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The Digitalization of the Asian Real Estate Industry - Global Outlook and Progress

EXECUTIVE SUMMARY

Real estate as an industry has for many years notoriously lagged behind other asset classes in its digitization and adoption of technology, and, according to a recent survey conducted by KPMG, only 58% of real estate companies have a digital strategy in place. Despite this, advancements in real estate technology have made significant strides in recent years and, coupled with a vast influx of venture capital, real estate technology or 'Proptech' is embodying a new digital era across the global real estate industry, with 27.8% of Venture Capital firms investing in real estate technology companies in 2021.

The Covid-19 pandemic has further fueled this growth with significant technology adoption taking place across numerous businesses due to lockdown restrictions. This has created several opportunities to innovate to meet changing customer needs and locations, with the shift for many to remote working increasing the acceleration of adoption of new technologies. This somewhat enforced adoption is set to have a profonde influence on how real estate is used in the future, as property companies increase their reliance on digital communication and infrastructure to maintain operations and execute transactions, and this is only set to increase in the future as technologies and products evolve.

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[1] Center for Real Estate Technology and Innovation: 2022: The Future of Proptech Venture Capital Report.

This novel ecosystem of products, processes and technologies has resulted in an explosion in new and innovative companies, with the number of global Proptech companies now standing somewhere between 7,800[2] and 9,700[3] (depending on how you define the term) with tenant experience, iBuying, CRM, Data & Analytics, and Flex Solutions being the top 5 most crowded (overfunded) sectors according to investors[4]. Interestingly, this surge in new Proptech companies is not standard across the globe with certain geographical locations seeing a slowdown in the number of new startups in recent times as the industry begins to mature and consolidation begins to take shape as outlined by Rajh Singh, Managing Partner of JLL Spark, in a 2021 report by JLL. "While this will be gradual, we expect to see additional mergers, acquisitions and IPOs in the year ahead, especially M&A as industry consolidation starts, in order to provide the scale and scope required to serve the largest of commercial customers". Interestingly, 125 venture-backed companies in the real estate industry group were acquired in 2021, the highest amount in the past five years and highlighting how consolidation is taking place.

Several locations which are still in the midst of their Proptech infancy, such as Latin America, are now seeing significant growth in the numbers of new ventures, going from around 350 companies in 2018 to over 1200 in 2022.

This escalation in new companies has coincided with an injection of over $100 billion dollars in equity financing in the last 10 years and investment into the sector continues at unprecedented levels driven by a variety of capital sources. With the pandemic dramatically accelerating many companies' adoption and understanding of new technologies and, undeterred by inflation, geopolitical risk and supply chain issues, venture capitalists invested $32 billion in Proptech companies in 2021, a 28% increase in funding over 2020 and a 3.23% increase from 2019.[5]

Along with increased investment, advancements in technologies, specifically Artificial Intelligence (AI) and IoT devices, have enabled real estate industry professionals to take advantage of efficient and convenient tools such as automated valuation models, chatbots, virtual tours and digital twins. Increased adoption of technologies, from connectivity and hardware sensors to data analytic platforms, driven by artificial intelligence, means that nearly every aspect of the property industry has the potential to transform faster than ever before.

Improvement in data collection and advancements in data science education are now becoming more common among industry professionals with Proptech companies availing of behaviour, asset and performance data to provide real time analysis and allow for far more informed decision making.

[2] Transform with technology: Shaping the future of real estate report – JLL August 25, 2021
[3] Unissu Global Proptech Directory 2021.
[4] Center for Real Estate Technology and Innovation: 2022: The Future of Proptech Venture Capital Report.
[5] Center for Real Estate Technology and Innovation's, 2022: The Future of Proptech Venture Capital Report.

On a global scale, the most recent United Nations Intergovernmental Panel on Climate Change report emphasizes the threat of climate change with heatwaves, wildfires, floods and droughts causing incredible damage with a devastating effect on countless lives around the globe. With the built environment responsible for almost 40% of the worlds' carbon emissions and new global sustainability targets aimed at reducing carbon emissions and energy usage, there is significant acceptance that new real estate technologies can provide the way for a more sustainable and energy efficient environment.

