

The Innovation Opportunity
in Commercial Real Estate:
»» A Shift in PropTech Adoption
and Investment

ALTUS GROUP
CRE INNOVATION REPORT



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OVERVIEW








OVERVIEW

Commercial real estate (CRE), like other industries, is adapting to today's "data everywhere" world and making investments to create value through data and analytics. In particular, over the past two years the CRE industry has experienced a significant acceleration from awareness to adoption of both emerging technology as well as the utilization of data analytics.

A growing number of CRE firms are now starting to actively apply PropTech to drive efficiency across a broad range of business functions. While this changing sentiment and increasing investment is promising, CRE firms continue to be selective when it comes to adoption with many not recognizing the potential opportunity and benefits of some rapidly emerging technologies that have already gained traction in other industries. This could be a symptom of the fact that many CRE functions, systems and related data are still heavily siloed.

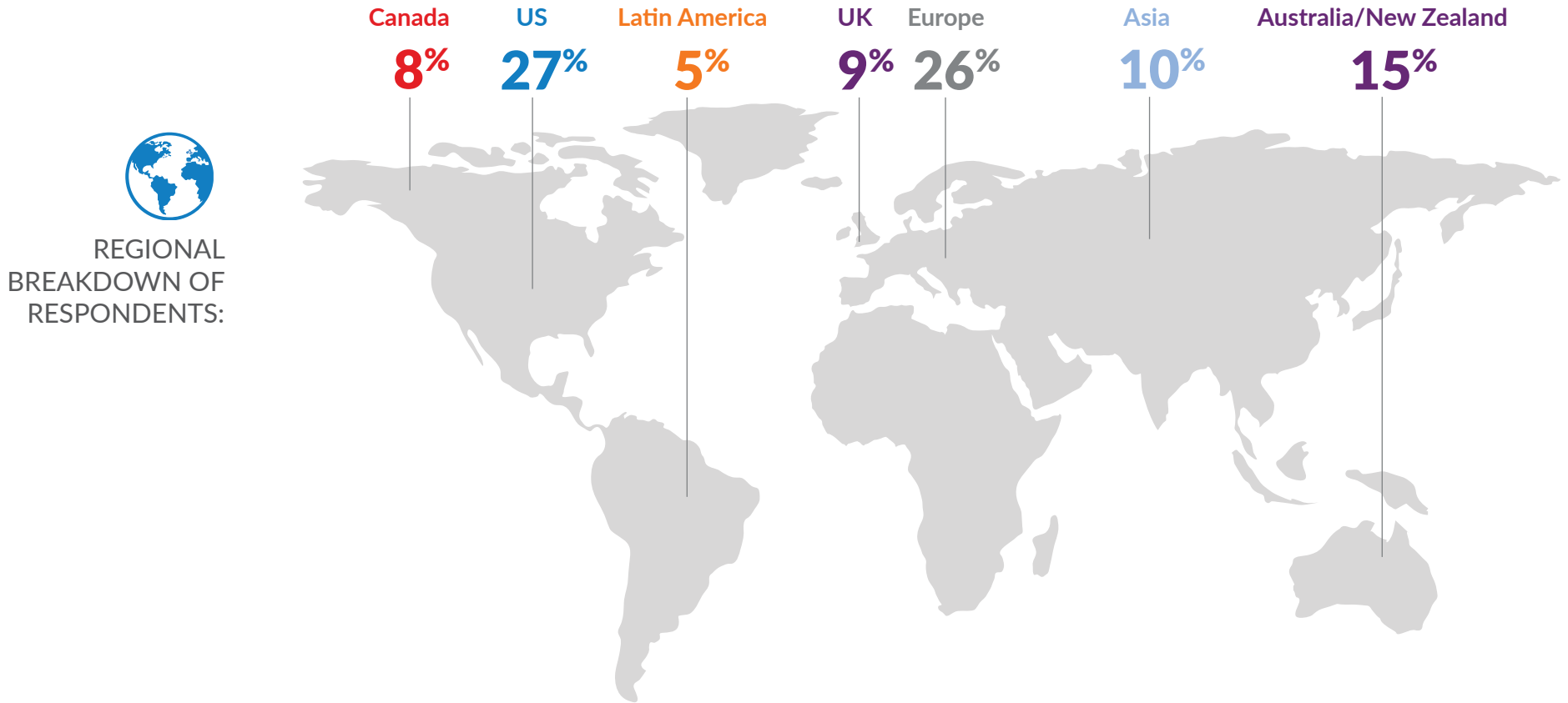
The latest Altus Group CRE Innovation Report explores the turning points that have emerged in how CRE companies view technology and approach technology investment, adoption and use, while also highlighting the gaps and opportunities related to changing technology and market trends.

KEY QUESTIONS POSED IN THIS REPORT:

-  Has the basic technology infrastructure used by the CRE industry evolved?
-  Where and how are new technologies affecting CRE processes?
-  Which emerging technology areas do CRE executives believe will have the most impact on the industry and where are they making investments?
-  How is disintermediation affecting the industry?
-  What's coming next and is the industry prepared?

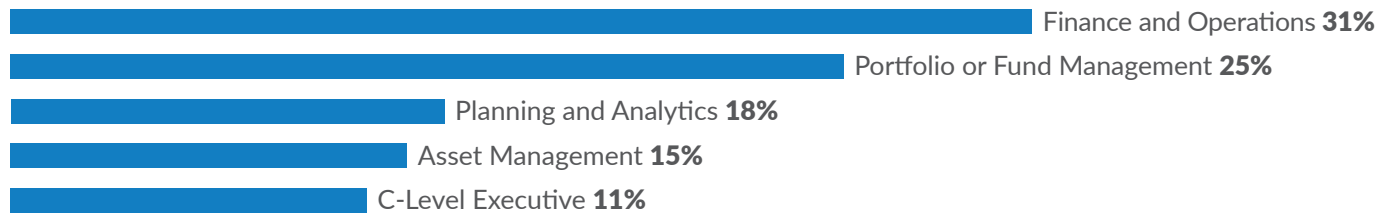
ABOUT THE SURVEY

This report is based on a global quantitative survey of 400 CRE C-level and senior executives in both front and back office positions at owner operator and investor firms in North America, Europe, Asia-Pacific and Latin America. All firms represented in the survey had a minimum of assets under management (AUM) of at least US \$250 million at the time of being surveyed, representing an approximate total AUM of over US \$2 trillion. The survey research used to form the basis of the report was conducted by international research firm IDC in late fall 2018.




REGIONAL
BREAKDOWN OF
RESPONDENTS:


JOB ROLE
BREAKDOWN OF
RESPONDENTS:



EXECUTIVE SUMMARY

Over the past few years we have seen real examples of emerging technology optimizing internal processes in CRE, along with many online solutions boosting efficiencies in external transactions. The industry is at a turning point in embracing technology and has entered a state of experimentation, adoption and investment as new technologies and applications continue to emerge. In other words, CRE firms are, for the most part, fully engaged in PropTech advancement and adoption, which comes with risks and benefits.

While many in the industry are still watching and waiting, CRE leaders are now taking a more active role in innovation. Of those who have adopted solutions to solve their business and data challenges, many have chosen to implement advancements such as AI and automation. In addition, there is a growing trend of CRE firms investing directly in PropTech firms and startups themselves. Many appear to be hedging their bets on the acceleration of various types of innovation in the industry through active participation in direct forms of investment.

This higher level of engagement and investment has the potential to enable the development of solutions that are better equipped to solve the unique challenges of the industry. It will also help CRE firms let go of traditional practices that are holding progress back, while preparing them to more quickly adopt the next emerging technologies and use them to their full potential.



