

Key Aspects of Property Graduates' Employability in the Digital Age: Perceptions of Employers and Graduates

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Abstract

Purpose – In response to the evolving dynamics of the professional landscape and the ongoing global discourse on sustaining graduate employability, this study explored the underlying themes in the key aspects of property graduate employability to highlight growing expectation gaps in the digital age, considering the perspectives of employers and graduates.

Design/methodology/approach – The perspectives of 72 property employers and graduates were gathered through an online questionnaire survey and subsequently analysed through Exploratory Factor Analysis to establish underlying patterns that highlight focus areas and expectation gaps.

Findings – Six clusters underpinning graduate employability were identified: soft skills, technological skills, problem-solving and digital literacy, core property specialisations, ethical responsibility, and financial analysis and evaluation. Overall, these factor clusters underscore the importance of innovation to both employers and graduates. Technological skills have become increasingly critical in the digital age, while overlooked soft skills such as communication, due diligence and ethical responsibility are imperative for well-rounded professionals.

Practical implications – These findings emphasise the need for a holistic approach to property education that incorporates the diverse perspectives of stakeholders such as academics, graduates, professional institutions, and employers. A continuous feedback loop is required to integrate these evolving priorities in the digital age.

Originality/value – Despite widening expectation gaps in property education, most previous studies only attempt to identify which skills are in demand, offering fragmented viewpoints specific to different professions and stakeholders. Instead, this study established underlying themes in these skill sets by considering the perspectives of two key stakeholders, employers and graduates, across various disciplines in the property sector.

Keywords – property education; property graduates; property employers; employability; exploratory factor analysis; Australia

Paper type – Research paper

Introduction

Due to digital and technological advancements across all industry subsectors, the property market has grown more dynamic and complex in the last few decades. A properly functioning property market is central to the economy's success due to its contribution to critical metrics such as gross domestic product (GDP) and employment (Abidoye et al., 2022). Boyd (2000) asserted that property, like any other asset, is worthless without a notable contribution to broader society.

To effectively contribute to the broader economy, the property sector requires an institutional framework within which different stakeholders constantly evolve to meet the dynamic needs of the industry. To that end, the relationship between education providers, graduates and employers is particularly critical (Abidoye et al., 2022; Aliu & Aigbavboa, 2021; Matsouka & Mihail, 2016). In the contemporary digital age, the core skills required of many professionals have been transformed. In addition to the skills offered by traditional property education, modern property professionals are increasingly expected to be proficient in data analysis, analytics, and other PropTech solutions to maintain operational efficiency (Abidoye et al., 2022; Prikshat et al., 2019).

Although there is an overall acknowledgement of the crucial role of the property sector in the economy, the extant literature has reported observable gaps in the training offered to students by education providers and the skills expected by employers (Abidoye et al., 2022). These gaps are present in the USA (Shi-Ming, 2001; Warren & Heng, 2005), the UK (Amidu et al., 2018; Poon, 2019), China (Xiao & Chan, 2016), and Nigeria (Ayodele et al., 2020), indications of a global conundrum. With the need for digital proficiency further exacerbating these skills gaps, the overall preparedness of property graduates for the industry has been critiqued by previous studies (Abidoye et al., 2022; Amidu et al., 2018; Ayodele et al., 2020; Xiao & Chan, 2016). Admittedly, expectation gaps and employer satisfaction with graduate employees are ongoing concerns across all disciplines. However, this issue is particularly pertinent in property education; compared to 90.2% of Australian employers in Engineering-related fields, only 79.3% of employers in Property-related fields are satisfied with the work-readiness of graduates (Quality Indicators for Learning and Teaching [QILT], 2022b). This figure is almost 5% worse than average, and only higher than Creative Arts across all education fields based on surveys of Australian employers (QILT, 2022b).

Motivated by growing concerns over graduate employability in the digital age, this study explored these expectation gaps from the perspective of employers and graduates to highlight the key themes and skills to establish skill clusters and inform efforts to address the gaps. While there have been some notable attempts to investigate the skill gaps, the following questions remain unanswered:

- Which common themes are present in the key skills required of property graduates?
- How best can education providers structure the academic curricula to incorporate these skill clusters?

A better understanding of these themes presents a valuable tool for all stakeholders in the ongoing effort to reduce gaps in the training provided to students by education providers and the skills demanded by employers. These clusters provide a signpost for universities to address current gaps in their delivery of property courses globally. The symbiotic relationship between property employers and graduates makes their perspectives on employability critical in attempts to train work-ready graduates. This relationship underscores the motivation of this study: to comprehensively explore the key aspects that define property graduates' employability in the digital age.

The remaining sections of this paper are structured as follows: the next section reviews relevant literature on the preparedness of property graduates for the industry, followed by a description of the data and the methodology adopted for empirical analyses in Section 3. Results and discussion are then presented in Section 4 to highlight the relevant skill clusters and the practical implications for stakeholders. Section 5 concludes the study and acknowledges limitations to provide further insights for future research.