At a market level, North America and Europe have led the charge for real estate technology in recent times, however Asia is currently driving the global urban development boom and looks set to lead the technology charge in the coming years. With ever-increasing sophistication, the property developers, investors and service providers in the region are finding new and innovative ways to streamline their operations and gain an edge over competitors by adopting an array of new technological systems. With more than half of the world's urban population set to live in in Asia by 2025, there is a major shift in thinking among Asian real estate companies to embrace technology adoption. More local startups are using proprietary technologies and customizing their products to their regional markets and there is a conviction among professionals that Asia is not only catching up to other regions in terms of tech adoption but in many ways is surpassing them.

While the real estate industry is only beginning to embrace its digital evolution, it has both an obligation and an opportunity to play a history-defining role in creating the smartest, healthiest, safest, and most efficient buildings for society. With a global housing crises, consistently overdrawn budgets and schedules, global warming, pandemics, demographic changes, a more demanding workforce and greater globalization, there is significant work to do. The technologies that are now available, together with those that are in the process of being developed, are set to radically reshape our cities. They can completely change how we interact with and use buildings and have the potential to lead to a much more human-centric, resilient and responsible built environment.

With this surge in demand to know more, MIT Center for Real Estate's Asia Real Estate Initiative 2022 Technology Whitepaper focuses on the topic of the real estate industry's digital transformation across the globe. This Whitepaper examines the status of the global Proptech market and what is currently taking place across 9 specific geographical locations: China, South Korea, Singapore, India, Thailand, Australia, North America, Latin & South America and Europe. In each of these regional markets, we outline 8 specific research segments: 1) Market Outlook; 2) Investment and Capital Markets; 3) Technological Advancement; 4) Key Regulation; 5) Data and Data Sources; 6) Start-up Landscape; 7) Market Challenges; and 8) Opportunities.

1. **Market Outlook**

We start by providing a general outline of the geographical market that is being investigated. This section will give a broad understanding of the size of the market, the established companies who are leading the way along with some of the individuals who are driving adoption of real estate technology.

2. **Investment and Capital Market**

The Proptech market has been propelled in recent years by huge sums of investment from venture capital, government, and corporate investment arms. This section will provide insight into the amounts of investment, areas that are most appealing to investors in specific locations and who is providing funding.

3. **Technological Advancement**

Certain geographical locations are more adept at adopting certain technologies than others. This can be due to established dominant players in the market, regulation or local trends and tastes. This section outlines the specific technologies gaining the most momentum in each location.

4. **Regulation**

Regulation can either be a driving force of adoption or a market hurdle. This section outlines the most influential regulations in each location which are affecting or have the potential to affect the Proptech landscape.

5. **Data and Data Sources**

The foundation of many Proptech platforms and companies is data. How data is accessed and collected varies from one location to another and it is vital to understand where and how data is gathered and maintained in order to utilize it. This section exams both the public and private data sources that are available in each specific location.

6. **Start-up Landscape**

With new startup real estate technology companies being founded in every location, this chapter provides insight and an understanding of how these new companies look to establish themselves in specific locations. This section looks at where these companies are being founded, what types of companies are seeing more growth than others and who is facilitating the growth of these enterprises.

7. **Market Challenges**

As technology begins to immerse itself within real estate it is met with many significant challenges, obstacles, and reluctance to change. This section outlines some of the most significant market challenges that real estate technology companies face in a specific location.

8. Opportunities

Through the course of this research, each author has developed an in-depth knowledge and understanding of their respective location. This section showcases some of the most interesting opportunities that each author has discovered in their respective location and where Proptech can make the most significant changes to the real estate industry.