KEY FINDINGS



KEY FINDINGS



While a majority of CRE firms have now invested in integrated CRE software solutions, many are still using spreadsheets for critical CRE functions which is creating more data silos.

- 60% of executives indicated their firms are utilizing spreadsheets as their primary tool for reporting, 51% for valuation and cash flow analysis and 45% for budgeting and forecasting



Driving efficiency through automation is a key priority for CRE executives, and the use of AI and machine learning is approaching a critical mass.

- 41% of firms are using automation for benchmarking and performance analysis, 39% for scenario and sensitivity analysis and 36% for budgeting and forecasting
- 19% are using AI and Machine Learning for scenario and sensitivity analysis followed by 16% for accounting and property management



The rise of disintermediating technology platforms and solutions is having a major impact on the CRE industry. Technology is enabling CRE executives to directly engage tenants, investors and each other. At the same time, business trends such as co-working, the sharing economy and e-commerce are impacting investment and portfolio decisions.

- 61% of CRE firms are using or already trying out online lending marketplaces, with 23% using them in a significant way
- 60% of CRE firms are using or already trying out online investment marketplaces and crowdfunding platforms, with 22% using them in a significant way
- A majority of CRE executives report disintermediating business trends are having a major impact on their investment and portfolio decisions; with 77% saying the sharing economy is having the greatest impact, followed by co-working at 66% and e-commerce at 61%



CRE executives are uncertain on the potential role and impact of blockchain and smart cities as the next disruptive forces.

- 37% of respondents expect blockchain to start having an impact on the CRE industry within the next two years, however 10% of CRE executives “don’t really understand blockchain and what it does”
- 31% said smart city initiatives and projects are already having a major impact on their investment and portfolio decisions



CRE firms are becoming PropTech investors themselves and many are engaged in PropTech development directly.

- 53% of CRE firms are directly investing in at least one type of PropTech firm

INTEGRATED SOLUTION ADOPTION YET
CONVENTIONAL APPROACH STILL LINGERS

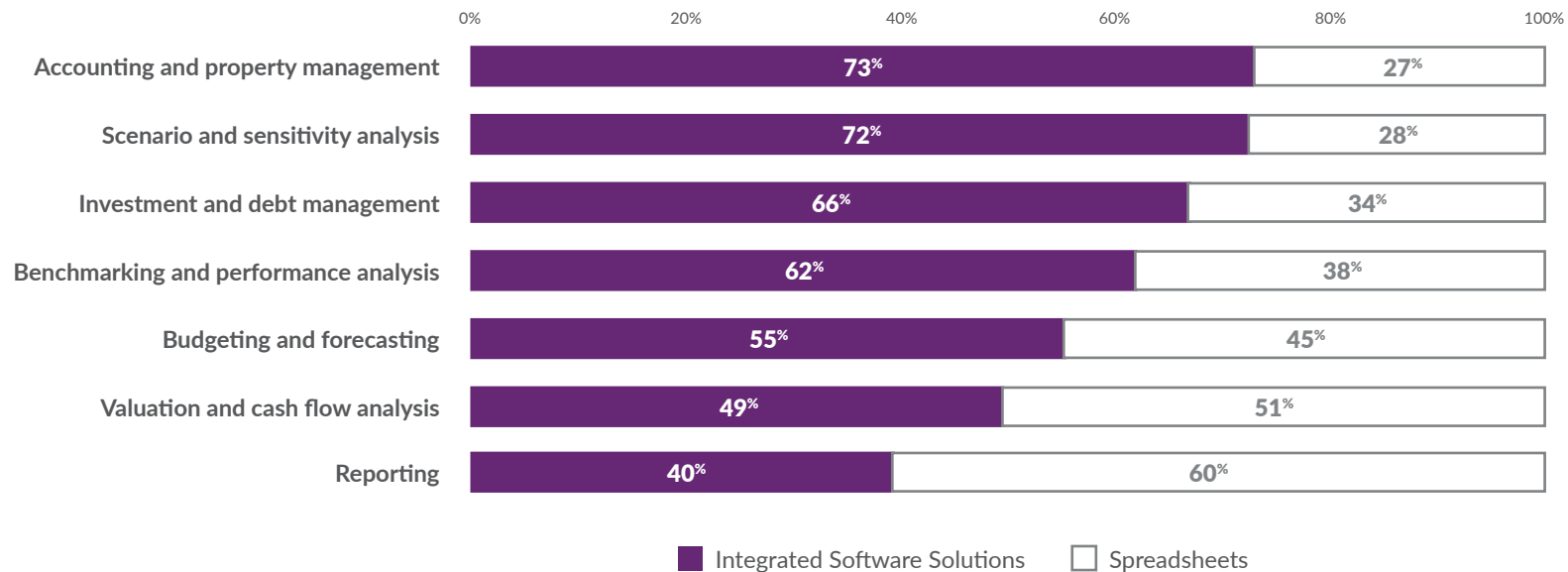


INTEGRATED SOLUTION ADOPTION YET CONVENTIONAL APPROACH STILL LINGERS

Investment in PropTech has shown astonishing year-over-year growth. While a significant number of firms have now invested in integrated software solutions, many CRE firms are still using spreadsheets as their primary tool for key processes: 60% for reporting, 51% for valuation and cash flow analysis and 45% for budgeting and forecasting. This may be a symptom of the fact that many firms continue to operate with data silos and have yet to implement a strategy to adequately manage or integrate their data.

The continued use of spreadsheets poses serious challenges for organizations as it stalls efficiency in data administration and management and increases the risk of human error. The lack of integration in spreadsheets also prevents firms from taking full advantage of the value-added insights their data can provide.