Literature Review

Key Stakeholders in Property Education

Baxter's (2007) investigation of expectation gaps between valuation practitioners and education providers in Australia sheds light on the critical stakeholders in shaping the landscape of practical training within property-related courses. At the core of these stakeholders are students, who are driven by ambitions to join the workforce seamlessly. As educational institutions, universities are responsible for crafting a curriculum that imparts theoretical understanding and facilitates the practical application of concepts. This multifaceted skillset extends to personal development, encompassing teamwork and emotional intelligence (Boyd, 2007). Employers and property firms, representing the final major stakeholders, rely on these institutions to produce graduates equipped with the skills necessary for the demands of the industry. Therefore, universities' obligation is twofold: preparing students for the workforce and meeting the expectations of employers who seek skilled and job-ready professionals (Newell, 2003; Xiao & Chan, 2016).

Beyond the trio of core stakeholders – students, academic institutions, and employers (Baxter, 2007), other groups also have a significant interest in quality. The general public, funding institutes and professional bodies all influence property education to some extent (Black & Rabianski, 2003). Typically, the relationship between these stakeholders can be summarised as follows: students pay for the services of education providers, expecting them to design curricula that adequately prepare them for a smooth transition into the workforce, while property firms provide employment opportunities for graduates (Newell, 2003; Xiao & Chan, 2016). Given universities' crucial role in training job-ready graduates, they are responsible to both students and employers. This dynamic relationship has placed universities squarely at the epicentre of discussions regarding graduate employability (Aliu & Aigbavboa, 2021). Avdiev (2000) also questioned the level of responsibility that universities owe graduates regarding the success of their careers after completion, suggesting that educational excellence alone is insufficient in the industry.

Essential Skills in the Property Sector

Black and Rabianski (2003) highlighted the difficulty in defining a body of knowledge for the property sector due to differences across borders and disciplines such as asset management, construction, investment, valuation, planning, and finance. The study recognises the intricate nature of property professions, with each demanding a unique set of skills. Specific technical competencies like property valuation, finance, investment, or construction emerge as fundamental skills, varying across roles within the sector (Aliu & Aigbavboa, 2021; Black & Rabianski, 2003). These technical skills are intricately tied to the specialised responsibilities of property professionals.

The fundamental skills may also be complemented by soft skills, given the predominantly client-centric nature of several property professions (Aliu & Aigbavboa, 2021; Succi & Canovi, 2020). Succi and Canovi (2020) noted the growing relevance of these interpersonal skills and their importance to negotiations, effective decision-making, and teamwork. Real estate transactions often involve intricate client relationships and multiple stakeholders, so professionals must adeptly navigate various interpersonal dynamics. Abidoye et al. (2022) comprehensively examined the skills in the real estate industry, and this serves as a contemporary summary reflecting a range of technical, soft, and interpersonal skills. This multifaceted skill set is foundational for property graduates seeking to navigate the complex challenges and opportunities posed by the digital age in the property industry.

As illustrated in Table 1, these 45 skills are required for well-rounded and versatile property professionals. This broad range of skills reflects the level of diversity among property professionals and the ensuing difficulties that education providers encounter in training graduates for an evolving industry.

Table 1: Key Skills for Property Graduates' Employability in the Digital Age

Property Valuation	Machine Learning
Property Laws/Regulations	Artificial Intelligence
Professional Ethics	Big Data Analysis
Customer Service	Blockchain
Feasibility Study	Sharing Economy
Due Diligence	Smart Building/City
Town Planning	Real Estate FinTech
Property Economics	ConTech
Finance and Accounting	Marketing and Sales
Marketing and Sales	Self-confidence
Effective Written Communication	Innovation
Numeracy	Leadership
Problem-solving	Emotional Intelligence
Creativity	Ability to work in a team
Health, Safety and Environment	Ability to work independently
Investment	Negotiation
Risk Management	Time Management
Report Writing	Critical Thinking
Asset Management	Microsoft Office Suite

Research and Analysis Methods
Data Management
Sustainability
Urban Renewal

Adaptability
Industry-based Software
Environment Impact Assessment

Source: Abidoye et al. (2022)

Expectation Gaps Between Property Education and Practice in the Digital Age

As the skills required of modern property professionals become increasingly more complex, critical gaps have also been noted in the preparedness of property graduates to meet employers' expectations. Despite regulatory frameworks such as Australia's Tertiary Education Quality and Standards Agency (TEQSA) intended to protect students' interests and assure public confidence in tertiary education, notable expectation gaps have been identified in the extant literature (Amidu et al., 2018; Poon & Brownlow, 2014; Robson et al., 2015). Beyond basic competence in the technical skills of the specific role, employers also place a premium on interpersonal skills (Succi & Canovi, 2020), digital competencies (Abidoye et al., 2022), and other generic skills (Aliu & Aigbavboa, 2021). Education providers aim to equip graduates with a fundamental understanding of concepts in the field to facilitate their continued development, while employers expect graduates already versed in core competencies (Amidu et al., 2018).

