each category, the relative share of each company. While many companies are operating in each PropTech category, only a handful of companies dominate. This concentration of market power is very pronounced in categories with smaller overall shares. “Building” and “Investing” have no more than 3-4 major market players. The “Investing” category is dominated by LendInvest, Better.com, Molo, and Easyknock. Similarly, Katerra, Procore, and Prescient dominate the “Building” category.

The “Living” category appears to have the most negligible market concentration—the top 12 companies do not exceed 50% in combined market share. The largest category, “Managing,” has the top five companies making up around 50% of the market share.



“ For more than 12 years we’ve been making it our mission to make property finance simple. As a result, technology underpins everything we do. We have built an asset management platform designed to make the process of getting a mortgage simpler: reducing the form-filling, increasing the speed to get a ‘yes’, and creating a better customer experience for our borrowers, intermediaries, and investors. ”

Figure 19 : PropTech Investment over time (1999-2021)

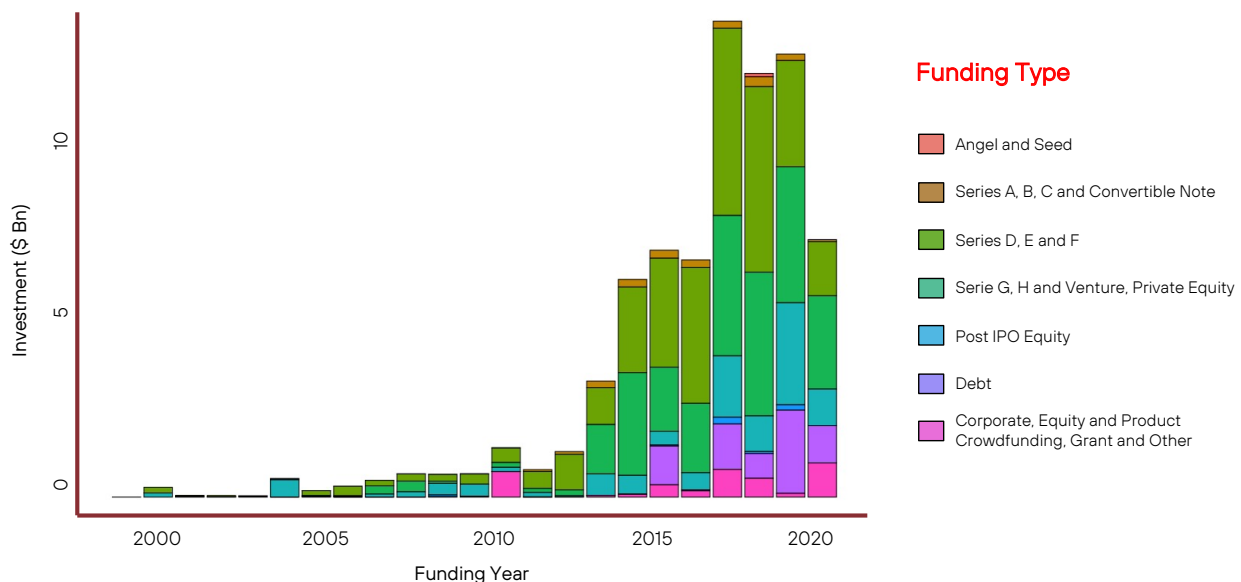


Figure 19 shows the investment in PropTech companies over time and across different types of investment. As for the trend in total investment, it is clear that it started to pick up in the year 2014 and again in 2018. Even despite the Covid-19 pandemic, the year 2020 saw high levels of investment in the PropTech industry. The investment composition is primarily of junior and senior-level series funding for startups, but there is also some alternative financing including debt, crowdfunding, and grants, especially in the past 5 years. In fact, the proportion of these alternatives has been increasing over the years.

The PropTech industry has been growing at a rapid pace since the fiscal year 2014, and lots of companies emerge daily. Even though this niche is relatively new, there are already so many technology market leaders that provide cutting-edge and advanced technology solutions to the real estate market around the world.

² About. LendInvest. (n.d.). <https://www.lendinvest.com/about/>.

