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The Future Property Workforce: Challenges and Opportunities for Property Professionals in the Changing Landscape

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Abstract: The rapid advancement of technology has revolutionised how we live and work, posing challenges and opportunities for various professions, including the property and construction workforce. The COVID-19 pandemic has further accelerated the pace of change. Therefore, in this study, we examined the future property workforce and the required skills for Property Industry 4.0 by conducting semi-structured interviews with property leaders. The findings suggest that digitisation and automation are reshaping the property workforce, including those working in development and construction, necessitating efforts to bridge the gap between graduates' technology proficiency and practical application. Moreover, calls for proactive regulation of artificial intelligence (AI) use in the property sector highlight the need for regulator and professional body involvement. This study also shows the challenges and opportunities for property professionals with an increased focus on environmental, social, and governance (ESG) matters and the challenges of balancing global expansion with local adaptability due to globalisation. Furthermore, this work highlights a concerning decline in communication skills among graduates, which is partly attributed to the pandemic. Collaborative efforts between universities and industry are essential to cultivate these vital skills among future property professionals. The implications of this study are also discussed.

Keywords: property professional; property education; proptech; ESG; AVM; Australia

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1. Introduction

We live in an era in which technology change has transformed how we live and work. Automation and "thinking machines" are replacing human tasks and jobs and changing the skills that organisations are looking for in their people (PWC [1]). New technologies have introduced various property industry revolutions (often called Property Industry 4.0). Notably, these include the automation of property valuation processes, the integration of smart building technologies in property management, the widespread adoption of building information modeling (BIM) in property development and construction, and the innovative application of blockchain and tokenisation in property investment (Starr et al. [2]; Elrefaey et al. [3]; Marey et al. [4]). The adoption of digital twins is also poised to increase the efficiency of the building industry. Moreover, the prevalence of data analytics has fundamentally transformed how we make business decisions. Artificial intelligence (AI), in particular, stands out as a major game changer for the real estate industry in the coming years, as indicated by a recent Jones Lang Lasalle (JLL) survey (JLL [5]). Wilkinson et al. ([6,7]) found comparable evidence in the property valuation industry.

Crucially, the rapid pace of these changes has been further accelerated by the far-reaching impact of the coronavirus pandemic. The work-from-home trend resulting from the pandemic has instigated a substantial overhaul in the property industry (The property industry encompasses a broad spectrum of sectors related to real estate, including property

valuation, property management, property investment, property development, property research, property finance, and property technology. It involves various professionals and stakeholders contributing to the acquisition, development, management, and utilisation of property assets. The terms "property" and "real estate" are often used interchangeably in the context of the property industry.), including the office sector (Allan et al. [8]; Wang et al. [9]), thereby exerting a considerable impact on property professionals (Property professionals refer to individuals who practice in various fields related to real estate and property. These professionals typically specialise in areas such as property valuation, property management, property development, property investment, property consultancy, property research, and other related disciplines within the property industry.). Specifically, the imperative to work remotely in response to the virus's spread has led property professionals to adapt to new ways of conducting their work. Property technology, property data, and property software have become commonplace tools integrated into the daily practices of property professionals. Property professionals must integrate property technology, engage with coworking providers, and stay informed about hybrid work models to navigate the evolving property landscape effectively. The pandemic has also highlighted the challenges of globalisation, such as supply-chain disruptions (JLL [5]), and increasing environmental, social, and governance (ESG) considerations have also been witnessed in the post-pandemic era (Talbort [10], Lee et al. [11]). Adapting to this changing dynamic is essential for property professionals to excel in the post-pandemic property market.

Therefore, it is essential to explore how these developments will reshape the future property workforce, which is defined as the collective body of individuals engaged in various roles and professions within the property industry. However, to the best of our knowledge, no study has been dedicated to assessing the changing nature of the property workforce in the post-pandemic era. Therefore, this study is dedicated to discerning the evolving landscape of the property industry's workforce. This study also evaluates its readiness for the future, specifically focusing on property practitioners and graduates. It also assesses the adaptations and enhancements required in property course curricula to equip graduates with the knowledge and skills essential for success in the dynamically evolving property workforce.

This study contributes to the literature in a number of ways. This is the first study of its kind to investigate the future workforce of the property industry in the post-pandemic era. Building upon prior research conducted by Wilkinson et al. ([6,7]) that predominantly centred on property valuation, the current study extends its scope to encompass various property professionals spanning property valuation to property fund management. This broader perspective provides a more comprehensive understanding of the evolving workforce landscape within the property sector, especially in the aftermath of the global pandemic. The research findings are expected to provide invaluable insights for property professionals, academics, industry stakeholders, and policymakers, helping them better comprehend the evolving landscape of the property workforce in the post-pandemic era. Moreover, this study contributes by shedding light on the opportunities and challenges presented by the convergence of post-pandemic changes and the Property Industry 4.0 era for the first time, offering a comprehensive understanding of the property industry's future workforce.

The remainder of this paper is structured as follows. A literature review is presented in Section 2. Section 3 explains the research methodology. Section 4 provides a discussion of the results, and Section 5 concludes the paper, in addition to proposing recommendations and discussing the implications of this research.

2. Literature Review

The Fourth Industrial Revolution has significantly disrupted the global economy, particularly during the pandemic, with the need for physical distancing and shifting consumer demands forcing businesses to embrace digitalisation and contactless operation (McKinsey & Company [12]). This literature review critically examines key emerging

trends within the property industry, highlighting the significance of ESG considerations, the implications of globalisation, and the requisite skills and knowledge demanded by this dynamic landscape.

2.1. Property Technology

Property technology (proptech) refers to the use of technology, software, and innovation to enhance and streamline various processes within the property industry. Digitalisation and the automation of property processes using technology have occurred over the last four decades. Computer aids have been used not just for computation but also to conduct repetitive, process-based activities with limited human intervention. Digital marketing has been used widely by property companies globally to reach out to new customers (Acker et al. [13]; Low et al. [14]) and retain existing customers (Royle and Laing [15]). The use of technology in the whole property life cycle has impacted professional practices. For example, building management systems notify the property manager of any anomaly (Cajias [16]).

Building information modelling (BIM) and digital twins are the most significant software solutions that have been adopted by the design and construction industry in recent years. Besides reducing design and construction costs, BIM adoption also enhances productivity and improves risk management processes (Azhar [17]; Bryde et al. [18]; Tzachor et al. [19]). The installation of smart meters, censors, and smart devices can also enhance building management. Furthermore, given the availability of smart energy data, Francisco et al. [20] discussed how digital-twin software can be used to identify building retrofit strategies and achieve near-real-time efficiency to reduce energy consumption.