This misalignment of expectations and approaches is at the core of expectation gaps between the significant stakeholders of property education. The gaps between graduates' competencies and industry expectations have been widely explored in the literature.

Galuppo and Worzala (2004) emphasised the importance of communication, technological, and financial skills. Shi-Ming (2001) noted subpar levels of interpersonal, teamwork and critical thinking skills. Aliu and Aigbavboa (2021) explored leadership, critical thinking, and analytical skills, while Narcisse & de Souza (2013) found that with the building construction sector evolving in the digital age, new skills and competencies have emerged and created further skills shortages. Consequently, employers have critiqued the work-readiness of property graduates, who often require additional specialist training (Hoxley et al., 2011; Robson et al., 2015). This is further supported by recent data released by the QILT in Australia, showing that undergraduate full-time employment rates are consistently lower than national employment rates; up to 30 percentage points in 2020 (QILT, 2022a).

According to Robson (2016), students are also dissatisfied with the adequacy of training offered by universities, citing poor feedback on assessments and lack of practical components as notable issues. These findings highlight the extent of the expectation gaps and the urgent need to address these deficiencies proactively. Crucially, digital transformation in the industry has further exacerbated these gaps for modern property professionals (Abidoye et al., 2022). The results of Abidoye et al. (2022) highlighted some notable themes in the prevailing expectation gaps between graduates and education providers in Australia. While many past studies have explored the skills required by property graduates (Aliu & Aigbavboa, 2021; Avdiev, 2000; Baxter, 2007; Black & Rabianski, 2003) and the expectation gaps (Abidoye et al., 2022; Amidu et al., 2018), a notable gap

remains to organise these skills and competencies thematically. Given the extensive range of skills forming the body of knowledge for the property industry, these skill clusters are critical to highlight underlying patterns and inform efforts to holistically redesign property education for the digital age. As such, this study considered the perspectives of property employers and graduates to categorise the key skills into skill clusters, thus providing insights into the core themes underpinning graduate employability in the digital age.

Materials and Methods

This study adopted an exploratory quantitative research methodology to explore the underlying themes in the key aspects of graduate employability among Australian property employers and graduates.

Data Description

The perspectives of property employers and graduates were gathered through an online questionnaire survey designed and administered on the University of New South Wales's (UNSW) Qualtrics platform. In addition to facilitating anonymous data collection, this approach eliminated geographical constraints and increased the survey's reach to prospective respondents (Aliu & Aigbavboa, 2021; Neuman, 2014; Torres-Machí et al., 2013).

The target population for this study comprised two distinct stakeholders of property education – property employers and graduates. Regarding the property employers, an initial database of 745 prospective respondents was extracted from the Royal Institution of Chartered Surveyors (RICS) database. This dataset was then filtered to exclude employers who do not consistently employ fresh graduates. Initial emails were sent to addresses extricated from the database, some of which failed to reach individuals who probably had changed roles, closed businesses, or were no longer employing new property graduates. The invitation was estimated to have reached 654 respondents. Regarding the sample of property graduates, this study targeted graduates of UNSW's Bachelor of Construction Management and Property and Master of Property and Development within the last five years. This initial sample was refined to graduates who had recently worked in the property industry or were currently holding positions during the survey. This criterion was introduced to gather the opinions of graduates with real work experience, who are best placed to give opinions on any expectation gaps.

Initial email invitations were sent to these prospective respondents to introduce the study and assure them of the anonymity and confidentiality of their responses. The property graduates were contacted through UNSW's school administration office, while the employers were contacted through their email addresses obtained from the Royal Institution of Chartered Surveyors database. Reminders were sent to the respondents two weeks after the initial invitation email to maximise the response rates. In the end, 63 and 43 responses were received from employers and graduates, respectively. The employer survey's response rate of approximately 10% is admittedly low but reflects similar challenges for previous studies in the built environment sector, notably 3% in Warren-Myers & Cradduck (2022) and

2.9% in Poon & Brownlow (2014). After screening out incomplete responses, the final sample comprised 36 responses for each of the two groups.

These two datasets were then manually merged in Microsoft Excel to facilitate further exploratory analyses. Although minor variations were expected in the experiences of employers and graduates regarding graduate preparedness for the digital age, the core premise of the questionnaires assessed how ready graduates are for their industry roles. As such, merging these two datasets into a panel dataset generated a more extensive dataset for robust analyses. Moreover, similar studies have also merged datasets from different respondent groups and longitudinal studies to investigate underlying themes and relationships (Hefetz & Liberman, 2017). The final dataset contains 72 responses, which compares favourably with similar studies in the built environment space (Abidoye et al., 2022; Akintoye & Fitzgerald, 2000; Steinmetz et al., 2020; Warren-Myers & Cradduck, 2022). According to Ott and Longnecker (2015), sample sizes above 30 can be considered large for quantitative analyses.