Figure 20: PropTech investment by company age

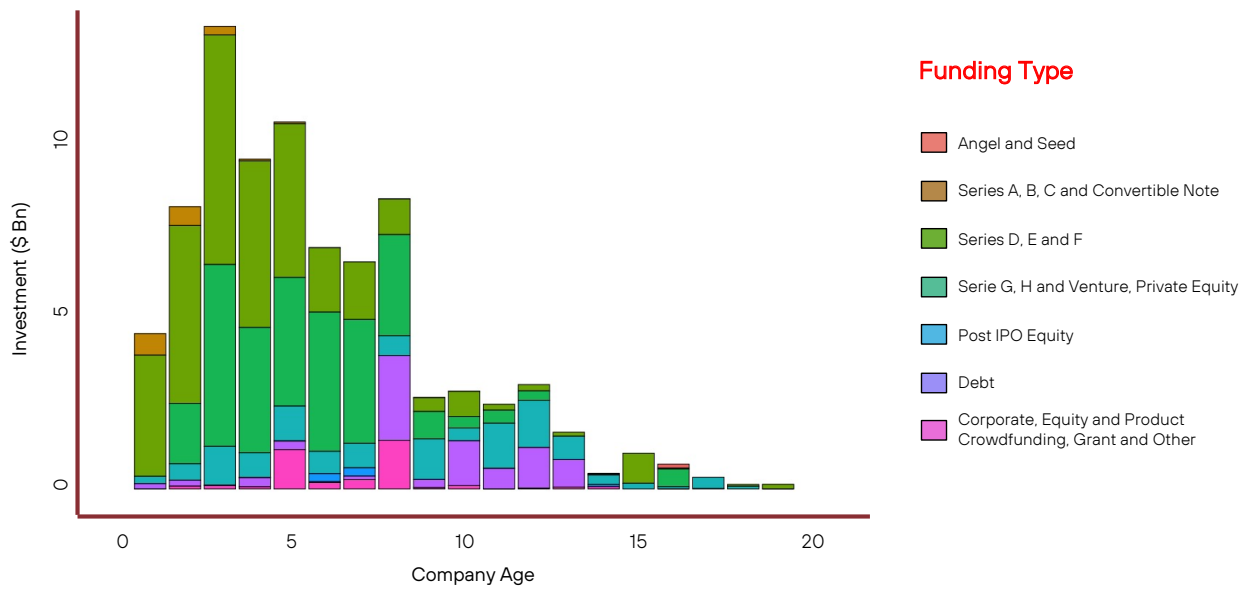
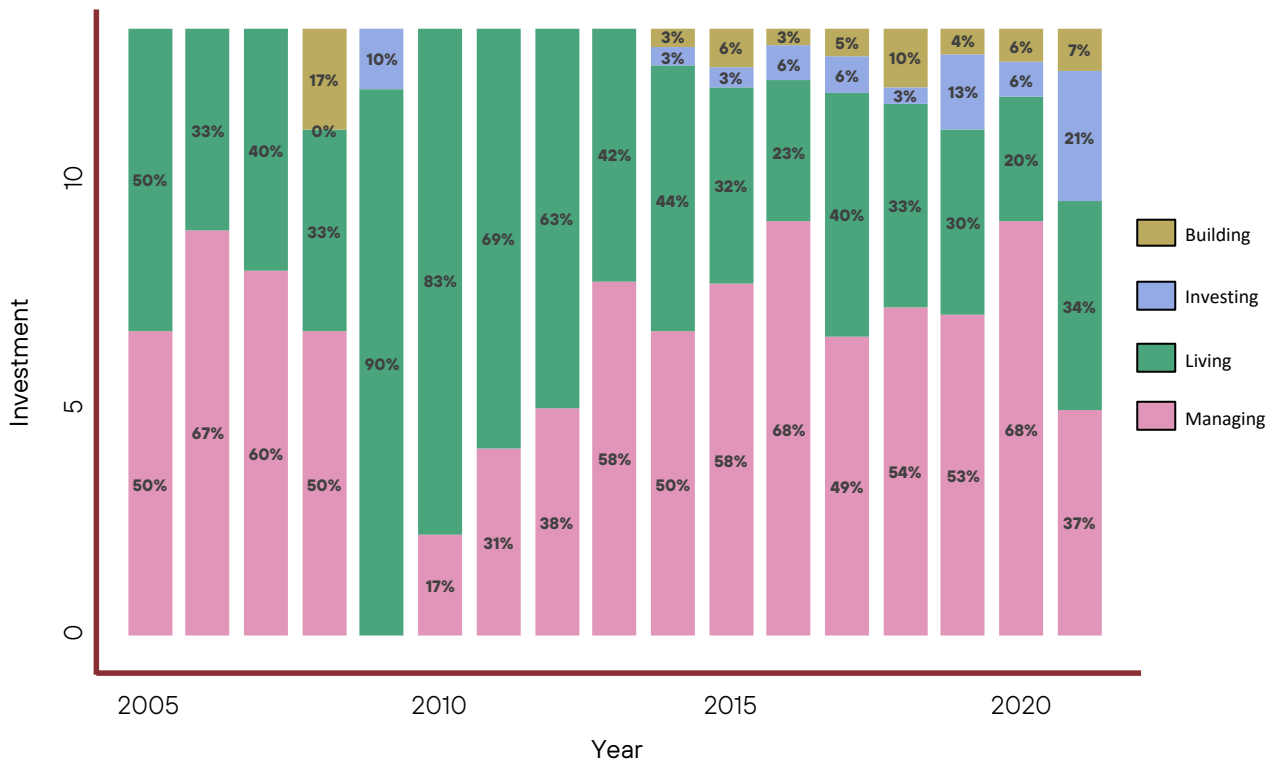


Figure 20 depicts the volume of funds raised during the lifespan of PropTech companies and identifies the funding types used. As expected, Year 3 experiences the highest investment amount because a significant amount of investment is needed during a company's growth period. The amount drops off every year, except in the 8th year when a large portion of PropTech companies decide to undertake Initial Public Offerings (IPOs).

After this 8th year, investment in a PropTech company decreases sharply to around \$1 Million, on average. This is because companies that have survived for more than 8 years tend to be well-established, well-reputed, and financially stable. Therefore, such companies typically do not need large sums of money right after the IPO. It is important to note that given the recent upsurge in the number of new PropTech companies and the recent spike in investment within this sector, this graph will change to better represent the investment activity in a PropTech company.

Figure 21: Evolution of Investment composition by company type

The changes over time in investment composition by company type are shown in **Figure 21**. It is evident from the graph that before 2013, most of the investment was going into “Living” and “Managing” category companies, except for 2009, when most of the investment was going into “Living” category companies. In the past 8 years, many new companies in other categories have also emerged, attracting more investments. In 2021, nearly one-third of the funding went into “Investing” and “Building” category companies, and the share of these two types of companies is on the rise.

Figure 22: Top 10 Global PropTech Companies by Investment (1999-2021)