In property investment, the introduction of AI and machine learning (ML), blockchain technology, virtual reality, etc., has affected the ways investors, tenants, and managers invest in and manage properties (Souza et al. [21]). For example, Cajias [16] proposed the use of AI to support investment managers in validating investment decisions by applying machine learning techniques to large datasets for improved forecasting of rents related to portfolio assets. Thackway et al. [22] applied an ML approach to predict gentrification areas. Veuger [23] found that blockchain applications in property investment provide more effective and efficient transactions, increased transparency, and a better investment foundation, in addition to supporting the development of new mortgage markets. In addition to increased transparency, Hoxha and Sadiku [24] added that cost reduction, followed by the security of transactions, is the most important factor in adopting blockchain technology. Tajani et al. [25] proposed an automated valuation model (AVM), a technology-based system that uses mathematical modelling to assess the value of a property. An AVM is used to support a 'quick' assessment of market value in the periodic reviews of the asset values of real estate portfolios.

AVMs were developed to reduce valuation cost and time, as well as to increase efficiency (RICS [26]). Over the years, they have been widely used by the property valuation industry, including artificial neural network (ANN) and geographic information system (GIS)-based valuation (Huang [27]; Wyatt [28]). In addition, the profession is deploying other advanced valuation techniques, including hedonic pricing methods, fuzzy logic, and autoregressive integrated moving averages (Pagourtzi et al. [29]). Hybrid AVM systems have been used to improve performance in mass appraisal (Yacim & Boshoff [30]; Hoang et al. [31]).

The use of AVMs for property valuations has increased (Grover [32]; Wilkinson et al. [6]) because it is more efficient and superior to traditional valuation methods in terms of accuracy (Abidoye et al. [33]; Chaphalkar and Sandbhor [34]; Kok et al. [35]). Furthermore, some property service providers in Australia, like CoreLogic and PropTrack, provide property valuation in real time using AVMs (CoreLogic [36]; PropTrack [37]). Other popular online property valuation providers in Australia include PriceFinder, Real Estate, OntheHouse, and Domain.

Property technology has also impacted property users, tenants, and occupants and changed their business practices in property investment, finance, transaction, and hybrid workplace models. The potential disruption of real estate crowdfunding is another area that has attracted attention in property the finance literature (Montgomery et al. [38]). Cash investors can diversify into different property investments through crowdfunding platforms, while property entrepreneurs can access a global pool of investors (Saiz [39]). Real estate tokenisation is gaining traction in the property investment market (Chow and Tan [40]). However, regulations governing the fractionalisation of ownership of assets are one among the challenges of tokenising single real estate assets (Baum [41]).

Digital technology can potentially speed up the property transaction process. However, the lack of an up-to-date, single pool of standardised property information is the most critical cause of delay in real estate transactions (Saull et al. [42]). Wouda and Opdenakker [43] discussed challenges in applying blockchain technology in the office building transaction process in the Netherlands. These challenges include difficulty defining the property's features due to a lack of data structure and quality. The IT revolution and the COVID-19 pandemic have accelerated and shaped a new economy of flexible jobs with a more mobile workforce tied only to portable phones and laptops, resulting in increased work from home (Saiz [39]). This changed how property professionals work (Souza et al. [21]) and significantly reduced the demand for office space.

In the 2023 global real estate technology survey, it was reported that companies recognise the strategic value of real estate technology as an enabler of new business models, improving decision making and enhancing productivity (JLL [5]). While many businesses claim to have a tech vision, very few have successful proptech programs that match boardroom ambition. A proportion of 78% do not have an actionable strategy, and fewer than 40% say their technology programs have been very successful (JLL [5]). It is encouraging that most businesses plan to increase their technology budgets despite a challenging operating environment. Eighty-nine per cent of respondents plan to combine upskilling of the existing workforce with the hiring new talent, outsourcing, and mergers and acquisitions to enhance their technology capacity. At the same time, 78% will turn to external partners to help improve technology outcomes (JLL [5]).

In summary, extensive studies have demonstrated that the use of property technology has increased in the property industry. However, few studies have been devoted to the readiness of the property workforce for this development.

2.2. Environmental, Social, and Governance (ESG)

Another emerging trend in the property industry is ESG property investment, which is a set of frameworks that encourages businesses to act responsibly. Specifically, several studies have consistently demonstrated that property investors opt for sustainable buildings due to the potential for enhanced returns, reduced investment risk, and the long-term sustainability they offer (Eichholtz et al. [44,45]; Lee, et al. [11]; Onishi et al. [46]). Although there has been growth in the number of sustainable buildings in Australia, it was found that the level and rate of knowledge development are still in the elementary stages. Only a small proportion of property valuers understand sustainability thoroughly (Warren-Myers [47]). Furthermore, substantial limitations were reported in incorporating sustainability in property valuation in Melbourne. These included valuers' limited knowledge, reluctance to consider sustainability in the valuation process, poor verification or investigation of sustainability considerations, client instructions that did not direct valuers to consider sustainability, a lack of data, and limited tools for detailed analysis (Le and Warren-Myers [48]). A longitudinal study investigating valuers' perceptions of sustainability in Australia found that a lack of knowledge about sustainability and the ability to compare sustainability attributes and certifications substantially limit valuers' consideration of sustainability in valuations (Warren-Myers [49]).

According to Talbot [10], the growing importance of ESG is one major trend shaping the valuation profession. Investors and other stakeholders expect ESG to be considered

in property valuation as climate change and social responsibility take centre stage. As a result, valuers may need to be capable of assessing and incorporating ESG into their analysis, adopting new methodologies and approaches to valuing assets and liabilities that consider non-financial risks and opportunities (Talbot [10]). In doing so, valuers must also be familiar with sustainability reporting frameworks and metrics. This supports the earlier report findings that there is a lack of understanding and engagement with climate change risks in Australia's valuation practice. Hence, there is a need for better information sources and guidance to inform valuers of the risks, as well as the development of specific mechanisms to consider such risks to be included in valuation processes, practices, and reports (Warren-Myers and Cradduck [50]).

In summary, the property industry is significantly transforming towards ESG property investment, influenced by frameworks advocating ethical business practices. Although Australia's number of sustainable buildings is rising, understanding sustainability among property valuers is still in its early stages. Moreover, while most studies emphasise the significance of sustainability components for property professionals, there is a notable gap in attention to social and governance strategies, indicating a need for increased awareness and integration of these aspects into industry practices. Furthermore, most studies focus on how ESG affects property valuation.

2.3. Globalisation

Another trend shaping the property industry is the challenges posed by globalisation. Several studies emphasise the growing integration of property markets and professionals globally. Globalisation is another major factor that affects the valuation profession (Wilkinson et al. [51]; Wilkinson et al. [6]). With the rise of international trade and cross-country property investment, property valuers are being called upon to value businesses that operate in different countries and regions, and this requires a good understanding of the local market, as well as the economic, cultural, political, and legal environment (Talbot [10]). As a result, there is an increasing demand for property valuers with expertise in international valuation practices. In addition, the globalisation of real estate is associated with an increase in foreign individuals and institutional investors diversifying their investment portfolios. JLL research reported an estimated AUD 2 billion of foreign capital flows into the Australian commercial property market (JLL [5]).