The questionnaires for both respondent groups posed similar questions about background information and property graduates' preparedness for the digital age. The first section of the questionnaires requested personal information such as age, gender, highest educational qualification, and years of industry experience. Subsequent questions required the respondents to rate the importance of all 45 key skills on a 5-point Likert Scale, ranging from 1 (not important) to 5 (extremely important). Finally, two open-ended questions were included to draw out additional knowledge not expressly stated in the questionnaires.

Table 2: Profile of Property Employers

Variables		Frequency (n = 36)	Percentage (%)
Age	26–30 years	1	2.8
	31–35 years	4	11.1
	36–40 years	8	22.2
	41–45 years	4	11.1
	46–50 years	4	11.1
	51–55 years	3	8.3
	56 and above	12	33.3
Gender	Male	31	86.1
	Female	5	13.9
Industry experience	6–10 years	1	2.8
	11–15 years	6	16.7
	16–20 years	9	25
	Above 20 years	20	55.6
Education qualification	Diploma	1	2.8
	Bachelor	22	61.1
	Master	10	27.8
	Others	3	8.3
Property graduates hired each year	1–10	3	8.3
	11–50	25	69.4
	51–100	7	19.4
	Above 100	1	2.8
Property specialisations*	Property consultancy and analysis	16	22.2
	Property valuation	14	19.4
	Asset/facility management	11	15.2
	Property development	6	8.3
	Property sales, leasing, and management	4	5.6
	Others	21	29.1

Note: * denotes that respondents could select more than one option here. Hence, n is > 36.

Table 3: Profile of Property Graduates

Variables		Frequency (n = 36)	Percentage (%)
Educational qualification	Undergraduate	22	61.1
	Postgraduate	14	38.9
Age	20–25 years	13	36.1
	26–30 years	14	38.9
	31–35 years	8	22.2
	Above 35 years	1	2.8
Gender	Male	25	69.4
	Female	11	30.6
Industry experience	1 year	8	22.2
	2 years	4	11.1
	3 years	7	19.4
	4 years	2	5.6
	5 years	1	2.8
	Above 5 years	14	38.9
Property specialisations *	Construction project management	15	27.8
	Property development	7	13
	Construction	6	11.1
	Contract management	6	11.1
	Property consultancy and analysis	5	9.3
	Others	15	27.8

Note: * denotes that respondents could select more than one option here. Hence, n is > 36

Analysis Techniques

After collating the data gathered, quantitative analysis was conducted with Version 28 of the Statistical Package for Social Science (SPSS) software. This study adopted the Exploratory Factor Analysis (EFA) approach to reduce all 45 key skills, presented in Table 1, into a smaller set to reveal underlying themes and patterns in the dataset (Taherdoost et al., 2014). EFA is a multivariate analysis technique commonly used to draw out a model or theory from a relatively large set of variables (Fabrigar & Wegener, 2011; Williams et al., 2010). EFA is ideal in the absence of an existing theory specifying patterns in a set of related factors. By exploring these latent themes, EFA facilitates a deeper understanding of complex phenomena, which is invaluable in exploratory studies where the aim is to generate hypotheses and refine existing theories (Fabrigar & Wegener, 2011; Williams et al., 2010). Additionally, the unexplained variance component of EFA results highlights unexplored aspects of graduate employability in the digital age, suggesting that further research is

required (Taherdoost et al., 2014). Fabrigar and Wegener (2011) accentuated five key issues to consider when adopting EFA for statistical analysis – evaluation of the data suitability, factor extraction method, factor retention method, rotational method, and labelling.

Correlation coefficients were assessed to establish the suitability of the dataset for EFA, in line with Costello and Osborne's (2005) recommended range of 0.40 to 0.70. Although the correlation matrix showed a few coefficients higher than 0.80, this is a common and acceptable exemption for smaller sample sizes (Taherdoost et al., 2014). The correlation matrix was also significant at a 1% level, suggesting the existence of patterns and clusters in the variables (Field, 2009). The sampling adequacy was then tested with the Kaiser-Mayer Olkine (KMO) test, which yielded 0.705, well above the 0.6 threshold recommended by Hair et al. (2010). Bartlett's test of sphericity was also conducted to establish that the matrix is not an identity matrix (Williams et al., 2010). In this study, the test produced a high chi-squared value of 2336.1, which was significant at the 1% level. The results of these sampling tests are presented in Table 4.