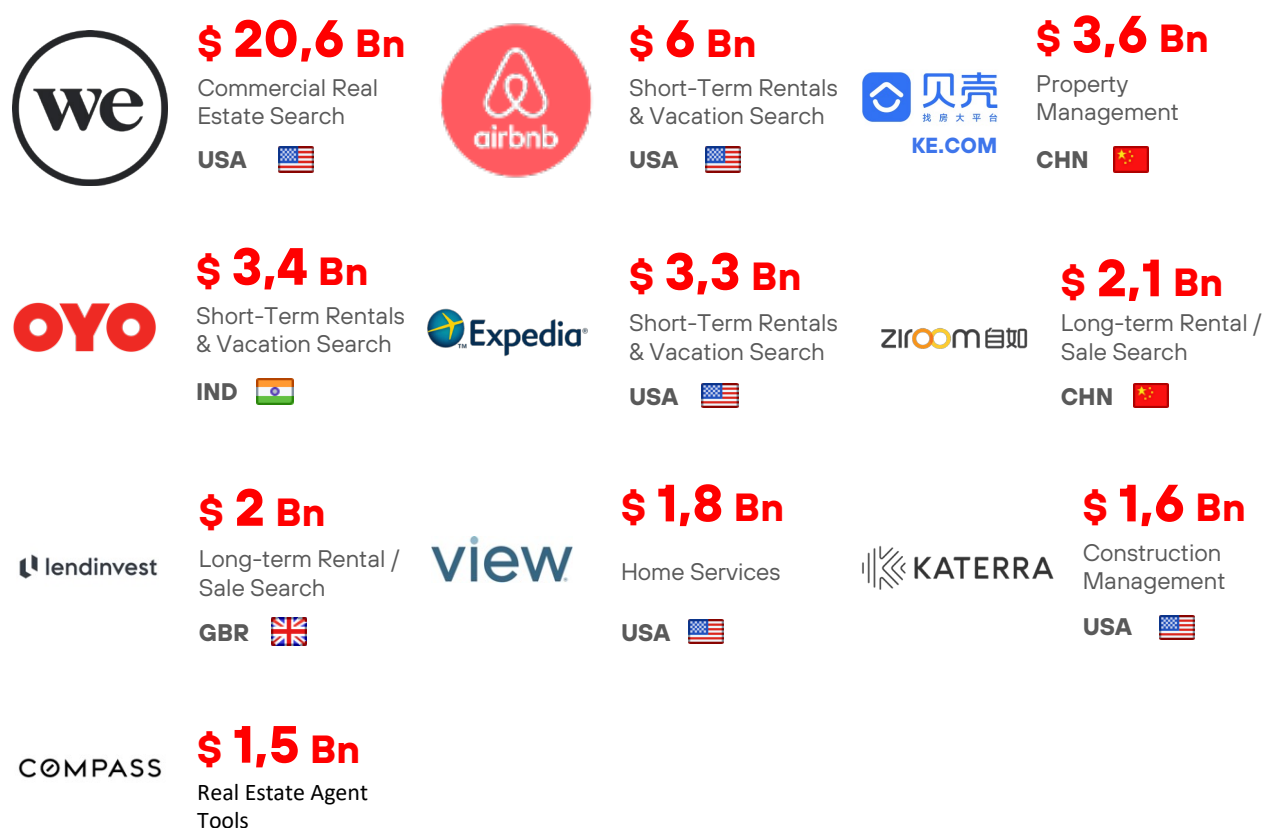


Figure 22 shows the relative sizes of the top 10 PropTech firms in the world. Unsurprisingly, US dominance is reflected here as well. Six US companies made it onto the list, and three of them ranked in the top 5. Alongside The We Company, two other US companies - Airbnb and Expedia - show investments higher than \$3 Billion. The remaining top 5 spots are occupied by the Chinese firm Ke.com and the Indian firm OYO. UK-based LendInvest is the only European firm that has made it onto the list.

Ke.com is a Chinese PropTech company that offers a complete online and offline platform for housing transactions and services. The Chinese residential real estate market is one of the largest in the world, valued at approximately \$3.5 trillion in terms of gross transaction value, growing at approximately 3% YoY (year-over-year), with around 6.5 times the investment volume of the US market. Ke.com has a market share of 15% in the Chinese housing transactions and services market.³

³ About us. KE Holdings - About us. (n.d.). <https://investors.ke.com/about-us/default.aspx>.

Chapter 4: PropTech Industry in the United States

4

CATEGORIES

1,176

COMPANIES

1,079

INVESTORS

42

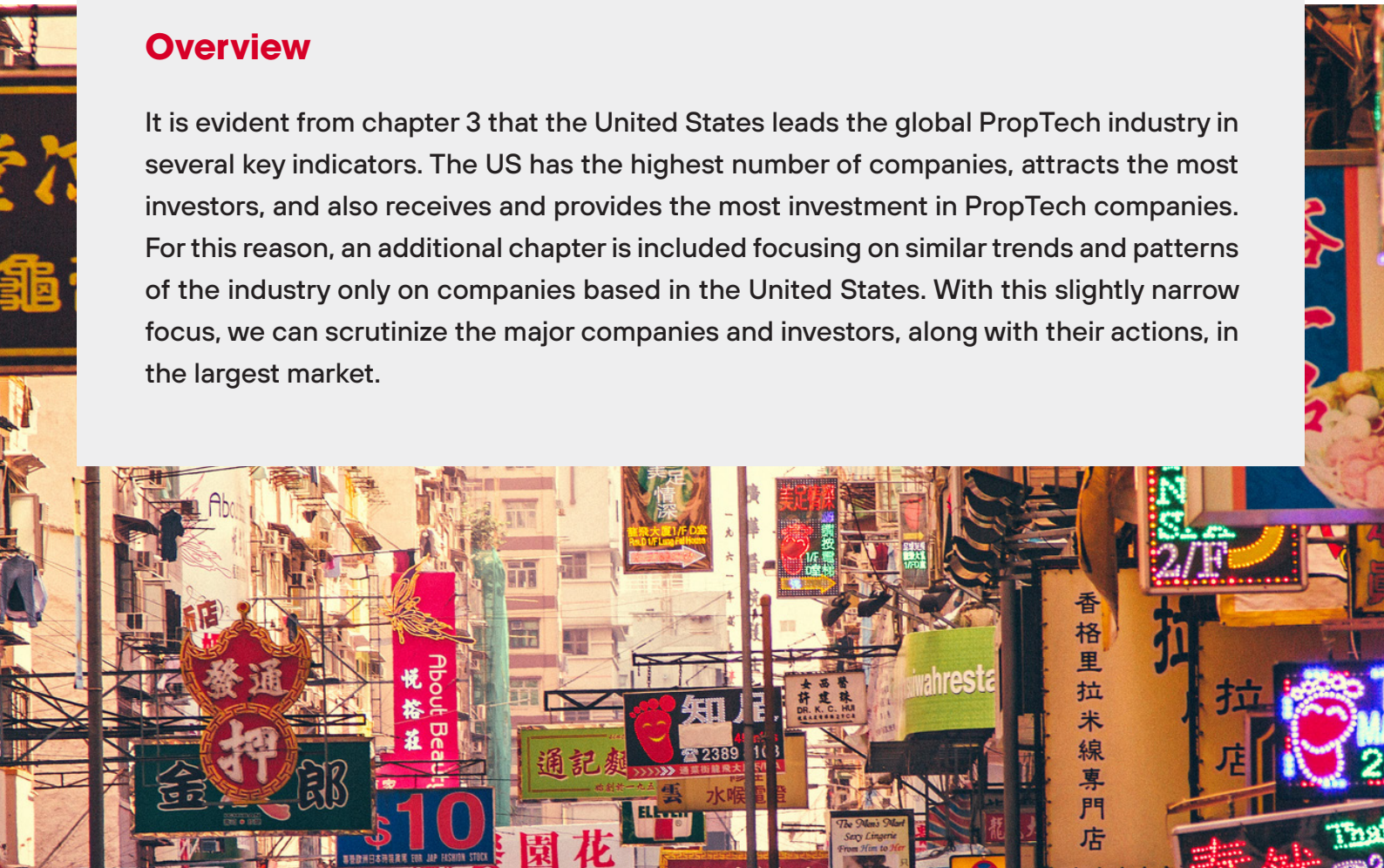
STATES

\$45.3

BILLION RAISED
(1999-2021)