SOFTWARE VS SPREADSHEET USE BY FUNCTION

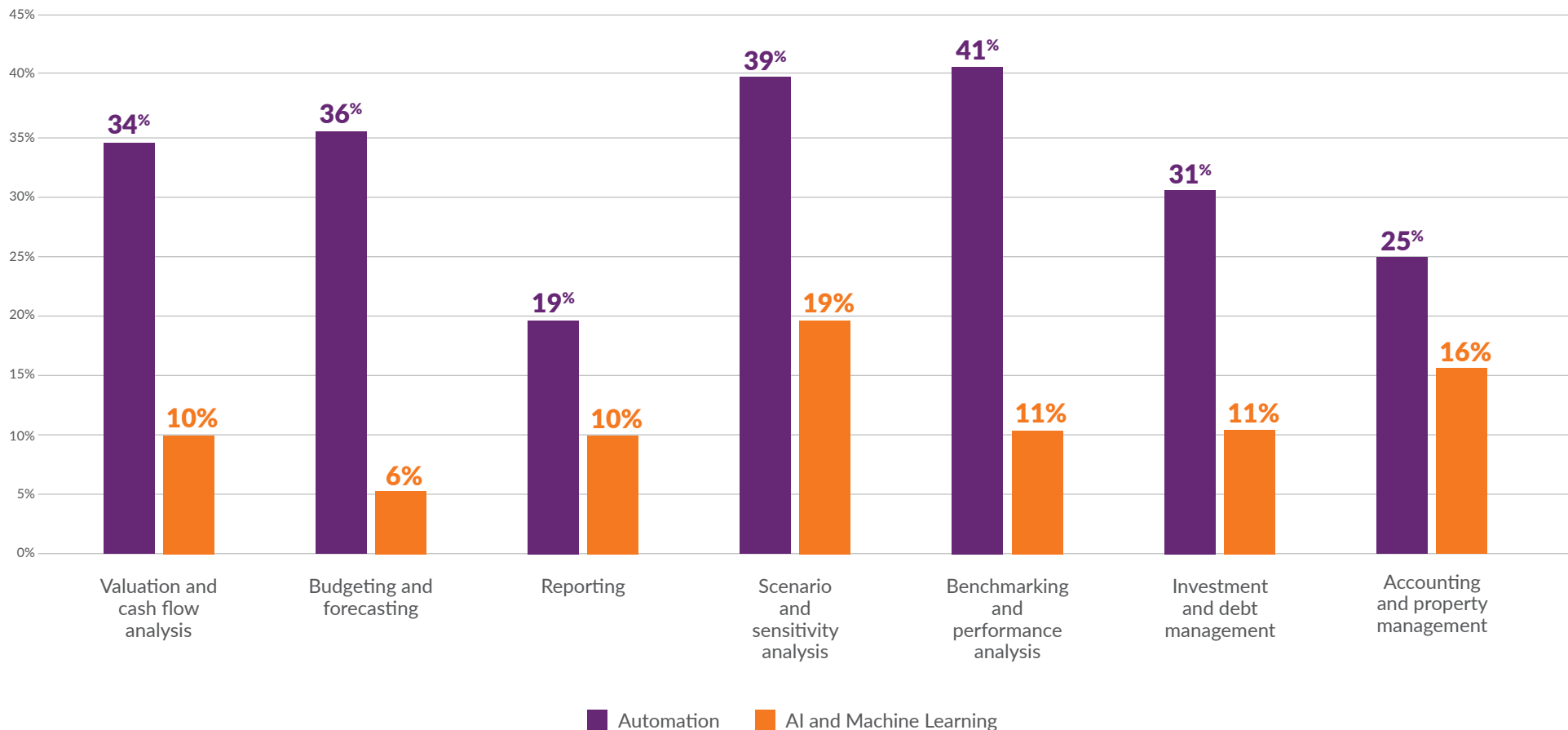


BOOSTING EFFICIENCIES WITH EMERGING TECHNOLOGY

Of the CRE firms surveyed that are currently using integrated software solutions, the findings reveal that a significant percentage are targeting process and analytical efficiency.

Firms are not only focusing on improving business intelligence based on enhanced analytics, but also eliminating inefficiencies by strategically applying process automation, artificial intelligence and machine learning in areas that they believe will see the greatest benefit.

CRE FIRMS ARE AUTOMATING PROCESSES OR APPLYING AI OR MACHINE LEARNING IN THE FOLLOWING FUNCTIONS





A DIFFERENT WAY OF THINKING

The findings reveal that driving efficiency through automation is a key priority for CRE executives and the use of AI and machine learning is on the rise.



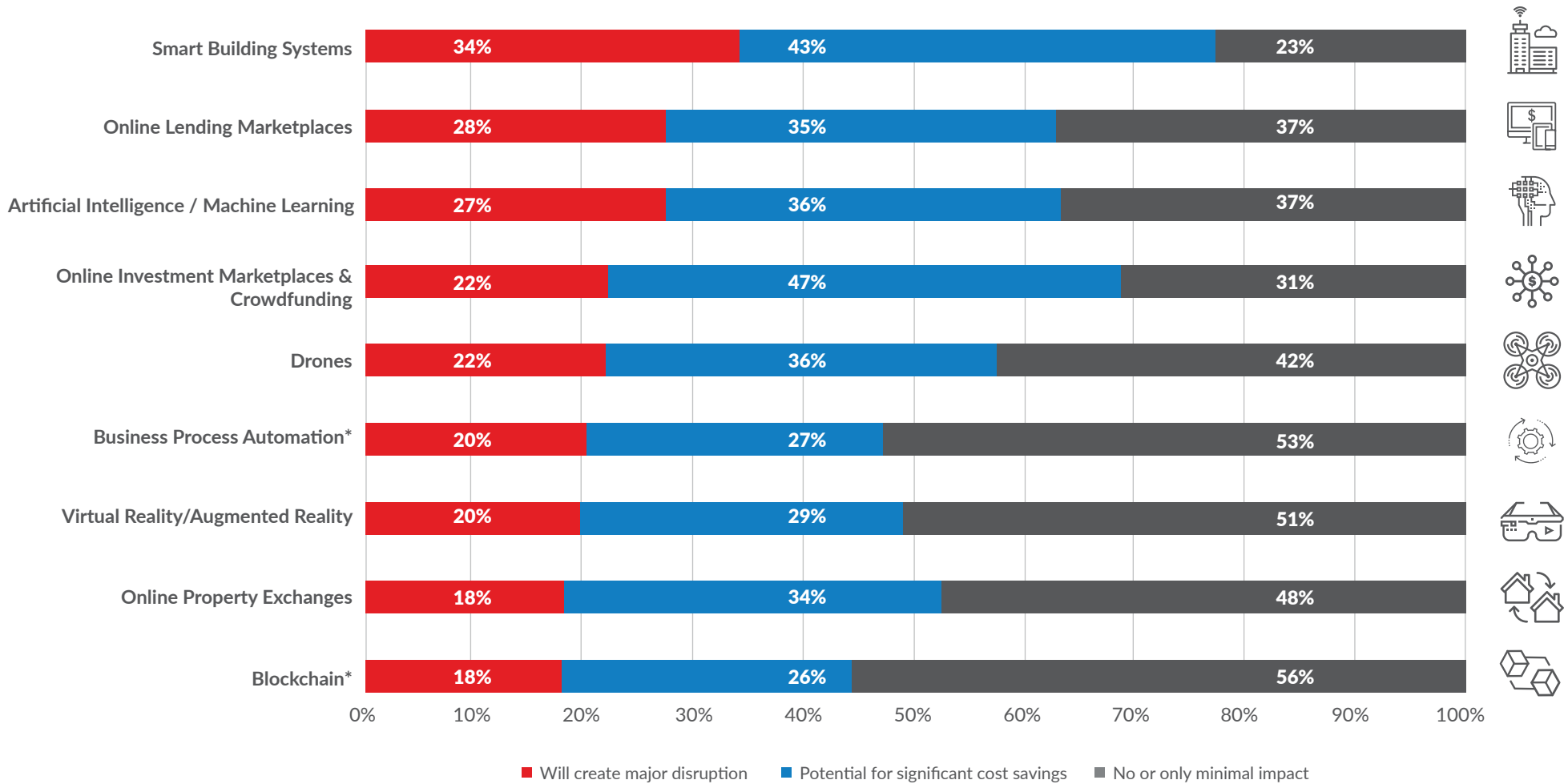
EMERGING TECH ADOPTION:
IS THIS A TURNING POINT?



EMERGING TECH ADOPTION: IS THIS A TURNING POINT?

A large majority of CRE executives indicated their firms have benefited from technology investments. However, when presented with nine rapidly emerging technologies and technology-enabled innovations, only a minority of respondents recognized them as having the potential for major disruptive impact.