Table 4: KMO and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.705
Bartlett's Test of Sphericity	<i>Approx. Chi-Square</i>
	<i>df</i>
	Significance

The Varimax rotational method was preferred over alternative approaches to maximise the sums of variance of the squared loadings and factor loadings on the underlying themes (Costello & Osborne, 2005; Taherdoost et al., 2014). Item communalities, ranging from 0.55 to 0.82, were also inspected to ascertain the strength of the variables in each factor cluster. Costello and Osborne (2005) opined that a communality greater than 0.40 suggests a strong relationship between the variable and the factor cluster.

Williams et al. (2010) examined the various options available in EFA for factor extraction and retention. These four methods were all considered – Total Variance Explained, Kaiser's criteria (eigenvalue > 1), Scree test, and Pattern matrix. These tests returned an initial set of nine-factor clusters, which were then screened to retain consistency. The Total Variance Explained details the cumulative percentage of variance explained by the retained factors (Hair et al., 2010). As presented in Table 5, the nine-factor clusters explained 73.373% of the total variance in the dataset. Kaiser's rule of retaining factors with an eigenvalue greater than one also validated the initial set of nine components.

Table 5: Total Variance Explained and Eigenvalues

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	
1	10.979	25.533	25.533	7.419

2	6.649	15.463	40.997	5.912
3	3.677	8.55	49.547	4.843
4	2.938	6.834	56.38	3.034
5	2.131	4.955	61.335	2.855
6	1.615	3.756	65.092	2.375
7	1.304	3.033	68.125	2.062
8	1.159	2.696	70.821	1.857
9	1.097	2.552	73.373	1.194

Extraction Method: Principal Component Analysis

The Scree Plot presented in Figure 1 was further inspected. According to Aliu and Aigbavboa (2021), the decision rule is to retain factors that occur before the break, while any factors that tail off after the break are rejected because they have eigenvalues below 1. These nine clusters were thus retained for further discussion to highlight themes in the core skills in property education.

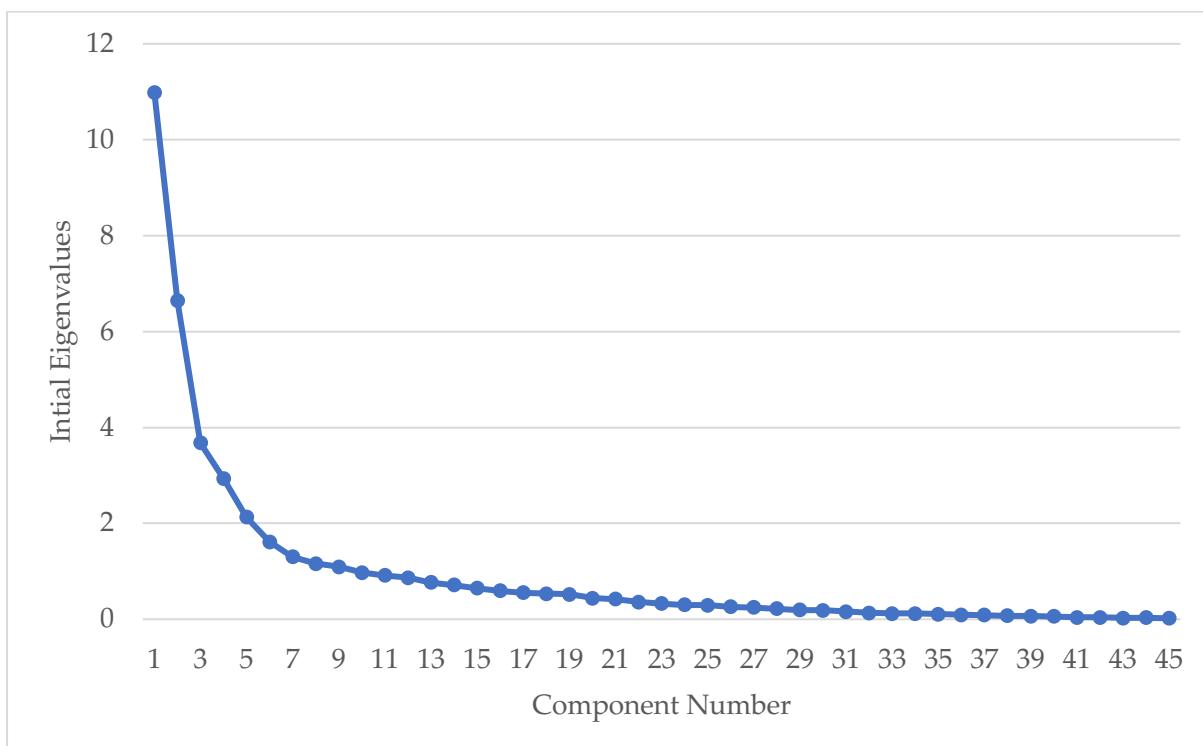


Figure 1: Scree Plot

The rotated matrix was then examined for factor loadings and to label the components resulting from the EFA. Table 6 presents the rotated matrix from which the nine-factor clusters were extracted. To prevent cross-loading and ambiguous clusters (Costello & Osborne, 2005; Fabrigar & Wegener, 2011), coefficients with an absolute value lower than 0.30 were suppressed. Following established best practices for EFA, the final three-factor clusters were also excluded from further discussions because a minimum of three items is required for model stability (Costello & Osborne, 2005). Consequently, subsequent

discussions of underlying themes and interrelationships explored the six main factor clusters underpinning the perspectives of property employers and graduates regarding graduate employability in the digital age.