A recent report in The Australia Financial Review stated that the arrival of a record 1.5 million migrants would worsen housing shortages, driving up rents and inflating property prices (Kehoe et al. [52]). Rogers et al. [53] examined foreign investment in residential property in Australia. They concluded that a broader discussion about foreign investment and affordable housing might provide visions about how various issues (e.g., foreign capital, foreign developer contribution, and foreign taxation concessions) might be used to increase the supply of affordable housing.

While numerous studies have highlighted the challenges posed by globalisation in the property industry, there is a limited body of research focused on assessing the readiness of property professionals for these challenges.

2.4. Skills and Knowledge

The property education literature has discussed the skills and knowledge of property graduates who have completed their education and earned a degree in a field related to property, real estate, or a related discipline. However, in the evolving landscape of the property industry, property professionals face changing expectations from investors and stakeholders, necessitating the acquisition of new knowledge and skills. Bessen [54] reported that the jobs created by new technologies far exceed the losses caused by automation. However, Piazolo and Dogan [55] suggested that almost one in two jobs within the property industry will be affected.

As reported by Wilkinson et al. [6], the most significant issues facing the property industry include threats of digital disruption, automated valuations, declining fees, and

an ageing professional body membership. Therefore, property valuers need to embrace new technology as the profession has increased use of AVM, and graduates need to equip themselves with computer technology, knowledge of relevant software, and advanced statistical knowledge for the future workforce (Wilkinson et al. [6]). To improve valuation accuracy, valuers should enhance their big data analysis skills, and valuation companies should train their valuers in market forecasting skills (Abidoye et al. [56]).

Although AI and ML are becoming more prevalent in the property industry, graduates must also understand how the software derives the results, as it is essential to understand the basic valuation principles (Wilkinson et al. [6]). The authors outline a list of knowledge and skills required for the future, including a greater knowledge of the fundamentals needed for a valuation, a better understanding of methodological principles, the development of more interdisciplinary skills, etc.

As such, to satisfy the expectations for the future workforce of the property industry, education providers must implement curriculum changes to incorporate digital technologies and statistical knowledge and skills (Wilkinson et al. [7]). Although knowledge of new technology is in high demand, foundational skills in communication, writing, collaboration, critical thinking, and management are equally important, and they help workers move between different jobs (Dawson et al. [57]). This supports the finding of Ayodele et al. [58] that employers have high expectations for soft skill sets relating to responsibility, administration, listening, and communication skills. Poon [59] also identified graduate soft skills as a concern among human resource managers. This includes client care, as well as interpersonal, writing, communication, and presentation skills. Consistent with research examining property-related knowledge and skills in Australia, which prioritised problem solving and time management (Abidoye et al. [60]), this aligns with the viewpoint that these competencies are crucial for property employers and graduates. On the other hand, contrary to the results of Wilkinson et al. [6,7], these results suggest that Australian property professionals may not fully integrate new technologies into daily operations.

Recognising practical experience as a crucial employability factor, Callanan and McCarthy [61] highlighted employers' concerns about property graduates lacking sufficient practical expertise to bridge the gap between theory and practice. A study conducted in the UK echoed the importance of commercial awareness as an employability skill, underscoring the insufficient development of this aspect in graduates (Poon [59]). Notably, industry internships have been identified as essential, providing students with a structured work experience to acquire the necessary knowledge and skills (Wilkinson et al. [6]). This aligns with earlier literature emphasising the importance of intertwining industry and academia through mentoring and internships for program enhancement (Weinstein [62]; Weinstein et al. [63]). Furthermore, fostering strong ties between professional bodies, universities, and practitioners facilitates the transfer of practical knowledge and real-world experience to students (Wilkinson et al. [7]).

For existing property professionals, continuing professional development programs are needed to address knowledge and skills gaps to keep them abreast of the latest developments (Wilkinson et al. [7]). They are responsible for updating their skills rather than relying on any employer (PWC [1]). On the other hand, employers must consider the skills of the current workforce's future skill requirements and embrace lifelong learning to bridge this gap (PWC [1]). This is in line with the findings of Talbot's [10], who suggested that one of the biggest challenges valuers must navigate in 2023 and beyond is the growing complexity of the business world and that valuers must be able to adapt to this constantly changing environment.

Despite extensive studies on property education and required skills for professionals, a research gap exists in terms of assessing the readiness of property professionals, especially valuers, for the transformative technological landscape. The acknowledged impact of digital disruption, automation, and artificial intelligence lacks an in-depth exploration of professionals' current proficiency in technical and essential soft skills. A comprehensive investigation into proficiency in communication, critical thinking, and management skills

is needed. Moreover, the effectiveness of existing educational curricula and professional development initiatives in addressing these skill gaps for future preparation has not been thoroughly covered.

In summary, that existing literature extensively discusses the challenges of globalisation in the property industry. However, a significant research gap exists in terms of assessing property professionals' readiness for these challenges, especially valuers navigating technological shifts. Emphasis on technical competencies requires deeper investigation into essential soft skills. The growing trend of ESG property investment lacks attention to social and governance strategies, necessitating increased awareness. Despite the acknowledged role of property technology, a substantial research gap remains in understanding the readiness of the property workforce for this development. Closing these gaps is crucial in order to effectively prepare property professionals for the industry's transformative future.

3. Methodology

Given the exploratory nature of this study, a qualitative methodology was chosen, leveraging semi-structured interviews as the preferred method for efficiently gathering substantial data within a constrained time frame (Silverman [64]). Semi-structured interviews allow for focused yet flexible exploration of pertinent ideas, enhancing understanding (Adam [65]). This qualitative approach effectively elucidates individuals' meanings, perceptions, and assumptions (Brannen [66]), especially when existing insights on the subject are limited (Brinkmann [67]). Numerous property studies have successfully employed a similar qualitative approach (e.g., Wilkinson et al. [6,7]; Bulut et al. [68]).

Therefore, in this study, we employed a semi-structured interview approach to engage with influential figures in the property industry who can offer insights into the evolving property workforce. The interview participants are industry leaders with expertise in diverse property sectors, including valuation, management, investment, development, research, and technology. This diverse set of property leaders aimed to provide a comprehensive understanding of the evolving property workforce. Through these interviews, participants shared valuable perspectives and experiences, offering insights into the transformative changes expected in the industry. The participants, all holding prominent titles, such as Director, Founder, Head, and CEO, collectively present an in-depth and holistic view of the challenges, opportunities, and adaptations anticipated in the property workforce in the post-pandemic era and amidst Industry 4.0 trends.

The qualitative approach employed in this study, through the analysis of responses from industry leaders, offers an enhanced exploration of key ideas and individuals' perceptions. This method proves instrumental in delving into the intricacies of the future property workforce, particularly in the post-pandemic landscape, which remains relatively under-researched. By capturing the rich and varied insights of experienced professionals, the qualitative analysis presented herein provides a comprehensive understanding of the complex factors shaping the property industry's trajectory. This approach is well-suited to unveil the depth and nuances inherent in discussions about the evolving workforce, offering valuable qualitative insights that a quantitative analysis might overlook.