HOW CRE EXECUTIVES SEE THESE TECHNOLOGIES IMPACTING THE INDUSTRY IN THE FUTURE



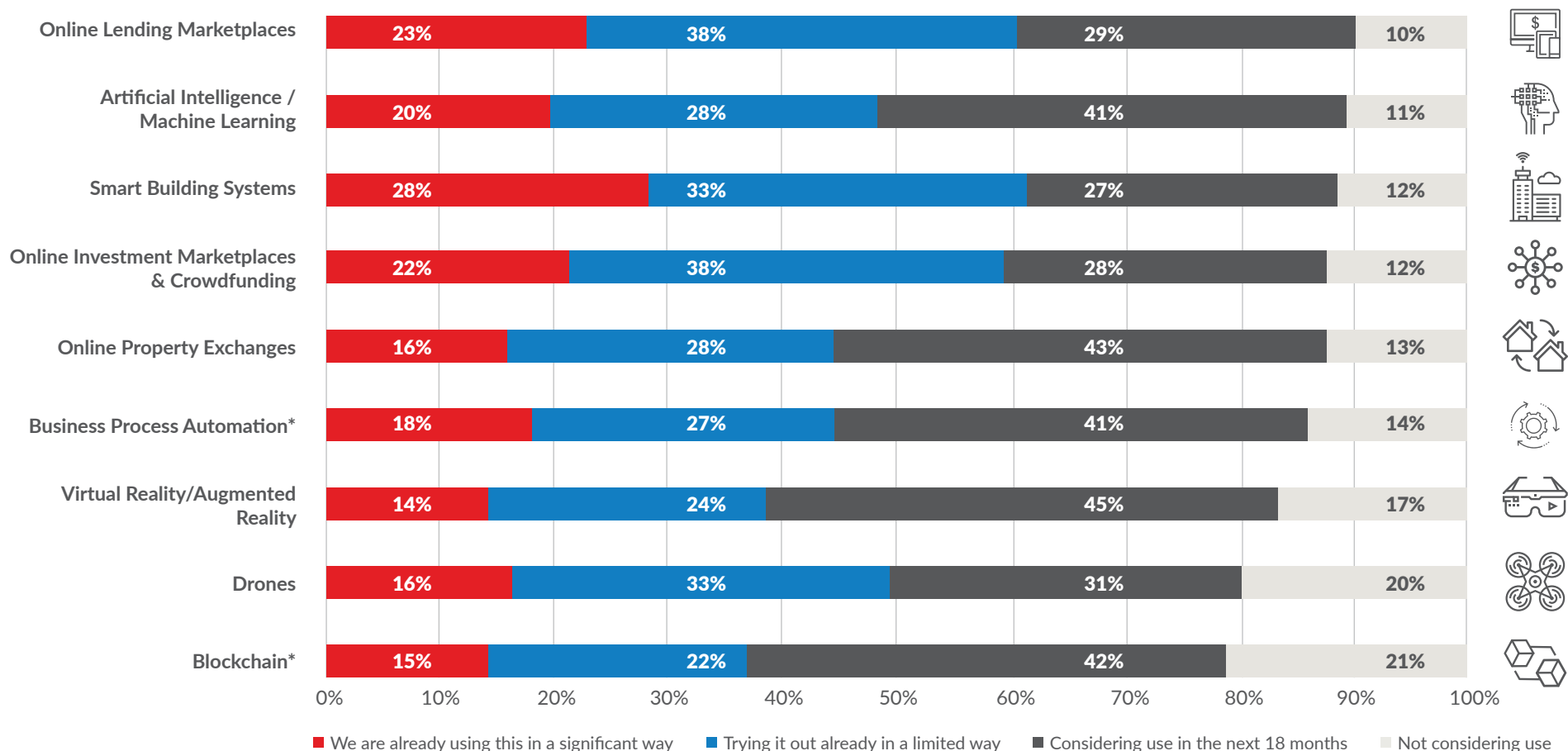
* Business Process Automation (e.g. automation of workflows/processes within valuations, leasing, budgeting, reporting, etc.)

* Blockchain (e.g. digital transaction platforms for smart contracts, title management and lease management services, etc.)

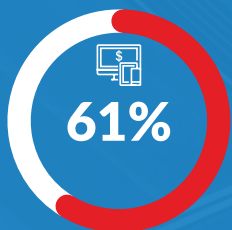
Despite this uncertainty, it appears a significant portion of the CRE industry is testing emerging technology and embracing an active role in innovation. More CRE firms are establishing resources, teams and budget to explore how these technologies will benefit their firm.

Across the board, firms are using emerging technologies to automate processes internally, while at the same time also taking advantage of platforms such as online exchanges, marketplaces and crowdfunding solutions to streamline lending and enhance the speed of transactions. When looking at the survey results, 61% of the respondents were either using or already trying out online lending marketplaces with artificial intelligence and machine learning not too far behind at 48%, suggesting that the future of these technologies and solutions is looking bright.

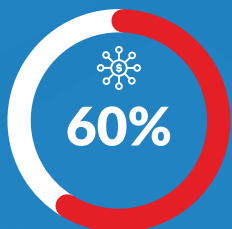
PROPTech USE NOW AND IN THE FUTURE



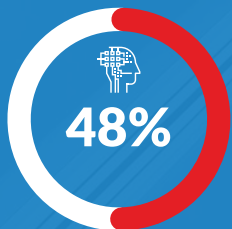
* Business Process Automation (e.g. automation of workflows/processes within valuations, leasing, budgeting, reporting, etc.)
 * Blockchain (e.g. digital transaction platforms for smart contracts, title management and lease management services, etc.)



Using or already trying out online lending marketplaces



Using or already trying out online investment marketplaces and crowdfunding



Using or already trying out AI and machine learning



A DIFFERENT WAY OF THINKING

Across the board, firms are using emerging technology to automate processes internally, while at the same time also taking advantage of platforms such as online exchanges, marketplaces and crowdfunding solutions to streamline lending and enhance the speed of transactions.



DISINTERMEDIATION:
CUTTING OUT THE MIDDLE



DISINTERMEDIATION: CUTTING OUT THE MIDDLE

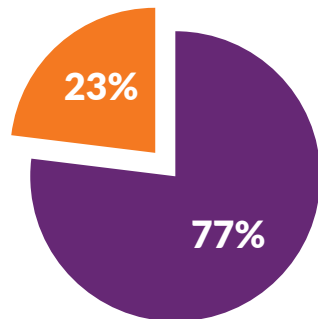
One of the biggest technology-enabled trends in CRE is disintermediation. The layers and stages of the financing, funding and transacting process create inefficiencies in many core CRE functions. The survey results suggest that transaction-based platforms such as online property exchanges, lending marketplaces and crowdfunding are now increasingly being used to streamline processes and create a more direct line between buyers and sellers, lenders and owners, and investors and funds, effectively altering the relationships between them at a fundamental level.

The effects of disintermediation can also be seen in new business models associated with the sharing economy (e.g. Airbnb), co-working (e.g. WeWork) and e-commerce (e.g. Amazon). These businesses are disrupting the CRE industry by cutting out processes and people or simply reducing the middle steps to create greater efficiencies. This is having a profound effect on portfolio planning and decision-making.

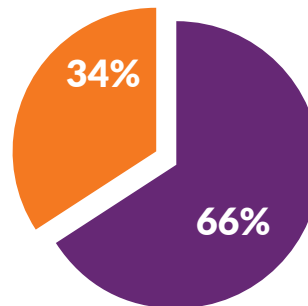
The majority of respondents indicate that these business trends are having a major impact on their investment and portfolio decisions.

MARKET AND BUSINESS TRENDS IMPACTING INVESTMENT AND PORTFOLIO DECISIONS

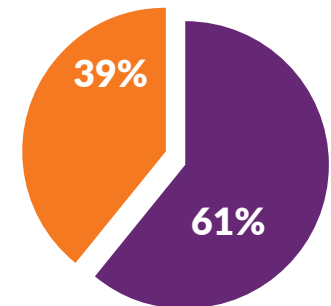
Sharing economy firms in real estate (e.g. Airbnb)



Co-working (e.g. WeWork, IWG Regus)



E-Commerce (e.g. Amazon)



■ YES, having influence on portfolio and investment decisions

■ NO, not influencing or no influence yet



BLOCKCHAIN

Blockchain represents another catalyst for **disintermediation** because it has the potential to remove cumbersome and costly middle steps from real estate transactions, while improving security and transparency across a network of individuals and companies.

When do CRE executives expect blockchain to start having any kind of impact, even minimal, on CRE?