ABSTRACT

China

Tremendous market demand along with strong governmental support has made China one of the most desirable markets for Proptech startups and their investors. From a situation of playing catch up to western companies, to currently setting the trend with innovations tailored to local markets, the Chinese real estate technology industry has evolved a long way since its start in the early 2000s. As the largest Protech investor in Asia, China has fostered more than 300 startups, with 10 companies exceeding a $1billion dollar evaluation with the Proptech landscape still at a very early stage of development. However, each market segmentations are experiencing different levels of maturity. While the commercial sector demands sophisticated innovations, the residential sector is experiencing a consolidation phase with the emergence of super apps. New markets such as digital twin, digitization of physical space, Automation, and the Metaverse continue to emerge, with the market now trending towards the use of more proprietary technologies that customize their products specifically to the Chinese market. The top down and localized nature of the Chinese Proptech landscape creates harsher barriers of entry for western companies, but at the same time fosters more domestic innovations. Future collaborations between tech giants and real estate tycoons will provide more established industry standards, enhance market demand, and accelerate technology development.

India

While growth of the Indian Proptech industry has yet to reach a level seen in other developed counterpart regions, the online listing platforms have received substantial investment from investors since 2009. In saying this, it is only in recent years that real estate technology has taken center-stage, with investments in Proptech crossing the $500 million mark for the first time in 2018. Stakeholders across the Indian real estate industry are realizing the value add of technology in the real estate asset lifecycle and thus, digital disruption is being looked at as the future of the real estate sector. This is evident from India establishing its first Proptech unicorn, NoBroker, in December 2021. Interestingly, a unique segment to the Indian market is Furniture Rentals which now accounts for almost 9% of the local Proptech market. This unique category has seen tremendous growth owing to the transient and young urban population but has yet to establish itself in other geographical locations at scale.

South Korea

The Proptech industry in South Korea presents immense opportunities for growth, even if its immediate scale may appear small in comparison to its Asian neighbors. In the last few years, the country has seen an enormous growth in the size and types of Proptech services that it offers. This growth is furthered fostered by the country's well-established technological infrastructure as well as support from both the private and public sectors. While the country's traditional real estate laws, conservatism, and relative difficulty in accessing publicly available real estate data have presented limitations for seamless growth for many

Proptech companies, the industry is actively seeking ways to grow beyond these traditional barriers through creative joint ventures, collaborations, and fundraising. Currently, the vast majority of South Korean Proptech focuses on providing real estate transaction services such as rental management and brokerage. However, the industry has also made noteworthy advances in areas of construction technology using Digital Twin, AR/VR-based design solutions, machine learning-based development solutions, and real estate fintech platforms that offer data and asset-backed securities transaction services. To date, most Proptech startups have grown through successful venture capital funding and collaborations with established companies within the finance, real estate, and technology sectors. With the South Korean government recently announcing a plan to foster the growth of Proptech in December 2021, changes at legal and institutional levels are expected to change the landscape of the Proptech industry significantly in the coming years.

Singapore

According to many industry leaders, Singapore is considered that center for technological advancement in Asia and the best alternative to Silicon Valley. Known for its developed IT infrastructure, strong government support, and intellectual property laws, the city has been a magnet for international technology giants such as Alibaba, Baidu, Tencent, Bytedance, Google, Amazon, and Facebook. This influx of demand has allowed Singapore to become the regional hub for the Proptech sector in the Southeast Asia, coinciding with more than $1.3 billion invested in the sector since 2007, with exponential growth taking place since 2014. The region has seen over 120 new Proptech startups from 2007 to 2021, about 12 companies per 1 million population, higher than the USA with eight companies per 1 million population. Furthermore, in the last five years, the Singapore government has initiated key strategic national projects to drive and enable the adoption of digital and smart technologies throughout Singapore, driving the growth of Artificial Intelligence (AI), Internet of Things (IoT), and sensors in the real estate technology sector. The Singapore Government collaboration initiatives with local and international universities are also helping the Proptech landscape to flourish. As the city continues to face problems with land scarcity, a dense population, global climate challenges, and the pandemic, these collaborations have driven the Proptech sector in Singapore towards significant innovation, automation, and sustainability – creating value for efficiencies, cost-savings, and promoting a healthy and sustainable living environment.