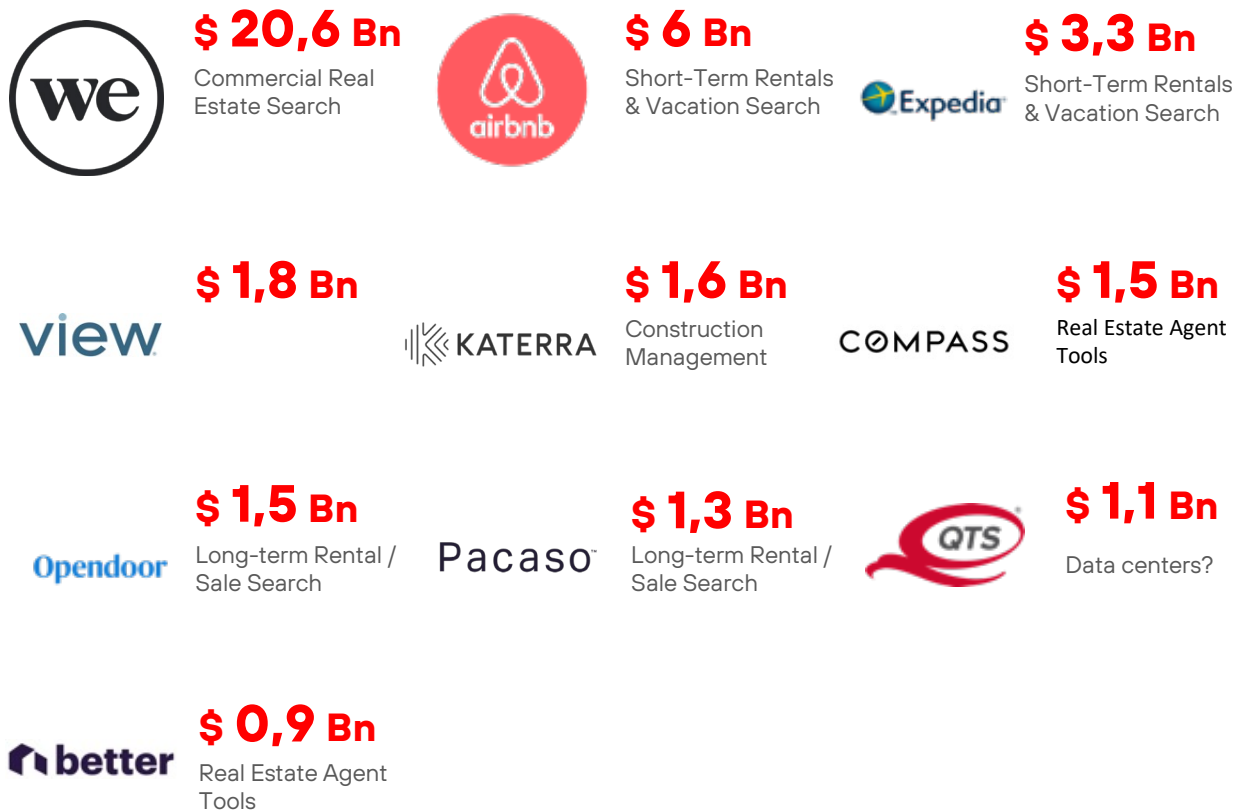
Overview

It is evident from chapter 3 that the United States leads the global PropTech industry in several key indicators. The US has the highest number of companies, attracts the most investors, and also receives and provides the most investment in PropTech companies. For this reason, an additional chapter is included focusing on similar trends and patterns of the industry only on companies based in the United States. With this slightly narrow focus, we can scrutinize the major companies and investors, along with their actions, in the largest market.



Industry Trends

Figure 23: Top 10 PropTech Companies in US by Investment Funds Raised (1999-2021)



As shown in **Figure 23**, The We Company is leading the Top 10 PropTech Companies in the US concerning their cumulative investment funds. With over \$20 Billion in investment funds raised up to 2021, its dominance in the PropTech sector remains unchallenged, not only in the US but also in the entire world. Airbnb, the second largest firm, with \$6 Billion in investment funds raised, is at least three times the size of most of the competing top 10 firms but is still dwarfed by The We Company, which is more than triple its size in valuation. Most other companies in the top ten have valuations of less than \$2 Billion which makes the We Company at least ten times larger than most competing firms in the top 10.

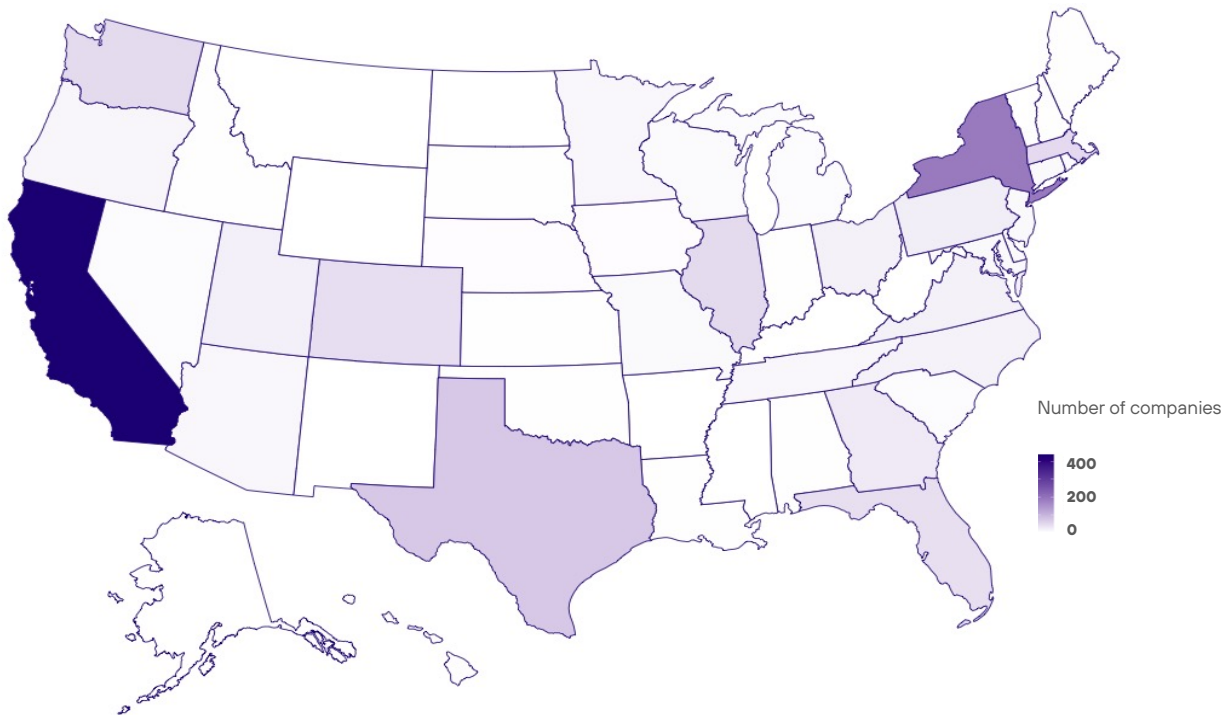
Figure 24: Spatial Distribution of Companies across states (June 2021)

Figure 24 shows the spatial distribution of PropTech companies within the United States as of June 30, 2021. There are a total of 1,170 PropTech companies based in the US. As expected, California, home to Silicon Valley, ranks number one with 439 (38%) of those companies, followed by New York at 188 (16%), Texas at 73 (6%), Massachusetts 47 (4%), Illinois 46 (4%), and Washington 46 (4%).