- 10%** don't know what blockchain is
- 11%** don't think it will have an impact
- 37%** within the next two years
- 23%** more than two years from now
- 19%** it already is

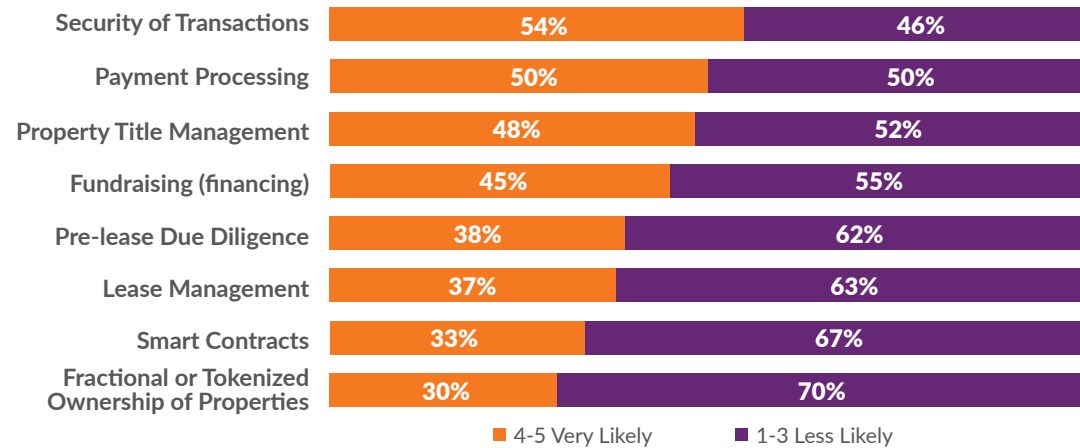
THE GREAT UNKNOWN: BLOCKCHAIN AND SMART CITIES AS THE NEXT DISRUPTIVE FORCE?

HOW COULD BLOCKCHAIN BE APPLIED TO CRE?

Although blockchain was not at the forefront of technologies identified as having a disruptive future impact on CRE, it is highly recognized by experts as having the potential to play a significant role in changing how many CRE functions will be managed in the future.

CRE executives see the impact of blockchain in a few areas, believing that it has potential to play a role for the industry in delivering security of transactions (54%), payment processing (50%) and title management (48%) – all issues where more confidence is needed in transactions for a global industry.

AREAS WHERE BLOCKCHAIN COULD HAVE A SIGNIFICANT ROLE IN THE CRE INDUSTRY



While respondents acknowledge some potential benefits, the survey results ranked blockchain at the bottom of the list for both future impact and adoption. Almost 56% of executives surveyed believe blockchain will have minimal to no impact on the CRE industry. Moreover, adoption of blockchain was also the lowest on the list of technologies with over 21% saying their firms have no plans of trying it out.

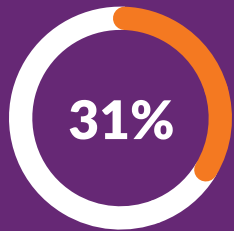
Smart City Initiatives and Projects are Impacting Investment and Portfolio Decisions



NO, not influencing or no influence yet



YES - accounting for it in some of our decisions



YES - having a major impact already on our decisions

HOW WILL SMART CITIES IMPACT CRE?

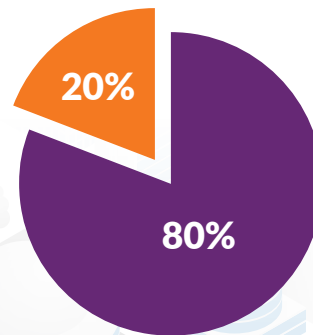
While blockchain's future seems less than certain, there appears to be a growing buzz around smart cities. As cities struggle with growing populations, limited resources and lifestyle demands in a finite amount of space, city officials are looking to technology to help improve efficiencies and meet the increasing demands of urban centers and the built environment. Many of these projects currently have modest goals of revitalizing small urban spaces, but there are also more ambitious projects that involve entire towns and large sections of cities. One of the more ambitious projects is Sidewalk Toronto where a large waterfront industrial area is being reimagined as the city of the future. Alphabet's Sidewalk Labs is working with Waterfront Toronto to solve the challenges of a dynamic and growing city.

These types of smart city initiatives and projects are already having an impact on the investment and portfolio decisions made by CRE executives. Even when compared to the other market and business trends, smart city initiatives and projects ranked as having the highest impact on investment and portfolio decisions.

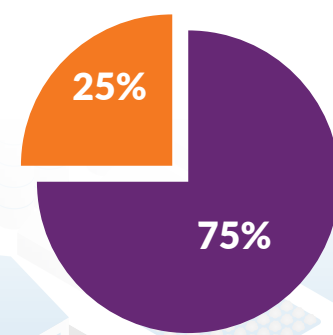
Partly fueled by the success of smart buildings and related technologies, this new growing trend towards smart cities will have an undeniable impact on the way the industry conducts business.

INFLUENCE ON PORTFOLIO AND INVESTMENT DECISION

Smart city initiatives and projects



Amenitization and experiential-focused development



■ YES, having influence on portfolio and investment decisions

■ NO, not influencing or no influence yet

HEDGING THEIR BETS: CRE FIRMS
INVESTING IN PROPTECH FIRMS

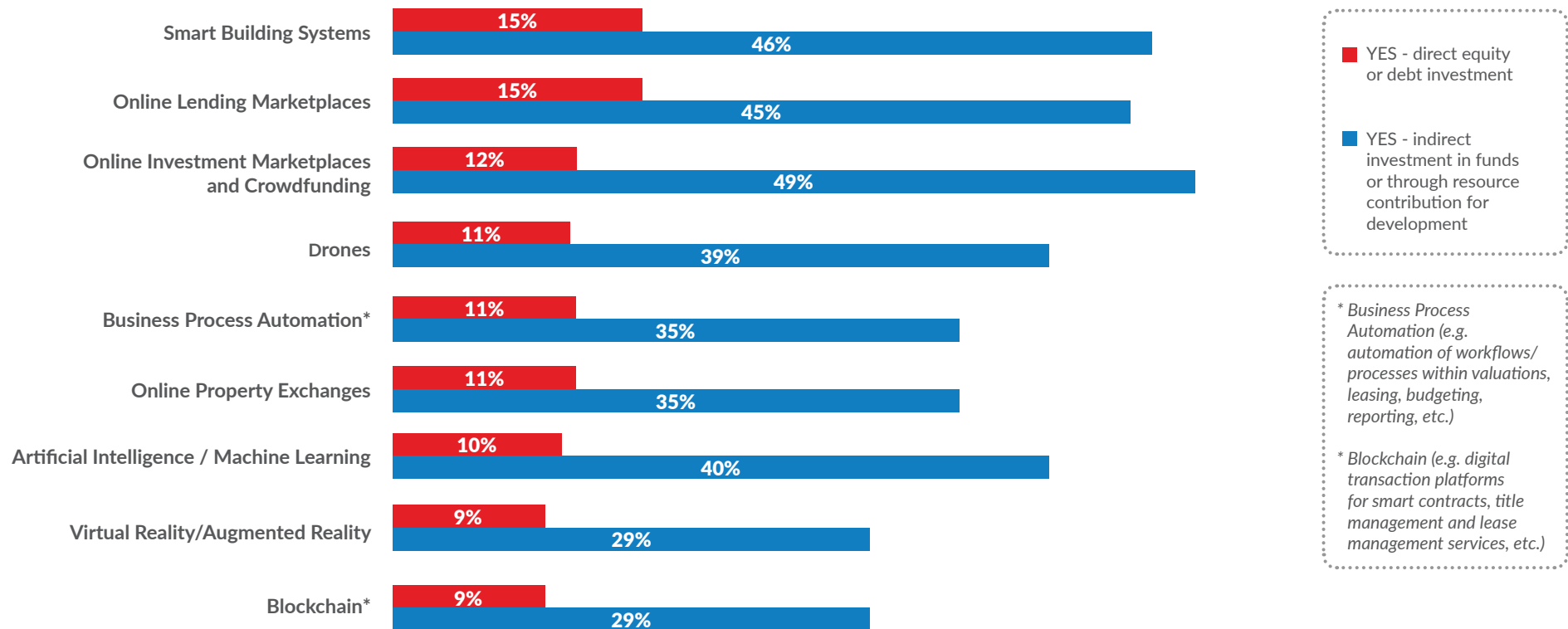


HEDGING THEIR BETS: CRE FIRMS INVESTING IN PROPTech FIRMS

While CRE executives may still be skeptical of the impact of some emerging technologies, many recognize the changing landscape and the need to adapt and invest to remain competitive. As a result, CRE firms are no longer simply anticipating that new technology will have an impact on their industry – they are actively participating in this change through direct investment in PropTech.