Table 6: Rotated Matrix and Factor Loadings

Key skill	Component								
	1	2	3	4	5	6	7	8	9
Leadership	0.80								
Emotional intelligence	0.79								
Adaptability	0.78								
Self-confidence	0.78								
Creativity	0.72								
Ability to work independently	0.72								
Innovation	0.69								
Time management	0.67								
Ability to work in a team	0.65								
Effective written communication	0.64								
Effective oral communication	0.62								
Artificial Intelligence	0.88								
Sharing Economy	0.80								
Big Data Analysis	0.79								
Real Estate FinTech	0.77								
Blockchain	0.74								
ConTech	0.73								
Smart Building/City	0.70								
Machine Learning	0.61								
Marketing and sales	0.59								
Report writing	0.85								
Numeracy	0.81								
Problem-solving	0.76								
Negotiation	0.73								
Industry-based software	0.61								
Critical thinking	0.58								
Microsoft Office Suite	0.51								
Property valuation	0.78								
Property economics	0.74								
Property laws/regulations	0.74								
Town planning	0.74								
Professional ethics	0.73								
Customer service	0.71								
Sustainability	0.56								
Health, safety & environment management	0.64								

Finance and accounting	0.66
Investment	0.63
Feasibility study	0.54
Due diligence	0.53
Risk management	0.78
Research and analysis methods	0.77
Data management	0.52

*Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization (Rotation converged in 34 iterations)*

Results and Discussion

In examining the multifaceted aspects of graduate employability within the property sector, this study established six-factor clusters which underpin the underlying themes from the perspective of property employers and graduates. These factor clusters are presented and labelled in Table 7, encapsulating soft skills, technological skills, problem-solving and digital literacy, core property specialisations, ethical responsibility, and financial analysis and evaluation. The subsequent discussions integrate the critical aspects of property graduate employability, the intricacies surrounding these skills, and the practical implications of the underlying themes in shaping the employability landscape for diverse stakeholders.

Table 7: Core Themes Underpinning Property Graduates' Employability

Component	Graduate employability (factor clusters)	% of Variance
1	Soft skills	25.53%
2	Technological skills	15.46%
3	Problem-solving and Digital Literacy	8.55%
4	Core Property Specialisations	6.83%
5	Ethical Responsibility	4.96%
6	Financial Analysis and Evaluation	3.76%
*	Unexplained variance	34.91%

Note: This table presents labels of the six retained factor clusters related to property graduate employability in the digital age. * denotes the unexplained variance, suggesting additional aspects of graduate employability that necessitate further research.

Cluster 1: Soft Skills

The first-factor cluster, aptly labelled 'Soft skills', accounted for 25.53% of the total variance and encapsulates a myriad of essential attributes that collectively contribute to a robust capacity to address challenges within the dynamic landscape of the property sector. This factor underscores the significance of multifaceted skills crucial for navigating the complexities of contemporary professional environments, collectively forming a foundation

for success in the evolving digital age. The skills embedded within this cluster were leadership, emotional intelligence, adaptability, self-confidence, creativity, ability to work independently, innovation, time management, ability to work in a team, effective written and oral communication.

Aliu and Aigbavboa (2021) offered varying opinions on the relevance of these soft skills to employers, suggesting that employers rate graduates with these skills very highly. Innovation, creativity, adaptability, and the ability to work independently are attributes of potentially productive workers (Finch et al., 2013). Similarly, employers consider creativity and innovation as essential due to the dynamic and fluid nature of services in the digital age (Starr et al., 2021; Wilkinson et al., 2017). The ability to work independently or collaboratively reflects the agility required in a rapidly changing work environment (Aliu & Aigbavboa, 2021). Considering that recent graduates notably struggle with innovative projects due to limited project experience (Radermacher et al., 2014), this finding reinforces the need for a more project-based approach to education (Boyd, 2015). Recent surveys of graduate employers suggest an increased focus on collaborative skills and teamwork, a skill which graduate employers are least satisfied with among recent graduates (QILT, 2022b).