It is no surprise that this distribution mirrors the distribution of technological innovation in the US, coupled with a high-density educated population, the concentration of world-leading research universities, and conducive business environments. This signifies the need for these necessary ingredients to host innovative startup companies in the PropTech industry.

The United States has the particularity of having the PropTech companies spread out in several large cities; wherein others countries such as the United Kingdom, the vast majority of PropTech companies are located in London.



Chapter 5: Future Projections

This chapter focuses on projections for the PropTech industry in the year 2022. In the previous chapters, we examined the patterns and trends in the recent and distant past. That analysis set the stage to get a glimpse of what we can expect to see in the year 2022 using fiscal years to do our analysis. This means that the year 2021 represents the time period from July 1, 2020 to June 30, 2021. Similarly, the year 2022 represents the time period between July 1, 2021, to June 30, 2022.

Before we move onto the trends in the projections, we briefly explain the process of making these projections. We used past data on the investment made in each PropTech company starting from the year 1999 up until June 2021 to make these predictions. We observed the investor identity, its region, along with data on receiving company identity and its region. We also used information on the type of investments that were made in the past along with the date of that transaction.

We combined all these data and put a time series structure on it. Next, we used machine learning to predict the investments at the transaction level for the year 2022. Finally, we aggregated the predictions at the company category, year, and country-level to show these aggregate trends. These are baseline projections expected given the past trends of investment. If something extraordinarily unexpected happens in the year 2022, the projections may change to some extent.



The real estate tech sector will enter in a consolidation phase through a series of buy and build operations. I expect to see large digital players emerge from this consolidation and be able to challenge the incumbents thanks to better unit economics. In my perspective, the hottest sectors will be : fractional homeownership linked with tokenisation ; operating real estate companies (coliving, serviced apartments, flex office...) ; use of AI in architect and maintenance operations.



Robin Rivaton

VC Investor & Author | Smart City, PropTech & Real Estate

Projected Industry Trends

Figure 27 : Predicted Investment by Category (Investment in USD Billion, 2021 - 2022)

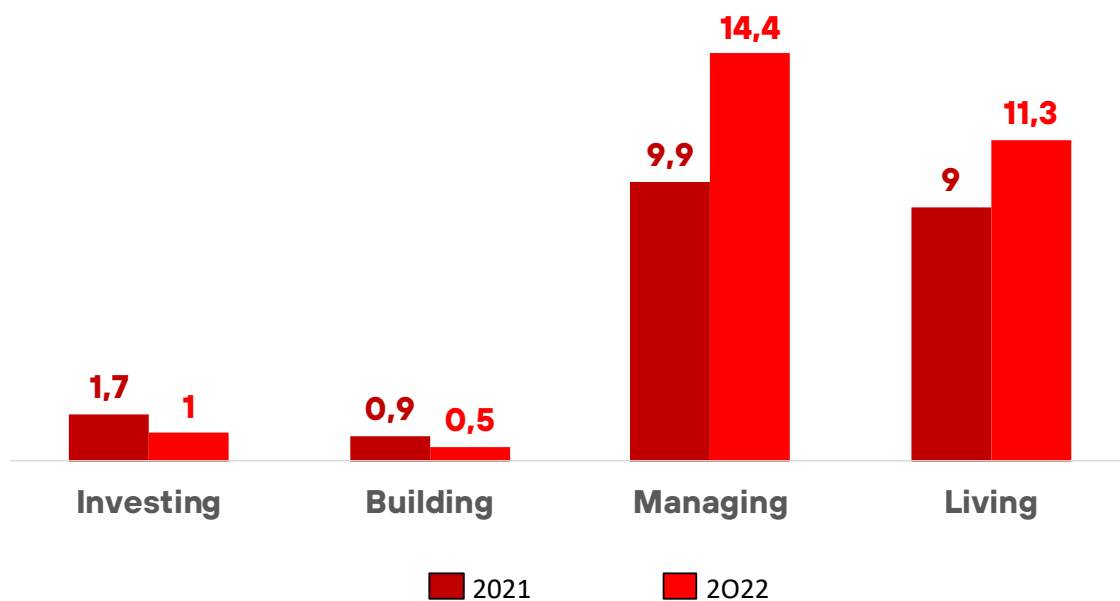


Figure 27 shows the comparison of investment amounts for the two years of 2021 and 2022 across the four categories of companies. We see that the order of categories from highest to lowest is expected to be maintained in the year 2022. In fact, for the two largest categories "Managing" and "Living", the investment is projected to increase significantly, as compared to the smaller categories of "Investing" and "Building". These projections show an optimistic picture of the PropTech sector which has experienced a decline in investment in 2020 and 2021. One main reason for this downward shift was the low economic activity and uncertainty created by the Covid-19 pandemic.