The survey results highlight the growing trend of CRE firms actively investing directly in PropTech firms and startups at the forefront of innovation. It appears that CRE firms are hedging their bets and having a direct impact on what the future state of technology in CRE might one day look like.

CRE FIRMS INVESTMENT IN PROPTech FIRMS



KEY TAKEAWAYS



KEY TAKEAWAYS

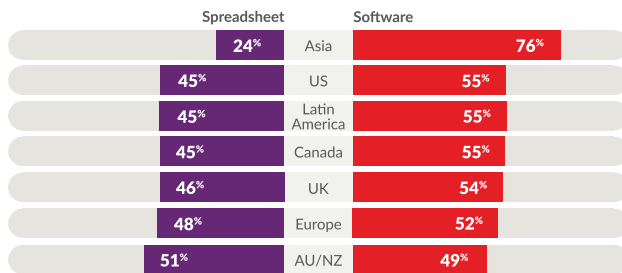
- KEY CRE firms that are holding on to traditional ways of managing their business through the use of spreadsheets will face competitive challenges. Firms that have embraced integrated technology solutions are better positioned to streamline their processes, gain better intelligence from their data and transact faster with other participants. Reporting is a key area of opportunity for firms to start leveraging the benefits of integrated technology solutions.
- KEY CRE firms are no longer questioning the benefit of emerging technology, but rather actively applying it across a broad range of business functions. Overall it is clear that the move to greater PropTech adoption is only accelerating. However, many executives remain uncertain about a number of emerging technologies. Innovation is an opportunity rather than a cost. Having a clear technology and data strategy will help enable firms to more quickly respond to increasing market pressures.
- KEY The combination of new market entrants, new technologies and changing demographics have created disruptive models within CRE. This means significant opportunity for firms who rapidly embrace innovation and PropTech to streamline their systems and processes to reduce complexity. Staying on top of the disintermediating drivers will help ensure CRE executives are well-positioned to leverage the latest available technologies to their advantage.
- KEY CRE firms are not only adopting PropTech but a growing number are also becoming PropTech investors as well. As a result, these firms are well-positioned to influence the direction of PropTech development and investment as they take on a more active investment role. These firms will be best equipped to compete in a constantly changing technology landscape.



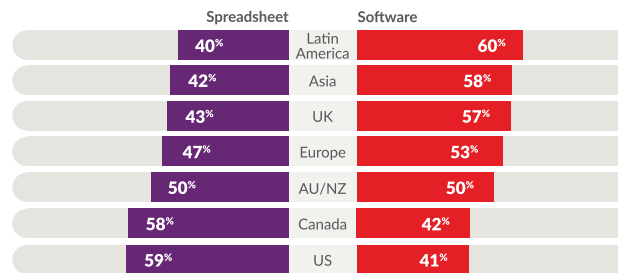
APPENDIX

Spreadsheet vs Software – Thinking specifically of your own firm, what best describes the type of tools you use internally for the following functions. The choices for type of tools are:

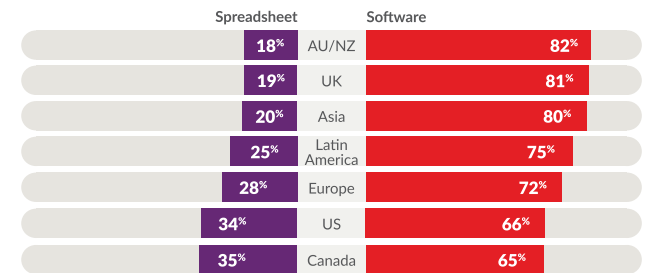
BUDGETING AND FORECASTING



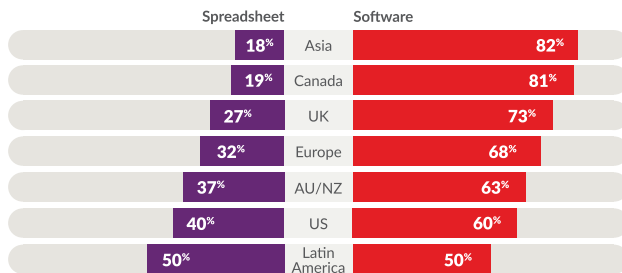
VALUATION AND CASH FLOW ANALYSIS



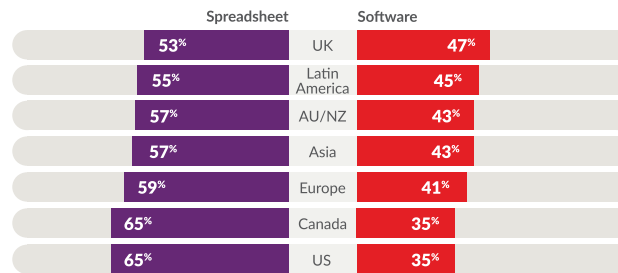
SCENARIO AND SENSITIVITY ANALYSIS



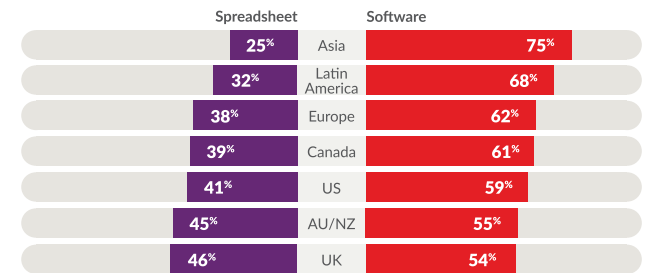
INVESTMENT AND DEBT MANAGEMENT



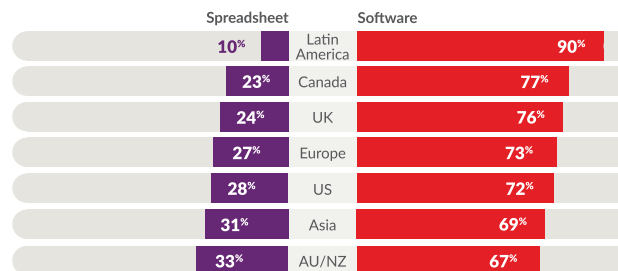
REPORTING



BENCHMARKING AND PERFORMANCE ANALYSIS



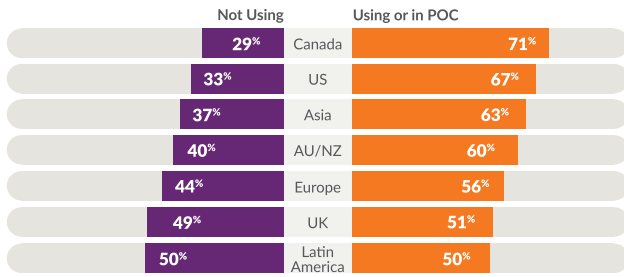
ACCOUNTING AND PROPERTY MANAGEMENT



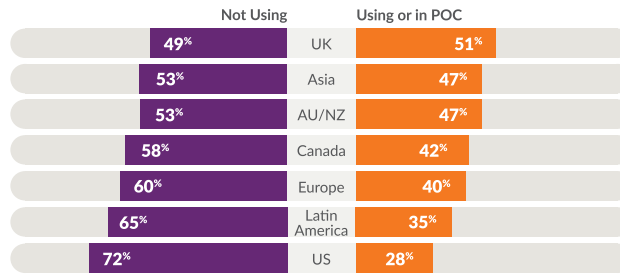
APPENDIX

Technology Adoption - What best describes your firm's current or future use of these emerging technologies?