The semi-structured interview questions consist of four sections: personal identifiers, current practice, perceptions of the future, and future preparation. The complete list of questions is provided in Appendix A. In this study, we employed semi-structured interviews with a carefully selected group of 15 property industry leaders. Each interview lasted for about an hour. The sample size of 15 participants is considered appropriate and robust for several reasons. First, qualitative research—particularly in-depth interviews—often focuses on achieving depth rather than breadth of understanding (Patton [69]). With influential figures with significant expertise in various property sectors, depth of insights is prioritised over a larger sample size. Secondly, data saturation is crucial in qualitative research, indicating that as the number of interviews progresses, redundancy in information is observed, and new insights diminish after the 11th interview. With 15 participants, in this study, we aimed to reach a point of saturation where a rich understanding of the subject

matter could be achieved (Numerous qualitative studies on built environments have used different sample sizes: 15 interviews (Adilieme et al. [70]), 9 interviews (Roger et al. [53]), 6 interviews (Yadav et al. [71]), or 23 interviews (Porto Valente et al. [72]). Furthermore, Hennik and Kaiser [73] posited that a sample of 9 to 17 participants is sufficient for qualitative research, particularly studies with relatively homogenous populations. Comparable evidence was found by Galvin [74]. Given that the population included in this study is relatively homogenous (e.g., property leaders), with 15 semi-structured interviews of 15 property leaders, the reported results provide invaluable insights into the challenges and opportunities associated with the future property workforce).

Additionally, the careful selection of influential figures ensures that the participants bring diverse perspectives and experiences to the study, contributing to a comprehensive exploration of the evolving property workforce. Each participant, holding prominent titles such as Director, Founder, Head, and CEO, represents different facets of the property industry, offering invaluable insights. As such, this study, with 15 semi-structured interviews of 15 property leaders, provides valuable insights into the challenges and opportunities associated with the future property workforce.

Table 1 comprehensively summarises the participants, highlighting their diverse backgrounds, professional affiliations, and experience levels.

Table 1. Summary of participants.

Participant Number	Category	State	Years of Experience	API Membership
1	Property management	NSW	10	No
2	Property valuation	NSW	35	Yes
3	Property consultancy	ACT	43	Yes
4	Property valuation	Victoria	9	Yes
5	Property development	NSW	20	Yes
6	Property valuation	Victoria	32	Yes
7	Property valuation	Victoria	23	Yes
8	Property valuation	QLD	10	Yes
9	Property management	WA	40	Yes
10	Property development	NSW	28	No
11	Property development	SA	39	No
12	Property development	SA	19	No
13	Property technology	QLD	8	No
14	Property finance	QLD	34	Yes
15	Property valuation	QLD	37	Yes

Source: Authors' compilation (2023).

As indicated in Table 1, participants represent various sectors within the property industry, including property management, valuation, consultancy, development, finance, and technology. This diversity ensures a well-rounded understanding of the workforce's future dynamics, as each sector brings unique perspectives and challenges. The number of years of experience within the property industry vary significantly, ranging from as few as 8 years to a substantial 43 years. Participants' average years of experience stand at 25.8 years, highlighting a balance between experienced professionals and those relatively newer to the property industry. This mixture allows for a comprehensive analysis of the property workforce with input from both seasoned and emerging perspectives.

Participants are based in different Australian states, including New South Wales (NSW), Victoria, the Australian Capital Territory (ACT), Queensland (QLD), Western Australia (WA), and South Australia (SA). This regional diversity is vital, as it accounts for potential regional variations in workforce trends and industry-specific demands, providing a holistic view of the Australian property industry. Specifically, the inclusion of participants from different regions is a deliberate choice aimed at capturing the diverse conditions and perspectives within the real estate sector. The real estate industry is inherently context-dependent, and

variations in regional conditions (Bangura and Lee [75]), regulations, and market dynamics can significantly impact the experiences and viewpoints of property professionals.

By incorporating participants from various regions, with this study, we aim to provide an enhanced understanding of how different contexts shape the evolving property workforce. This diversity in perspectives enhances the external validity of the findings, acknowledging that the challenges, opportunities, and adaptations in response to industry changes may differ across regions. While we do not claim to represent a singular, universal view, the intention is to offer a more comprehensive and contextually rich exploration of the subject matter. Recognising regional distinctions adds depth to the findings, enabling a more robust interpretation of the impact of Industry 4.0 and post-pandemic dynamics on the property workforce.

It is also essential to highlight that 40% of the participants majored in valuation practice. Additionally, 26.7% of the participants majored in property development, emphasising the dominance of these fields within the property industry. This distribution reflects the significance of exploring evolving trends and challenges in valuation and development practices. Notably, 66.7% of the participants hold memberships with the Australian Property Institute (API). These API-affiliated participants anchor the findings in the experiences and insights of recognised industry professionals, further substantiating the study's quality and relevance.

These participants are influential property industry leaders with key positions such as Director, Founder, Head, and CEO. Their extensive experience, diverse sector representation, and strong API membership make this study a rich source of insights for property professionals, academic institutions, regulatory bodies, and policy makers. With a focus on leaders actively shaping the industry, this research is well-equipped to provide valuable guidance on the evolving landscape of the property workforce in the post-pandemic era and during the implementation of Industry 4.0.

In this study, we used thematic analysis to identify emerging themes from the responses of interview participants. The analysis involved a breakdown of the participants' demographic data and emerging themes from the other three sections of the questionnaire, i.e., current practice, perceptions of the future, and future preparation. The analysis of the emerging themes was not bound to the selected topics from the interview questions but covered the themes that emerged from the responses. The similarities and differences across property professionals, including property management, property valuation, property development, and other property professional categories, were also highlighted in the analysis. Direct quotations from selected interview participants are used to enhance the presentation of thematic analysis results.

4. Results and Discussion

This section presents the interviewees' insights into emerging themes, including property technology, ESG, globalisation, and the requisite skills/knowledge for the future property workforce. It delves into the transformative impact of evolving technology on the property industry, emphasising its benefits and dispelling the misconception of technology as a mere replacement. The discussion extends to the varying readiness for technological changes across sectors, reinforcing the pivotal role of professional bodies and government entities in regulating AI use. The shift towards ESG in the property industry is explored, focusing on the environmental aspect. Globalisation challenges are also identified as a significant aspect of the future workforce. While new graduates exhibit technological proficiency, their potential lack of experience and a broader understanding of its effective business application are highlighted. The section concludes with an examination of the strengths and weaknesses of graduates, emphasising the roles of universities and professional bodies in equipping them with industry-driven activities.

4.1. Evolving Technology Drives the Future of the Property Industry

The property industry is poised for significant transformations in the future, driven primarily by evolving technology. The anticipated technological changes within the property industry may vary depending on the participants' expertise. Professionals across various sectors within the industry are optimistic about the benefits of technology advancements.