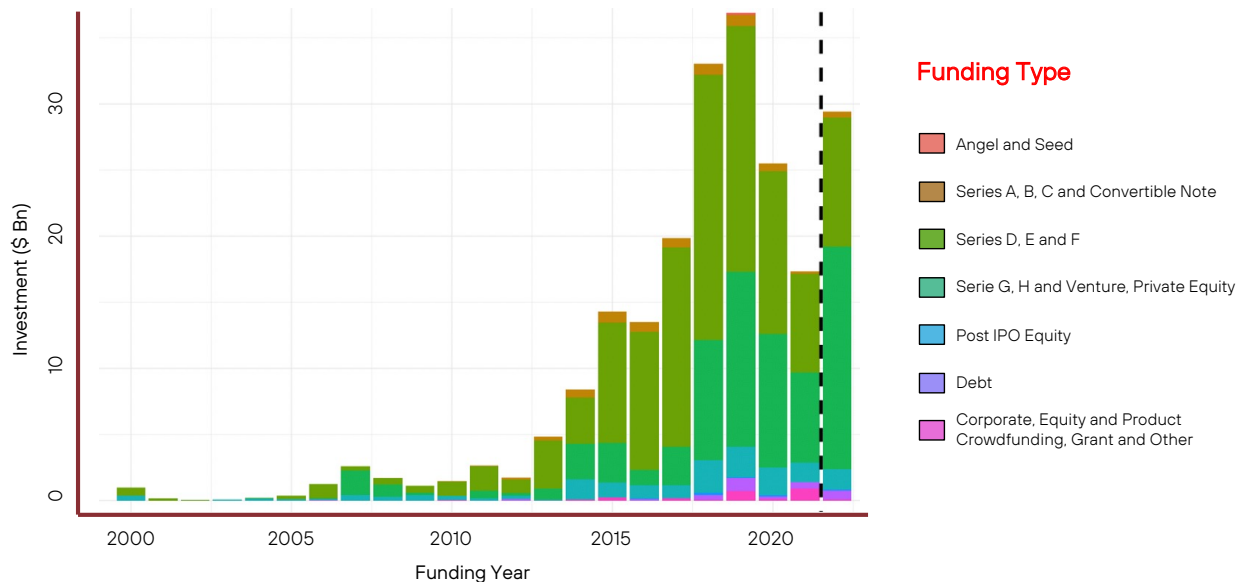
Figure 28 : Investment Amount by Type (with 2022 Projection)

Figure 28 shows the composition of investment types over the years within the PropTech industry. The black dashed line indicates the point after which the predictions start. It is evident from this figure that the investment levels are projected to increase by more than 50% in the fiscal year 2022 as compared to 2021. The investment is projected to surpass the level in the fiscal year 2020 but is still shy of the pre-pandemic level.

The main types of investment are junior to senior level Series (Types 2 and 3). This is good news for the PropTech industry as a whole because it appears that many early-stage start-ups will be able to receive new funding from venture capitals in early-stage Series funding. The significant presence of Type 3 also indicates that many start-ups will succeed in their revenue and operational goals to proceed to the next round of Series funding.

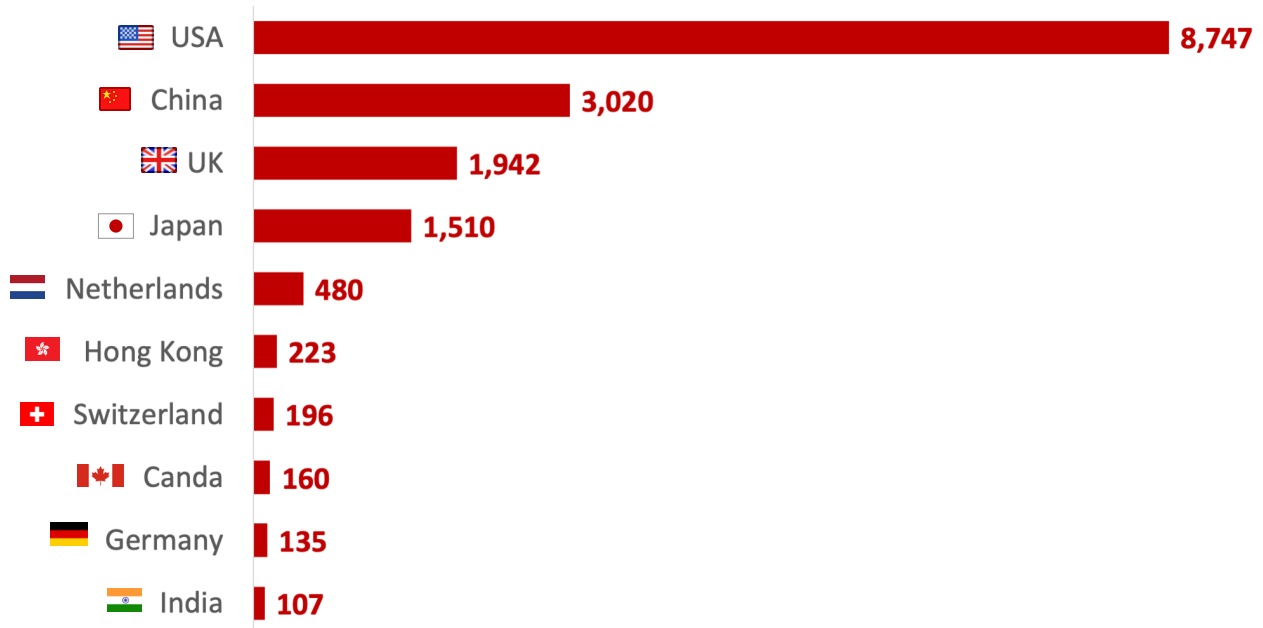
Figure 29: Top 10 Investment Origin Countries (2022 Projection) in USD billion

Figure 29 shows the expected investment predictions by country of origin for the year 2022. This pattern resembles the pattern in prior years, with the United States leading the pack with approximately USD 8.7 Billion of predicted investment.

China, United Kingdom, and Japan follow in second, third, and fourth places, with USD 3 Billion, USD 1.9 Billion, and USD 1.5 Billion of expected investment, respectively. After these top four countries, the investment levels drop significantly to less than USD 500 Million for the Netherlands, which comes in fifth place. The top country within Europe is the United Kingdom.