Time management is also a top priority for employers and a key determinant of graduates' career progression prospects, which indirectly impacts work efficiency and ability to manage workloads (Aliu & Aigbavboa, 2021; Zaheer et al., 2021). This cluster requires more attention and a renewed focus on soft skills, which are often overlooked in traditional education (Zaheer et al., 2021). Emotional intelligence also loaded highly onto this factor, suggesting its relevance to the work-readiness of property graduates. According to Matsouka and Mihail (2016), high emotional intelligence correlates to the ability of graduates to work in teams and make necessary adjustments to address challenges. Leadership skills refer to the ability of graduates to take charge of other colleagues, which impacts their growth prospects on the corporate ladder (Abidoye et al., 2022).

Notably, property employers place less emphasis on these soft skills than graduates (Abidoye et al., 2022), indicating an expectation gap between graduates and employers. Practically, this dimension emphasises the range of skills required of graduates in the property sector, which is further underscored by the dynamic nature of clients and services in the digital age (Aliu & Aigbavboa, 2021; Starr et al., 2021).

Cluster 2: Technological Skills

The second cluster, 'Technological Skills', emerged as a pivotal aspect in the contemporary landscape of the property sector, explaining 15.46% of the total variance. This cluster encompasses a spectrum of cutting-edge skills, including machine learning (ML), artificial intelligence (AI), big data analysis, blockchain, sharing economy, smart building/city, real estate FinTech, Contech (construction technology), and marketing and sales. These technological skills are designated *PropTech* and represent an ongoing shift from traditional roles to more data-oriented decisions and automation in most property professions (Baum, 2017). Abidoye et al. (2022) noted the transformative impact of technology on the property market, and digital competencies have become increasingly essential for property

professionals. There is a burgeoning body of literature exploring the critical expectation gaps emerging from this transformation, further compounding existing gaps in training (Braesemann et al., 2020; Cornish et al., 2009; Saiz, 2020; Starr et al., 2021). Juxtaposing this emergence with the sluggishness of the property sector to adopt disruptive innovations (Baum, 2020), this factor cluster underpins the need to revamp curricula to reflect the technological skills required of modern property professionals (Cornish et al., 2009; Starr et al., 2021).

Practically, the impact of this cluster on employability is profound, reflecting the growing significance of technological competencies in the role of the modern property professional. The interrelationship between these technological skills also highlights a synergistic ecosystem where proficiency in one area often complements and enhances the others (Baum, 2020; Starr et al., 2021). For instance, integrating AI and big data analysis can revolutionise decision-making processes in property investment, portfolio management, and strategic planning (Saiz, 2020; Starr et al., 2021). Similarly, blockchain technology can enhance transparency and security in property transactions, contributing to the overall efficiency of the property market (Verbeek & Lundqvist, 2021; Veuger, 2018). Proficiency in these areas enables professionals to harness data-driven insights, streamline operations, enhance decision-making processes, and offer tailored solutions to clients. Due to the wealth of information available (Baum, 2020; Starr et al., 2021), embracing these technological advancements is not only imperative for staying relevant in the industry but also presents opportunities for driving efficiency, sustainability, and growth in the evolving landscape of property management and development.

Abidoye et al. (2022) noted that the Australian property market has yet to fully embrace technology despite its growing influence, recommending that self-development programs and Continuing Professional Development (CPD) could help bridge the gap. Similarly, property employers have reported dissatisfaction with graduates' competency levels in technological skills, which limits their employability and displaces the burden of training to employers (Abidoye et al., 2022; Warren & Heng, 2005). Overall, these gaps require a holistic overhaul of graduate training and input from several stakeholders to identify the technological tools in demand by employers, revamp curricula, and equip property academics with the digital know-how to train future graduates. 'Marketing and sales' is a notable outlier in this cluster, but its inclusion could hint at growing links between technology and the practice of sales-focused professions. Future studies could explore the adoption of digital technology in these roles and any emerging gaps due to the transformation.

Cluster 3: Problem-Solving and Digital Literacy

Accounting for 8.55% of the total variance, Cluster 3 (Problem-Solving and Digital Literacy) captures seven interrelated skills: problem-solving, critical thinking, numeracy, report writing, negotiation, industry-based software, and Microsoft Office Suite. Collectively, these skills reflect the ability of property graduates to critically approach problems and navigate stakeholder engagement (Prikshat et al., 2019; Russell et al., 2007).

The impact of this cluster on employability is significant and pervasive across various professions within the property sector (Aliu & Aigbavboa, 2021; Ayodele et al., 2020; Weinstein & Worzala, 2008). Report writing skills are crucial for conveying complex information clearly and concisely in valuation reports, feasibility assessments, legal documents, and project reports. Problem-solving, critical thinking, and numeracy skills facilitate this by enhancing the property graduate's ability to critically evaluate data to make informed decisions in dynamic situations (Aliu & Aigbavboa, 2021; Matsouka & Mihail, 2016). Additionally, negotiation skills empower graduates to navigate professional relationships, resolve conflicts, and achieve mutually beneficial outcomes in diverse organisational settings, enhancing their collaborative prowess and overall employability (Succi & Canovi, 2020).