The unanimous consensus is that changing technology will be a pivotal force shaping the property industry's future, with the potential to drive efficiency, reduce costs, and improve overall performance. Property development experts foresee cost reduction through 3D printing, prefabrication, and robotic automation, which will revolutionise the construction sector. At the same time, property and asset management professionals are gearing up for enhanced collaboration and streamlined processes for more efficient asset management.

Valuers anticipate faster and more accurate valuation processes with increased automation. This automation will bring about efficiencies and accelerate the valuation procedures. For instance, Participant #8 stated:

> "For the valuation industry, there certainly will be a trend towards automated valuation models. They've been around for, you know, a number of years. But I feel as data collection and analysis get better, those models can become more accurate. And so, there could be a higher reliance on AVMs as part of that kind of topic. There will be a high demand for what I would call instant valuations, so high speed. The lenders want to know if they can lend on property within a relatively short time. I'm talking hours, not days. So, I think there will certainly be a trend in our industry".

This is consistent with the findings of previous studies in which there has been an increased use of AVMs for property valuations (Grover [32]; Wilkinson et al. [6]). Research has also explored the use of hybrid AVM systems to enhance accuracy in mass valuation (Yacim and Boshoff [30]). Despite variations amongst participants in terms of expertise, all participants perceive changing technology as a key to future change in the property industry.

4.2. Positive Perception of Changing Technology in the Property Industry

The participants revealed several benefits of changing technology. They include cost reduction, manpower savings, time savings, and increased productivity and efficiency. Property professionals acknowledge the role of technology in enhancing efficiency and effectiveness while reducing costs and saving time. The prevailing sentiment is that technology complements—rather than replaces—human roles, enabling professionals to focus on more strategic and creative aspects of their work. Most participants emphasise technology's role in improving efficiency and effectiveness within the property management industry, including digital cameras (Participant #5) and AI. Participant #1 states, "AI won't replace your role as a property manager, but you could certainly be more efficient through it".

The results here are consistent with the findings of Azhar [17] and Bryde et al. [18]. An increasing use of BIM in property development reduces design and construction costs and improves the risk management process. Digital twins are another popular tool widely used to achieve sustainable development goals (Tzachor et al. [19]). This suggests that property industry participants recognise the benefits of evolving technology in enhancing the efficiency of their daily work.

A common misconception exists that technology, especially advanced solutions like artificial intelligence and automation, is poised to replace human professionals in various industries, including property management and real estate brokerage. This misconception can create fear and resistance to technological adoption. Contrary to the misunderstanding, most property professionals view most technological solutions as tools or enablers that enhance their capabilities rather than replace them.

> "I feel like there's this overarching narrative that technology and digital is (are) here to replace the property professionals rather than enable, I would say, the vast

> majority of solutions that I've seen on the market in the tech and digital world are enablers of the property professional, not there to replace".
>
> (Participant #13)

Technology is seen as a way to make jobs more efficient, effective, and productive. Therefore, technology allows property professionals to focus on the more strategic, creative, and complex aspects of their work. However, concerns exist among valuers regarding the accuracy of automated valuation processes, highlighting limitations when applying automation to commercial properties and the potential for fee reductions, especially in residential mortgage valuation. Despite these challenges, the industry is poised to thrive by harnessing technology to drive progress and innovation while upholding its core principles.

> "The next ten years will be less valuers, more automated valuations because the bank will see that as a cheaper option . . . But there will still be challenges in that because we know now we've seen now a number of the automated valuations have been prepared to simply based on data that's not true and accurate. And (these are,) in fact, are overvalued. So the challenges of AI, and the challenges of these automated valuations, potentially could lead to the downfall of some of their own doing because I think that they are, to a degree, inaccurate".
>
> (Participant #6)

The concern of further fee reduction was also noted in Wilkinson et al.'s research [6], and the adoption of AVM may exacerbate this issue. While technology undeniably presents substantial cost, time, and efficiency benefits, it also raises concerns about its potential to diminish opportunities for young individuals entering the professional realm in search of experience and employment, as Wilkinson et al. [51] noted.

4.3. Readiness for Technological Change Varies across Sectors

The readiness for technological advancements in the property industry presents a varied landscape, with disparities observed across different sectors and organisations. While some industries have made substantial progress, others lag due to various factors, including the nature of their assets and historical practices, especially in asset and property management. For instance, the aged care sector often deals with older assets, and technological integration in these organisations has been sluggish (Participant #5). Therefore, technological transformation readiness varies significantly from sector to sector.

In the property valuation sector, some participants believe professionals are proficient with new technologies due to their ease of use. AVMs are indispensable and valuable tools for some property professionals. Participant #4 states, "A threat to them or not, this is something helping them to make their job easier. It is a tool we couldn't use without an AVM online. It holds all the data of the property information in there. It dramatically simplifies their work. It centralises all property information, including land and building details, bedroom counts, and lease information for commercial properties. Before its existence, they had to manually record data in physical books, but now it is all streamlined online. These speed up the process and facilitate calculations and valuations across all properties".

This is consistent with the findings of Starr et al. [2], who reported that the property market has traditionally been slow in responding to and adopting advanced technology; however, this has been changing, especially as the industry adapts to the changing nature of how we interact with the built environment post COVID-19. While many property companies claim to have a tech vision, very few have successful proptech programs that match boardroom ambition. A proportion of 78% do not have an actionable strategy, and fewer than 40% say their technology programs have been successful (JLL [5]).

Furthermore, participants acknowledged that readiness levels vary significantly based on the specific sector within the property industry and the organisation's size. Participant #5 stated that, "...in property development, there are players who are ready, but there are some who are not. Again, it comes down to the level of risk they want to take on as well".

Additionally, readiness is influenced by factors like organisation size and workforce profile, with larger and more diversified organisations better equipped to adapt to technological changes. Some sectors and larger organisations appear to be more prepared and adaptable to technological changes than others.

> "I think organisations large enough can hire diversified talent or talent which specialises in a certain field which can then be used to provide benefit to an organisation like us. I think it might be different if you're like a small business and you haven't quite aligned yourself to utilising new technology; you might find that more difficult to adapt and change".
>
> (Participant #8)

Most participants noted that it was a "yes and no" opinion due to how fast the business environment changes. In particular, some participants indicated that professionals' proficiency in new technologies and readiness for new technologies primarily rely on the scale of companies and the workforce profile of organisations. Hence, proficiency and readiness depend on the business and professional, as many younger professionals can keep up. The generational divide also plays a role, with younger professionals displaying greater tech proficiency. This complex readiness landscape reflects the evolving dynamics of the property industry as it adapts to a changing business environment post COVID-19.

> "I think so because we have now got young members, and certainly those (who) are studying now that were born in the age of technology. And I would say any more mature members that haven't adopted it. And yet to do it, they had to leave the profession".
>
> (Participant #1)

4.4. Professional Bodies and Government Entities Play a Crucial Role

Many respondents expressed concerns about the readiness of professional bodies within the industry, as well as government entities, particularly regarding legislation and regulatory frameworks. There is a perceived need for these entities to play a crucial role in preparing property professionals for a smooth and effective transition to the integration of technology, especially in domains like AI and automated valuations.