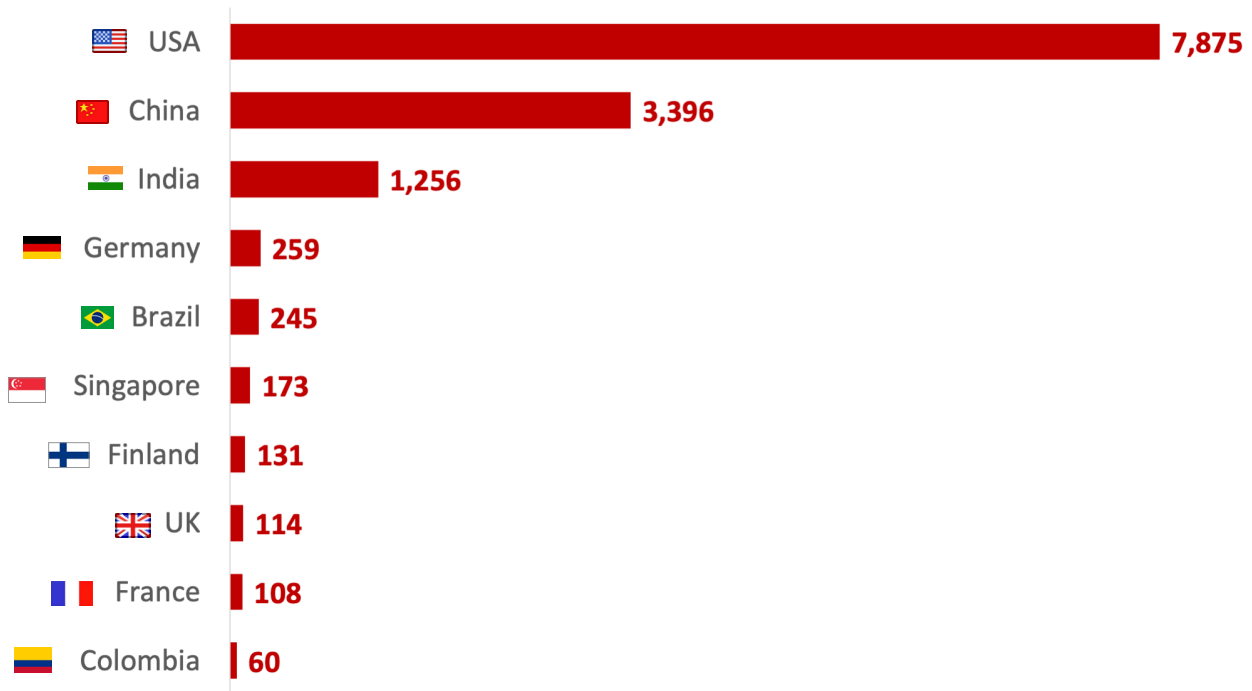
Figure 30: Top 10 Investment destination countries (2022 Projection) in USD billion

Figure 30 shows the projected investment levels in destination countries aggregated at the country level. The destination country represents the country in which the company receiving the investment is based. Perhaps not surprisingly, the United States is at the top of the group with USD 7.9 Billion in projected investment. China and India come in at second and third place with USD 3.4 Billion and \$1.3 Billion, respectively. The top investment destination country in Europe is Germany with USD 259 Million in predicted investment in 2022.

Comparing Figures 29 and 30, one should note that the US is receiving less investment than it is investing, whereas China and India are receiving more than they are investing. The case is particularly striking for India, which is expected to receive more than ten times the investment than it is projected to invest itself. This large gap signifies that India is projected to be an investment magnet in the PropTech industry for the fiscal year 2022.

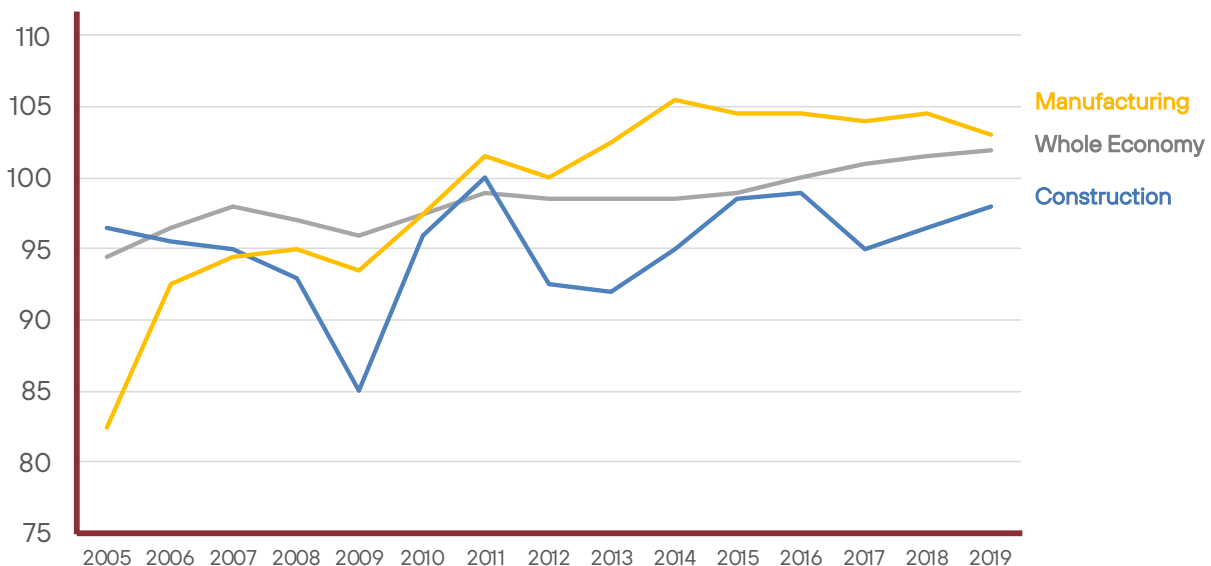
Case Study:

Building Information Modelling (BIM): The Answer to Construction 2025 ?

According to the Office of National Statistics 2014, in the UK, the construction sector is significantly less productive than the manufacturing sector and the whole economy (cf. **Figure 31**). In July 2013, the British government released a construction report outlining the future ambitions of the construction industry using BIM to achieve its goals.

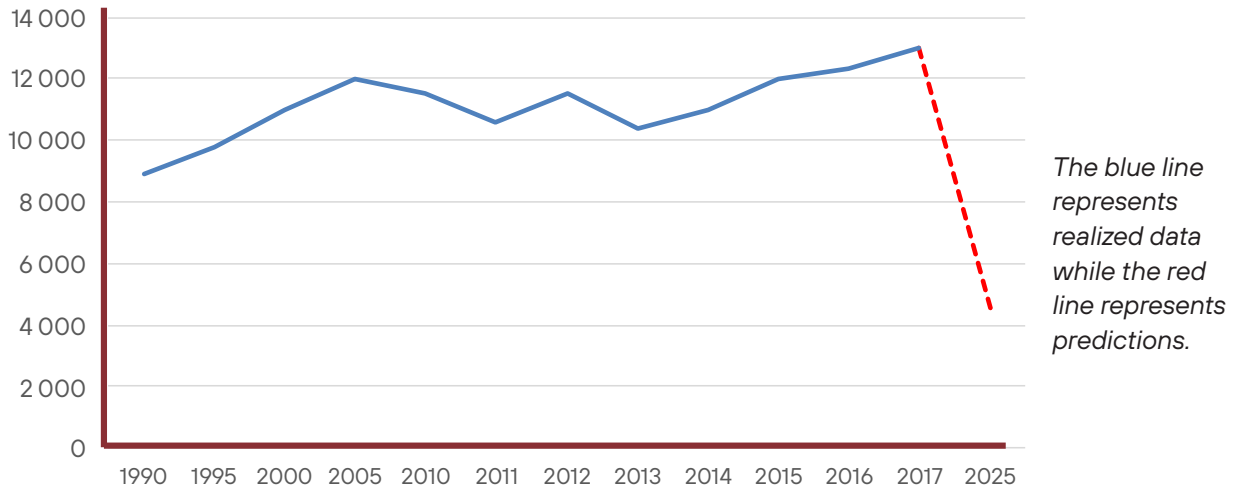
BIM is a 3D model-based software process that allows all the stakeholders involved in a project to contribute information and designs about a building. It aims to provide a digital solution to the distribution of information, creating a more effective tool for project management. Construction 2025's three principal goals were to achieve a 50% reduction in CO2 emissions in the built environment, a 33% reduction in construction costs, and finally a 50% reduction in the overall delivery time of a construction project.