Thailand

Thailand, based in Southeast Asia, is the second-largest economy among ASEAN member countries. Thailand's government has established a powerful framework called "Thailand 4.0", a sector-specific industrial policy, that aims to attract new investment and thereby transform the country's economy. Under Thailand 4.0, the Thai government is developing new growth hubs, starting with the Eastern Economic Corridor (EEC). The government's smart city development plan and its drive towards digitalization can accelerate the development of new technologies, which is expected to have significant ripple effects across the Proptech market. Even though the Proptech market is still small and primarily focused on online platforms that sell advertising to agents and property developers, Thailand stands ready to embrace new

technologies for the future. In fact, many leading developers are striving to produce innovative products and technologies, including smart-home and blockchain technology, to lead the Proptech market. Going forward, the Proptech market is likely to see more future-oriented projects initiated by developer-startup partnerships which will advance the development of the market. Furthermore, key infrastructure projects are currently underway as part of the smart city development, which are expected to play vital roles in laying the essential technological foundation for the Proptech market. Indeed, Thailand is poised to become the ASEAN hub of smart city innovation, allowing the Proptech market to expand further and grow into a key sector of the real estate industry.

Australia

With more and more adoption of technologies in the real estate sector, Australian real estate developers and investment capital companies are investing heavily in Proptech to improve their operational efficiency. It may not be as mature or developed as the UK or the USA, but it is keeping up in terms of new Proptech startups and investment. There are also numerous startups entering the market across the residential, commercial and retail sectors of the industry. Funding for this new wave of Proptech comes from a variety of sources, including industry and government grants, corporate capital, venture capital, and family offices. Government regulation is facilitating further research in the field by working with universities and developers and encouraging smart city planning with the aim of providing better living environments for all. While Australia has a strong data platform with both government and private providers, data still needs to be more accessible and open, in order to deal with a variety of social issues such as privacy. Blockchain technology is also developing quickly in this region for data decentralization. The entrepreneurship community is growing with founders coming from various backgrounds and facilitated with new accelerators and incubators. There are numerous opportunities in the region to help increase efficiency however there are still many challenges, specifically in accessing international investment.

North America

The United States and Canada have emerged as the leading force spearheading much of the innovation and investment into the world of Proptech. Furthermore, the Covid-19 pandemic fueled adoption in this field and forced real estate operators to dramatically redefine their business. 2021 was a record-breaking year for venture capital investment into Proptech as capital in the region continued to shift its focus towards more established companies with an incredible $32 billion invested, narrowly breaking the previous record set in 2019. The North American market continues to mature, reflected in incredible valuations of emerging Proptech firms, both private and publicly traded, as well as in the increase in M&A activity in the space.

With that, Canada and the United States are poised to continue to develop as the epicenter of Proptech propelled by their existing momentum and new opportunities within the field.

Companies that aggregate significant quantities of high-quality data are continuing to find success and high value M&A activity is set to continue as firms consolidate and work towards establishing scale and critical mass.

Europe

Europe is considered a global leader in the Proptech industry, even though its market size ($10.6 bn in 2021) cannot match that of the United States or China, primarily due to its decentralized structure of 44 national markets. While this market is not dominant in investment terms, Western Europe leads in technological advancement, with over 3,300 companies that have a predominate focus on smart building and smart management concepts, in addition to the local champions of digital marketplaces and transaction platforms. This advancement is facilitated further by European Proptech VC companies as they target continental firms that offer smart and sustainable products through a series of dedicated investment funds. However, the development of innovative European Proptechs beyond their national borders is slow, primarily due to regional issues with regulation and data standards. While the EU is actively engaged in setting up EU-wide data-laws, such as the GDPR, there has been little progress in developing a common standard for real estate data to boost the intra-European expansion of Proptech companies. As such, European Proptechs face the possibility of a lack of international capital investment as their scalability is perceived to be limited.

Nevertheless, the future for the European Proptech market is still bright, as it leads the world in a sector that will define the Real Estate industry for the next decade: Sustainable real estate technologies, specifically Smart Building technologies. As more and more global investors dedicate funds to this concept, facilitated by private and public emission policies, the European Proptech market may solve its lack of capital. In the future European Proptech companies are expected to reach a level of maturity that enables them to focus on pan-European collaboration as well as national specialization in subsectors, such as Real Estate FinTech, Blockchain or Construction Technology.