The participants provided opinions suggesting that the property industry is watching the emergence and use of artificial intelligence with some care, with some sectors and players more ready than others. For instance, AI can be easily applied to property and facilities management to enhance the communication processes of property and facility managers. On the other hand, property valuers called for stronger regulation with respect to the use of AI in the property sector.

> "At the moment, there's quite a big legislative gap because, as a valuer under the legislation, we have to sign off that we've been in charge of all the valuations, and we've been watching all the people that have done it. And if an AI is going off and doing valuations, that's not something I think a valuer would be comfortable signing off on. So, for us, there is that legislative, I guess, barrier on how much we have to be involved in the valuation to be able to sign off on it. . . things can change. Everything changes. So I don't know where that will end up. But at the moment, that's something that we do have to consider for municipal valuations".
>
> (Participant #4)

Some participants expressed confidence in the potential revision of regulatory frameworks, particularly within the Australian property industry. They anticipate changes in the rules and legislation, underlining ongoing efforts and committees dedicated to re-evaluating valuation standards. Notably, they observe a shift in influence on these committees internationally, with technology companies playing a substantial role in shaping future regulations. This shift in influence suggests a potential alignment of regulations with technological advancements. Participant #2 mentioned that no valuation firms and

many technology companies are on the advisory committee on US valuation standards, which has driven the outcomes of the regulation change.

In a recent technology survey conducted by JLL [5], AI was reported to be seen as one of the biggest game changers for the real estate industry over the next three years. To ensure that AI is deployed ethically and responsibly, regulation, including data protection, has to be established to protect users. Furthermore, Baum [41] stated that regulations governing the fractionalisation of ownership of assets are among the challenges of tokenising single real estate assets. In other words, government and professional bodies should play a vital role in providing stronger regulations and frameworks for professionals in terms of the use of technology.

4.5. ESG Is Another Future Change in the Property Industry

Apart from technological changes, another prominent emerging theme is the heightened focus on sustainability, particularly concerning carbon emissions and climate change. Participants from different fields shared a common concern about the "E" (environmental) aspect of ESG (environmental, social, and governance). Specifically, the property professionals participating in the discussion emphasised the growing significance of ESG criteria in the property industry, with particular attention on the environmental (E) aspect. Participant #3 stated, "There is no commercial property being built these days, that is, not being built with sustainability at the forefront. So I think the E in the commercial sense has been well addressed".

In property development and management, ESG considerations (especially E) are considered highly important and integral to decision-making processes. Similar evidence was substantiated by Hijjawi et al. [76], who reported an observable increase in ESG scores, particularly E scores for Australian real estate investment trusts (REITs). This further validates the growing emphasis on ESG factors, particularly in the property industry context, reflecting the evolving commitment to sustainability practices within this sector. Participant #10 expressed the following:

> "If you take the ESG and strip it down, I think the environmental side is really well understood and well adopted in administered in the sector. So, a lot of the commercial office buildings have a Green Star rating. They potentially now have a well rating. If it's an office, I think that the environmental side is well understood and worked well, adopted the current pushing the market, particularly from a capital that's investing alongside these major developments is now wanting to have a social narrative and a government and a governance narrative. . . .Now the capital coming in both from domestic and offshore sources is wanting to know what the plan or the pathway is from an S&G perspective on major projects, which is really positive".
>
> (Participant #10)

Some participants highlighted that industry demand and increasingly stringent regulatory requirements have propelled the growing environmental perspective within the property industry. This dual impetus compels professionals to adopt more sustainable and eco-friendly practices, reflecting the industry's evolving commitment to environmental responsibility. This discovery corroborates the findings of Jang et al. [77], who indicated green building certifications positively impact the willingness of potential tenants to rent such spaces. This influence, in turn, encourages property developers to invest in green building projects, driven by the prospect of increased returns on their investments. Property investors are motivated to opt for sustainable building investments due to the potential for higher returns, reduced investment risk, and the long-term sustainability factor, as evidenced by research studies conducted by Eichholtz et al. [44,45] and Onishi et al. [46]. Recently, Lee et al. [11] found that stringent regulatory requirements, such as the mandatory Carbon Disclosure Program for office buildings in Australia, resulted in a more vital

awareness of sustainable buildings in Australia. A quote from a participant is presented as follows:

> "The role of tenants in driving the demand for sustainability features in property development projects. Moreover, institutional investors and shareholders are now factoring in criteria related to carbon neutrality and environmental credentials when evaluating property developments. However, there are notable challenges associated with retrofitting existing buildings to include ESG features, as it may require significant structural and operational adjustments".
>
> (Participant #1)

However, the importance of ESG varies across sectors of the property industry. Participant #10 highlighted that ESG is notably lacking in property valuation. In property valuation, ESG factors do not seem to receive the same attention and emphasis. This disconnect highlights a potential gap in acknowledging the broader impact of ESG considerations on property values. Valuation professionals may need to explore ways to effectively incorporate ESG elements into their practices, as they have become increasingly relevant in the broader property industry, reflecting evolving environmental and social responsibilities and governance considerations. Several participants further explained this.

> "If you speak to any of the residential valuers, they'll tell you that as far as they're aware (of energy ratings), they've not been able to uncover anywhere it's made any difference to the purchasing decision".
>
> (Participant #3)

A few participants viewed ESG as, more or less, a vanity metric, while some felt companies were paying lip service to ESG, which ought to be taken seriously. As indicated by Guo et al. [78] and Szabo and Webster [79], companies engage in "greenwashing", a form of advertising or marketing spin in which an organisation presents a false or overly positive image of an organisation's environmental efforts to attract environmentally conscious consumers or improve the organisation's public image. This debate highlights the need for transparency and authenticity in addressing ESG issues within the business world. For instance, Participant #6 indicated:

> "To be honest, because it's just another box that needs to be ticked by external parties. . . . There's just another way of compliance that we need to tick to enable us to get on to bank panels now, . . ., which becomes a box to us as a phenomenon and organisation".
>
> (Participant #6)

Participants see an opportunity for property professionals, especially valuers, to assume a more influential role in addressing the social aspects of ESG concerns, particularly in the context of land taxation in Victoria, Australia. There is a heightened focus on the role of valuers and how they contribute to the land tax assessment. This renewed emphasis on the role of valuers suggests an opportunity for property professionals to take a more active role in addressing social aspects of ESG, such as land taxation and its implications.

> "Social is interesting in Victoria. I think, at the moment, in that we've had a fairly substantial change to the way that land tax is going to be implemented. And so I think there is a very strong and renewed focus on rating and taxing valuers and the role that they play".
>
> (Participant #7)

4.6. Globalisation Challenges as Another Future Workforce Challenge

Globalisation has emerged as a standard view of future property workforce challenges. However, the emerging theme of globalisation depends on the property industry, with the most significant impact on property management, as most participants revealed that institutional investors and asset managers often operate on a multinational scale, necessitating

a global perspective in their approach. Furthermore, numerous participants asserted that the COVID-19 pandemic accelerated the impact of globalisation on the property industry. Supply-chain disruptions during the pandemic affected construction deliverable prices, reflecting the interconnectedness of the global property market. In addition, the globalisation of real estate is associated with an increase in foreign individuals and institutional investors diversifying their investment portfolios. An estimated AUD 2 billion of foreign capital flows into the Australian commercial property market annually (JLL [5]). With the rise of international trade and cross-country property investment, property valuers are being called upon to value businesses that operate in different countries and regions, and this requires a thorough understanding of the local market, as well as the economic, cultural, political, and legal environment (Talbot [10]).