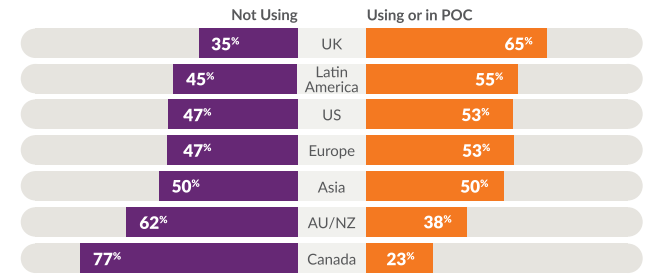
SMART BUILDING SYSTEMS



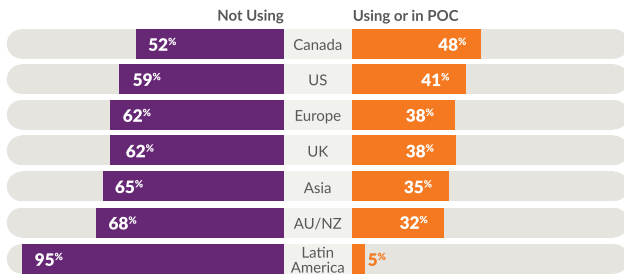
VIRTUAL REALITY / AUGMENTED REALITY



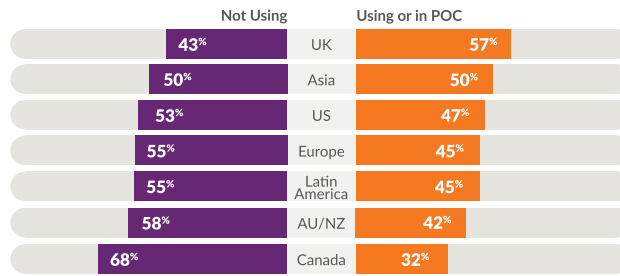
ARTIFICIAL INTELLIGENCE / MACHINE LEARNING



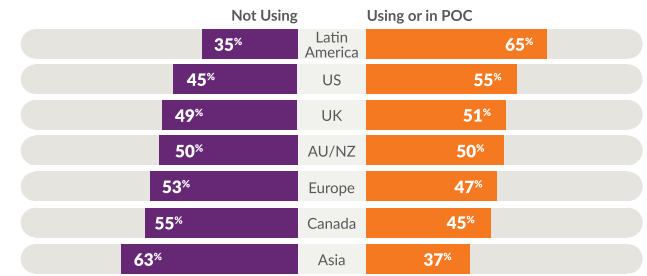
BLOCKCHAIN



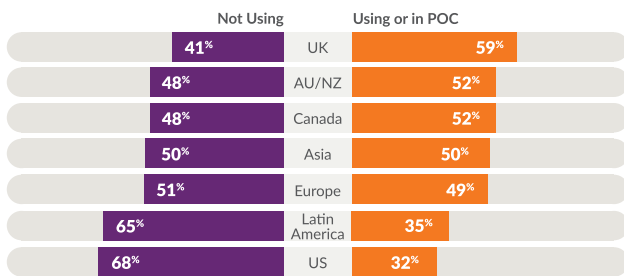
BUSINESS PROCESS AUTOMATION



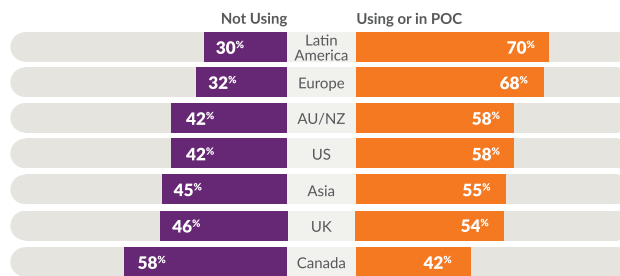
DRONES



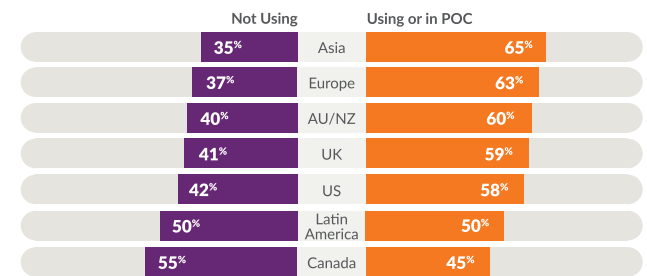
ONLINE PROPERTY EXCHANGES



ONLINE LENDING MARKETPLACES



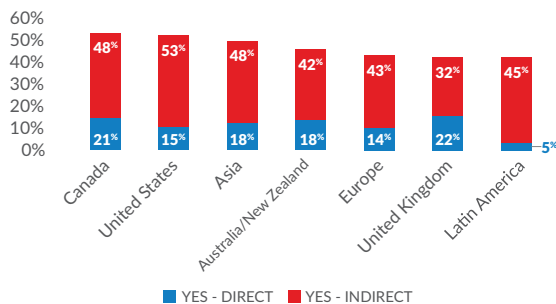
ONLINE INVESTMENT MARKETPLACES AND CROWDFUNDING PLATFORMS



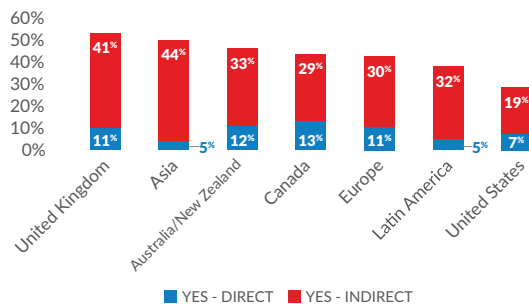
APPENDIX

Investment from CRE Firms - Has your firm invested in any organizations related to these technologies? (e.g. has your firm put investment money behind companies in any of these areas?)