Figure 31 : Comparing output per hour for industrial sectors within the UK (SA)
source: Office of National Statistics, 2014



Of the total UK CO2 emissions, the construction industry contributes almost 40%, meaning that the 2025 CO2 emissions target is more than half of the current CO2 emissions, making it a challenging task (cf. **Figure 32**).

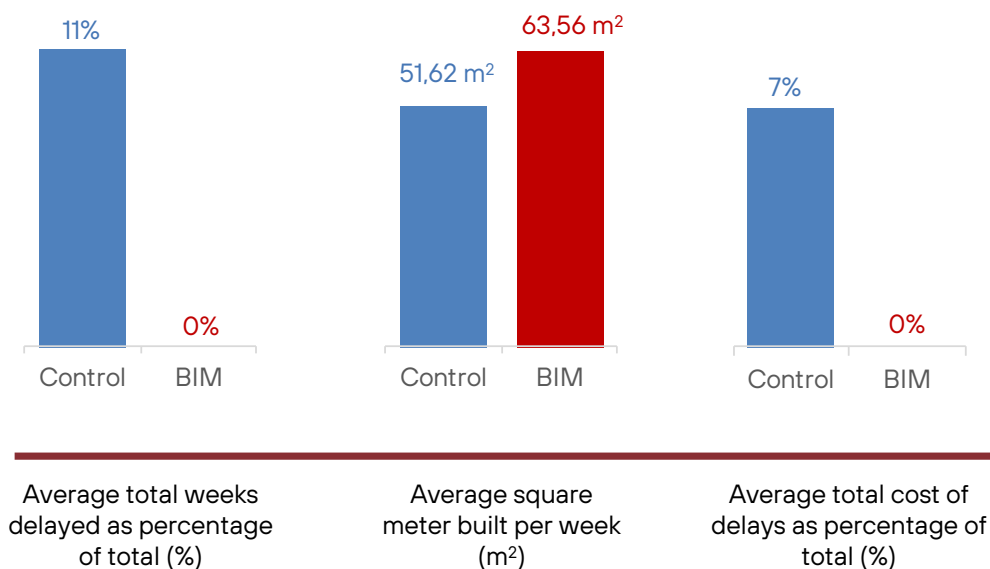
Figure 32 : CO2 emissions from the UK construction industry (in 1,000 metric tons)
source: Statista Research Department, 2018



ESCP performed a case study consisting of a 10-part questionnaire answered by 35 professionals from the UK housing sector, a methodological research framework including semi-structured interviews, and a case study analysis on 2 property development companies, each with 3 residential projects, were undertaken to research this subject.

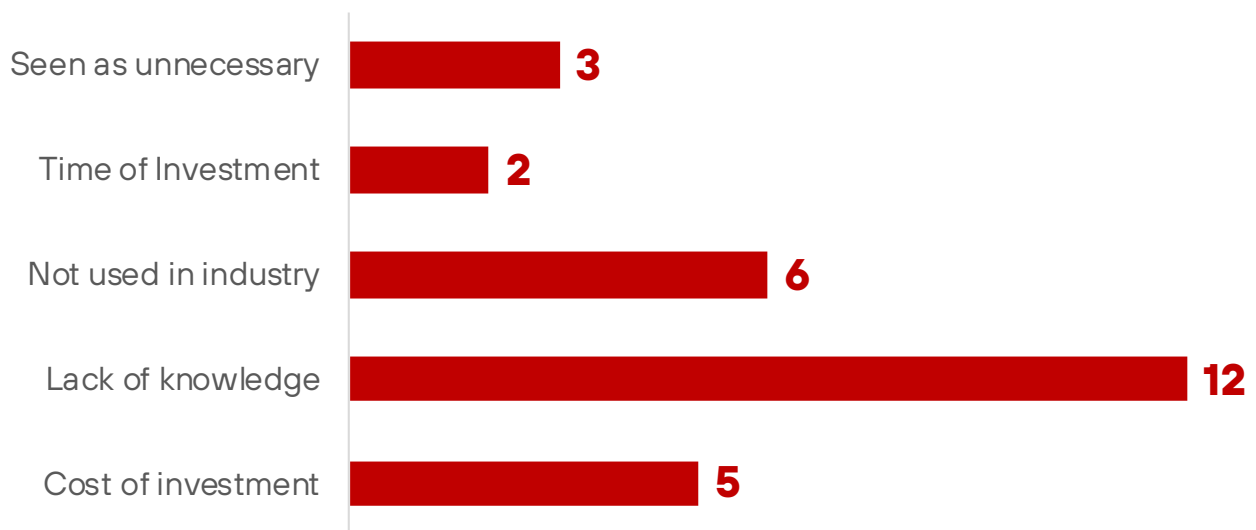
This study revealed that BIM can substantially reduce the time delays of a project by 11% (on average), increase productivity and decrease the overall costs of a project by 7%. It also can reduce project delivery times, construction costs, and CO2 emissions by optimizing energy efficiency through intelligent design.

Figure 33 : Comparison of time performance results from Company X (Control sites) and Company Y (BIM Sites)



Despite its advantages, BIM faces some obstacles such as a costly implementation process, lack of a sufficient understanding of it, and it does not have a universal measurement. These factors have led to a deficiency of its implementation and misguided public perception.

Figure 34: Perceived obstacles to BIM adoption from surveyed professionals of the UK Housing Sector



The results of this case study⁴ emphasize that BIM can play an important role in achieving construction goals and a need for a more developed partnership between the government and the housing sector. Homes must be built with intelligent designs, not only for cost and time savings but because they will directly impact CO2 emissions for decades to come.

⁴ In collaboration with Eloise Dean, as part of the ESCP-Monaco Real Estate Technology Innovation research program.



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