Some participants highlighted that globalisation, as it pertains to property, primarily involves international players looking to engage in various business divisions. Specifically, in rating and taxing, participants mentioned that this area is not particularly attractive to global players due to the substantial reliance on local personnel who must be physically present for property assessments. However, the advancement of technology might reduce the reliance on local personnel. This highlights the role of localisation and the limitations of globalisation in specific aspects of the property industry. As Ball [80] discussed, not all property-related economic activities are suited for globalisation, as local providers often offer cost-effective, knowledgeable, and proximity-based services that cater to client needs. This emphasises that, despite the trend toward increased internationalisation in various property sectors, there will likely remain a significant role for localised, "local-is-better" activities, particularly residential properties, challenging the assumption that all economic life will eventually become globalised.

> "There's an inherent need for somebody to be on the ground looking at the property, and that person is the same person who is legally responsible for that valuation. So I think globalisation, yeah, it's a thing. It might make tools at Bunnings a bit cheaper, but I don't think it will change valuations all that much".
>
> (Participant #7)

However, globalisation is likely leading to a standardisation valuation approach. Participants also highlighted a notable shift in the valuation models employed within the property industry. This change is observed globally and signifies a move away from various country-specific methods, such as the capitalisation method, towards a standardised approach to valuing investment-grade properties. This transition is driven by both lenders and investors seeking more consistency and reliability in their valuation methods. This aligns with Parker's [81] assertion, focusing on the emergence of globalisation, the significance of IFRS (International Financial Reporting Standards), and the evolution of valuation standards. These interconnected factors highlight the dynamic and evolving landscape within financial and valuation practices in response to global influences and international reporting standards. Participant #2 stated, "There is a move towards standardisation in valuation models, and that's actually across both those groups of lenders and investors".

Some participants expressed concerns about increased migration driven by globalisation. They believe that the Australian property industry may not be adequately prepared to handle the influx of people, which can exacerbate housing supply challenges. There is a perspective that while globalisation offers opportunities, it can also lead to sluggishness. Some property professionals may remain state-level players to maintain agility and skill in responding to local market dynamics. A recent report in The Australia Financial Review stated that the arrival of a record 1.5 million migrants would worsen housing shortages, driving up rents and inflating property (Kehoe et al. [52]). A deterioration of housing affordability in Australia has been evident in recent years (Bangura and Lee [82]; Bangura et al. [83]).

4.7. Proficiency of New Graduates in New Technology

The participants indicated that new graduates are generally knowledgeable and, thus, equipped for new technology. Numerous participants indicated that recent graduates learn many different technologies in university, such as BIM and virtual reality. There is a consensus among participants that younger generations have high levels of IT skills and are more likely to adopt and accept new technologies than mature professionals. This highlights the high level of proficiency of recent graduates in new technologies. The participants felt that graduates quickly adopt emerging technology and trends where many experienced professionals struggle. The theme that emerged is a difference in adopting technology linked to age and generation.

While this is a positive outcome for the younger demographic, another emerging theme is a certain level of impractical expectation from fresh graduates. New graduates are generally well-trained in technology but may lack experience and a broader understanding of how to effectively apply technology in a business context. There is a need for a strong understanding of the business, the balance between technology and intuition, the gap in understanding the role of technology in their field, and the potential for technology to enhance rather than replace professionals in the property industry.

> "I think that they (are) very good, but I think, you know, obviously, with new graduates, as you would expect, they lack that general sort of experience, and for me, what's important is having more of an understanding of the organisation or the business".
>
> (Participant #11)

This highlights that graduates lack soft and technical skills required for business and display independent thinking with respect to the use of technology. This is in line with Callanan and McCarthy's [61] suggestion that employers feel that graduates lack sufficient practical expertise to relate theory to practice. In another study conducted in the UK, human resource managers and course directors of RICS real estate courses stated that commercial awareness is an important employability skill. Still, graduates are not well-developed (Poon [59]). Participant #7 explained this further:

> "I think new graduates are very well trained in the technology where I think they're poorly trained is when to use certain technology and their intuition".
>
> (Participant #7)

4.8. Strengths of Graduates Are Self-Assuredness, Confidence, and IT Skills, Whilst Personality and Soft Skills Are Their Weaknesses

Graduates are exposed to various disciplines as a notable strength. This broad exposure can give graduates a more holistic understanding of the property industry, allowing them to draw from diverse perspectives and insights. The strengths attributed to graduates in the discussions primarily centred around their personal qualities and IT skills. In an increasingly technology-driven industry, having proficiency in IT and digital tools can be a valuable asset, enabling graduates to navigate data analytics, automation, and other tech-driven aspects of their roles more effectively. These qualities include agility, enthusiasm, self-assuredness, confidence, and high energy. Graduates were often commended for their ability to adapt quickly to new challenges and bring a fresh, energetic perspective to the industry. A previous Ayodele et al. [58] study also indicated that graduates have positive attributes, including self-assuredness and confidence.

Nonetheless, some personality traits identified as strengths were also seen as weaknesses by participants. For instance, graduates could be overly ambitious overconfident and assume things they do not know. Furthermore, the general nature of their educational program may leave them without specialist knowledge, especially in property valuation. Some quote:

> "My perception is that they're probably a little bit too confident and cocky to start with. Another downside could be that they may not be as agile when it comes to other historically tested methods or methodologies".
>
> (Participant #5)

The COVID-19 pandemic has exacerbated the need for effective soft skills, such as written and verbal communication and active listening, as remote work and digital communication have led to deficiencies in face-to-face interaction and interpersonal skills. Isolation and reduced face-to-face interaction have led to a noticeable decline in the soft skills of graduates. Participant #2 stated, "They don't have very good networks, which I think is COVID-related, but I find the personal skills". Employers place high expectations on graduates in these areas, emphasising the importance of a balanced skill set in navigating the dynamic property industry. It is noteworthy that employers have set high expectations for various soft skills, encompassing responsibility, administrative understanding, active listening, and effective communication, as highlighted by Ayodele et al. [58].

> "The pandemic also contributed to some weaknesses in the profile of graduates with the imposed lack of social contact, which limited their ability to garner soft skills such as communication and socialization".
>
> (Participant #9)

Some participants noticed a decline in graduates' soft skills in recent years. Poon [59] also emphasised similar concerns regarding graduate soft skills in the context of human resource management, citing issues related to client care, interpersonal skills, writing, communication, and presentation skills.