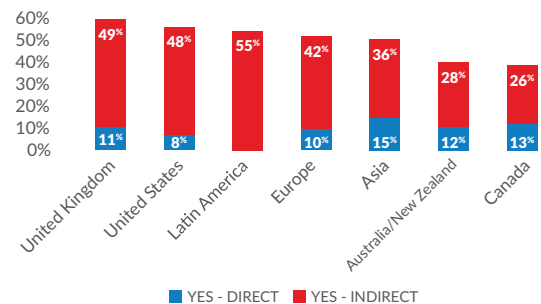
SMART BUILDING SYSTEMS



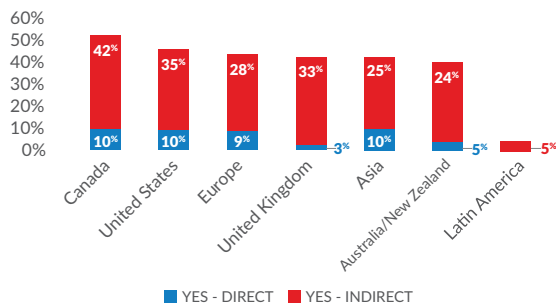
VIRTUAL REALITY / AUGMENTED REALITY



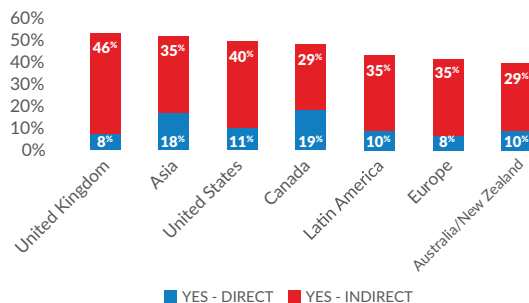
ARTIFICIAL INTELLIGENCE / MACHINE LEARNING



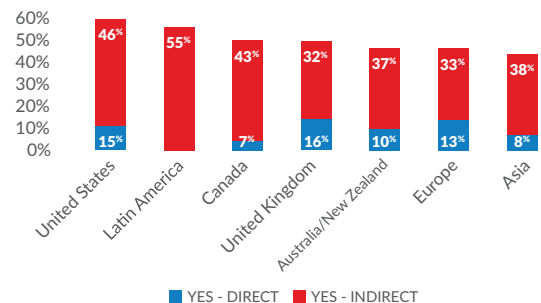
BLOCKCHAIN



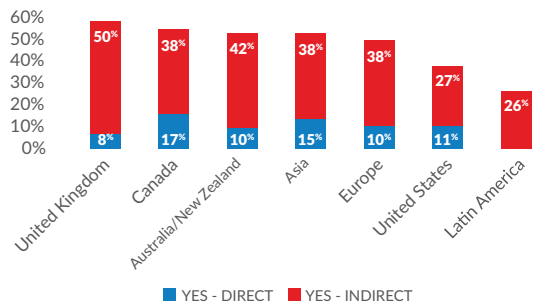
BUSINESS PROCESS AUTOMATION



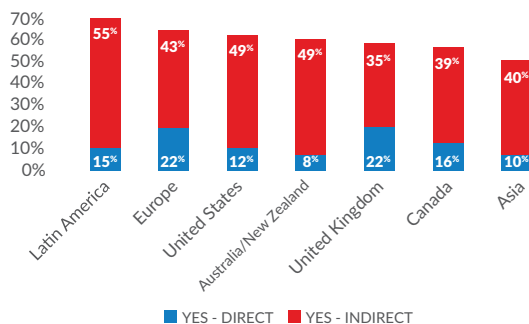
DRONES



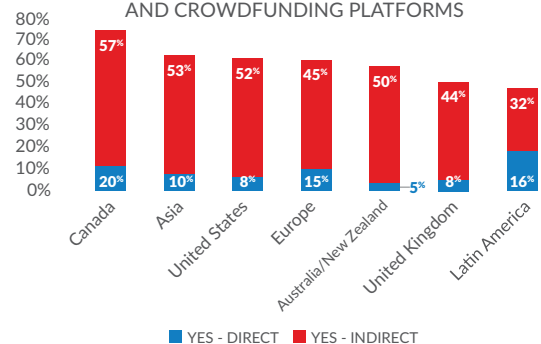
ONLINE PROPERTY EXCHANGES



ONLINE LENDING MARKETPLACES



ONLINE INVESTMENT MARKETPLACES AND CROWDFUNDING PLATFORMS

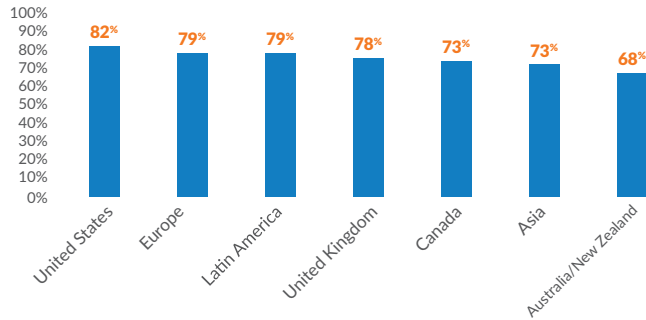


APPENDIX

Business Model Impacts – How are the following impacting your firm’s investment or portfolio decisions?

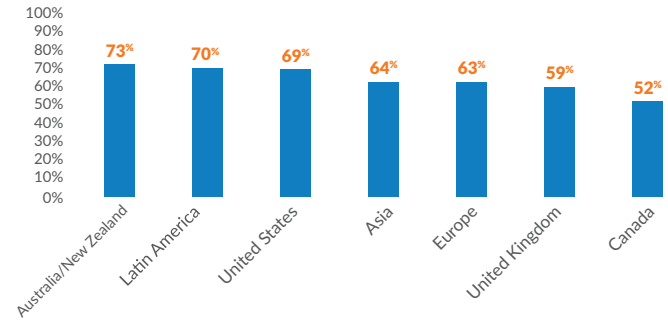
SHARING ECONOMY FIRMS IN REAL ESTATE (E.G. AIRBNB)

YES - INFLUENCING DECISIONS



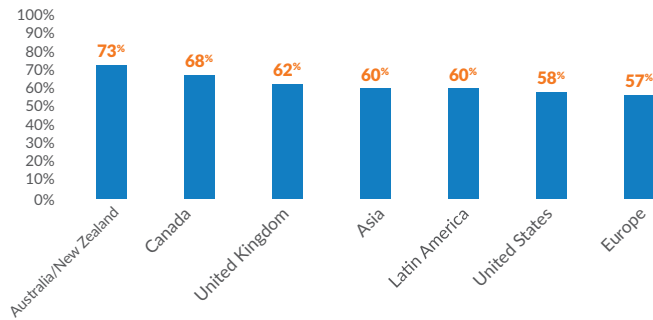
CO-WORKING (E.G. WEWORK, IWG REGUS)

YES - INFLUENCING DECISIONS



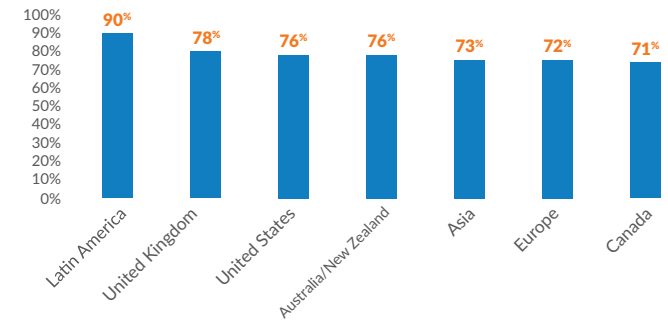
E-COMMERCE (E.G. AMAZON)

YES - INFLUENCING DECISIONS



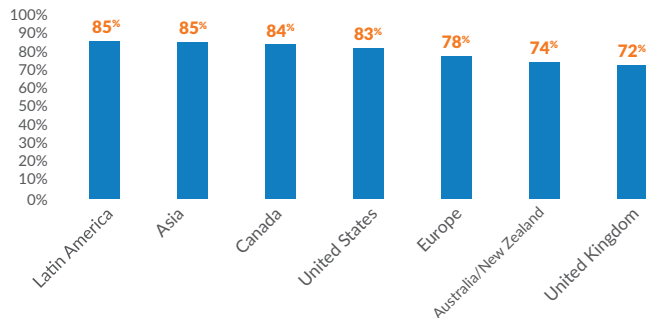
AMENITIZATION AND EXPERIENTIAL-FOCUSED DEVELOPMENT

YES - INFLUENCING DECISIONS



SMART CITY INITIATIVES AND PROJECTS

YES - INFLUENCING DECISIONS





ALTUS GROUP
CRE INNOVATION REPORT





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