4.9. Universities and Professional Bodies Can Equip Graduates with Industry-Driven Activities

The participants emphasised the pivotal role of universities in addressing the skills gap and the identified issues in graduates entering the property industry. To bridge this gap effectively, they recommended several strategies to enhance the practicality of courses and better prepare students for the real-world demands of the industry. One significant suggestion is the incorporation of internships or work placements within the academic curriculum. This hands-on experience could provide students with invaluable exposure to the industry, enabling them to apply theoretical knowledge to practical scenarios and develop the soft skills and industry-specific insights necessary for success. Other studies also found that it is important for property programs to better intertwine industry and academia through internships and mentoring programs (Weinstein [62]; Weinstein et al. [63]; Wilkinson et al. [6])

Study tours and site visits were also proposed to familiarise students with the practical aspects of property projects, allowing them to witness, firsthand, the complexities and challenges within the field. These experiences could offer a deeper understanding of the industry, its operations, and the dynamics at play, complementing classroom learning.

> "Educationalists and universities will also have to build bridges with employer organisations to get a better understanding of what we need and then put programs in how they would deliver it to us collectively so".
>
> (Participant #9)

Furthermore, participants recommended fostering closer collaboration between universities and industry players. Having professionals from the field as guest lecturers or guest speakers could enrich the academic experience by offering real-world perspectives on current industry trends. This collaboration could facilitate a more seamless transition for students into the professional world by providing them with practical insights and connections within the industry.

> "I am a firm believer that universities have a responsibility to educate the future. I've said this as part of the Advisory Council for one of the universities; more industry professionals can come in to have guest lectures and share information.

> It's great to deliver it from a technical perspective, and that's important, but then having practitioners come in and speak to it and give the students real-life examples of those impacts is important".
>
> (Participant #10)

The participants highlighted the importance of professional associations as a source of contact for professionals, as well as information, training, and seminars for graduates. Furthermore, they advocated for increased partnerships between industry associations and universities. As discussed by Willkinson et al. [7], it is beneficial for professional bodies and universities to have strong ties and encourage practitioners to transfer their practical knowledge and real-world experience to students.

However, a few expressed worries that the API is biased in favour of property valuation. Hence, other associations such as Property Council Australia (PCA) or the Urban Development Institute of Australia (UDIA) better serve other property industry sectors. Participants also suggested that professional bodies provide a diverse range of property career opportunities other than property valuation.

> "The industry body just needs to redefine what the membership pathways are and probably think about. What you know, maybe also think about the various roles that someone can perform so".
>
> (Participant #2)

Furthermore, as suggested by Wilkinson et al. [7], continuing professional development programmes are required to address knowledge and skills gaps among existing property professionals. Hence, a professional body like the API can play a role in updating the skills of its members.

5. Conclusions

The property and building industry stands at the threshold of transformative change. The growth of Industry 4.0 and the seismic impact of the COVID-19 pandemic have reshaped the landscape in which property professionals operate. Therefore, in this research, we examined the future workforce for the property industry through the lens of property leaders from diverse sectors and regions within Australia. We also examined the readiness of the property industry for foreseeable changes.

This study identified several key findings that bear far-reaching implications. First, digitalisation and automation disruptions are viewed as the most critical change in the property workforce. Automation, artificial intelligence, and data analytics will recalibrate the industry's foundations, demanding new skill sets and paradigms. While participants commend graduates for their tech-savviness, concerns about practical experience and a broader understanding of technology's role in business persist. This discrepancy highlights the need to bridge the gap between technological proficiency and its practical application within the industry. In addition, participants called for regulators and professional bodies to play a more proactive role in developing stronger regulations with respect to the use of AI in the property sector.

Secondly, the growing importance of ESG in the property sector was acknowledged. There is an increasing consensus among property professionals that sustainability is gaining prominence in the property industry, driven by industry demand and regulatory requirements. However, there is also concern about genuine commitment to addressing ESG matters. Globalisation has also emerged as a key change in the future property workforce, with foreign investments pouring into the Australian property market. Participants also asserted that a standardised global format will be introduced due to the growing integration of Australian and international property markets. While this prospect offers opportunities, it also raises concerns about housing supply and affordability, reflecting the requirement for a balanced approach for global expansion and local agility. Another significant finding highlights the perceived decline in the soft skills of graduates and young professionals, notably in communication skills. The impact of the COVID-19 pandemic is

seen as a contributing factor. This reflects the joint responsibility of universities and the industry to address this issue, emphasising the need for collaborative efforts to nurture essential soft skills among future property professionals.

The findings reported herein have several implications for property professionals and policymakers. The implications of our research also extend to property educators. For property educators, the study indicates the importance of adapting curriculum and educational programs to align with the evolving needs of the property industry. There is a clear need to incorporate a comprehensive understanding of technological advancements, ESG considerations, and globalisation trends into property education. Moreover, developing essential soft skills, such as communication, critical thinking, and management, should be a priority.

Furthermore, the findings highlight the urgency for property professionals to enhance their digital literacy, embrace technological innovations, and actively participate in lifelong learning initiatives. The property industry should also strengthen collaborations with educational institutions to bridge the gap between academic knowledge and practical skills. Moreover, there is a call for professional bodies (e.g., API) to be more proactive in shaping regulations and standards related to technology adoption and ESG integration in the property sector.

The inclusion of a wider group of property professionals, such as planners, designers, and constructors, could have potential for future research expansion to encompass a broader spectrum of industry stakeholders. Exploring the perspectives of these additional professional groups will make this a valuable avenue for future research. Such an exploratory study can be completed with future survey questionnaires for a broader range of property professionals in Australia to represent a more diverse range of property practitioners' experiences, including young property professionals and middle management groups. Furthermore, stakeholder codesign workshops can be conducted to incorporate the changes in the required skills of future property professionals to design future-proof property courses.

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Appendix A. Interview Questions

Appendix A.1. Personal Identification

1. How many years of experience do you have in the property industry?
2. What State/Territory are you located in?
3. What sector of the property industry do you work in? For example:—valuation, development, investment, real estate brokerage, management, and others.
4. Do you work in the public sector or the private sector?
5. If private, is your employer a local, national, or international firm?
6. Is your firm multi-disciplinary or purely property?
7. What professional bodies do you attach to?

Appendix A.2. Current Practice

1. At the moment, what type of technology has been adopted in your area of practice?

2. Do you think our property professionals are well-equipped for the new technology?
3. If you have worked with new graduates, how equipped are they for their professional tasks?
4. What are the strengths/weaknesses of new graduates?

Appendix A.3. Perceptions of the Future

1. What are the three most significant changes in your property practice area over the next ten years?
2. How will ESG, technology (e.g., AVM) and globalisation impact your property practice area?
3. In your opinion, do you think the property industry is ready for these changes?

Appendix A.4. Future Preparation

1. What are the three most important skills for new graduates in your area to have—this can include soft and technical skills.
2. How can universities develop these skills in their graduates?
3. How can professional bodies foster the development of these skills among graduates?

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