Proficiency in Microsoft Office Suite and industry-based software has become increasingly relevant in the digital age, enhancing efficiency and productivity across all aspects of property-related work (Abidoye et al., 2022; Prikshat et al., 2019). From project management to data analysis, these digital platforms are pivotal in streamlining processes and staying competitive in a technology-driven industry. By leveraging these digital tools effectively, property graduates can streamline workflows, organise information, and collaborate with colleagues, thereby enhancing their efficiency, productivity, and overall employability in today's technology-driven workplace (Cornish et al., 2009; Starr et al., 2021).

The need for real-life exposure through active learning and industry placement programs becomes evident when considering the practical implications of these integrated software applications. Property graduates must experience scenarios that develop proficiency in the Microsoft Suite, which is now ubiquitous in most professional settings. These skills are essential for successful day-to-day operations and building meaningful long-term relationships with clients, colleagues, and stakeholders. Industry placement programs and project-based course delivery could offer invaluable opportunities for property students to apply and refine their skills in real-world scenarios, fostering a seamless transition from the academic environment to various industry roles (Borg & Scott-Young, 2020; Boyd, 2015; Thomas & Busby, 2003).

Cluster 4: Core Property Specialisations

The fourth cluster, denoted as 'Core Property Specialisations', explained 6.83% of the total variance and comprised the following skills: property valuation, property laws/regulations, town planning and property economics. This fundamental set of skills is critical across various professions and subsectors in the property industry, necessitating an appreciable competency level from prospective employees. The interrelationship between these skills highlights their complementary nature, forming a cohesive foundation for professionals engaged in diverse roles within the industry (Black & Rabianski, 2003; Callanan & McCarthy, 2003). Property valuation, for instance, is intricately connected to property economics, as it involves assessing the economic factors that influence property values. Similarly, knowledge of property laws and regulations is crucial for navigating legal complexities in property transactions and development projects, while town planning

ensures a strategic and sustainable approach to property development (Ayodele et al., 2020; Callanan & McCarthy, 2003).

Regardless of their specific roles, possessing expertise in property valuation, laws and regulations, town planning, and property economics is essential for property professionals (Galuppo & Worzala, 2004). Property valuation skills are vital for real estate agents, developers, and investors, enabling them to make informed decisions about property values and investments (Ayodele et al., 2020; Black & Rabianski, 2003; Hoxley et al., 2011).

Understanding property laws and regulations is crucial for legal professionals and those involved in property transactions, ensuring compliance to mitigate legal risks (Blake & Susilawati, 2009; Hoxley et al., 2011). Town planning skills are integral for urban planners and developers, contributing to sustainable and well-designed communities (Callanan & McCarthy, 2003). In an industry where sound economic principles, legal compliance, and thoughtful planning are paramount, proficiency in the core property specialisations ensures that professionals are well-rounded and equipped to navigate challenges, make informed decisions, and contribute to the overall growth and sustainability of the property industry.

Cluster 5: Ethical Responsibility

Cluster 5, Ethical Responsibility, underpins property professionals' responsibility to clients, the professional body, and the environment. This factor cluster accounted for 4.96% of the total variance, encompassing professional ethics, customer service, data management and sustainability. The central theme of the cluster is linked to graduates' abilities to recognise the potential impact of projects on other stakeholders and the environment. Ethical conduct is undoubtedly a critical aspect of employability (Dziubaniuk & Nyholm, 2020; Weinstein & Worzala, 2008), one that has become increasingly critical with the boom in data on clients and businesses.

Russell et al. (2007) noted the tendency to focus solely on the economic implication of property decisions over ethical considerations, which are often treated as an afterthought. Weinstein and Worzala (2008) recommended that a comprehensive curriculum must include social and ethical responsibility to clients and the environment. According to Abidoye et al. (2022), property graduates' employers also emphasise professional ethics and sustainability. Further, Dziubaniuk and Nyholm (2020) admonished universities to expose students to ethical and sustainability issues as early as possible to help mould them into socially responsible professionals. Privacy and confidentiality issues are also closely linked to ethical aspects of data management, especially when dealing with clients' sensitive data. Although more data than ever is now accessible in this era of big data and analytics (Daniel, 2016), this ease of access must be accompanied by requisite safeguards for property professionals to mitigate the risks associated with data breaches (Mani et al., 2015).

Despite an implied inclusion of these skills in most property programs, the ongoing discourse on corporate social responsibility and sustainability necessitates their integration into training future property graduates (Savage, 2005; Savage et al., 2010). With the property industry increasingly confronting its role in global carbon emissions and exploring innovative solutions to ensure a sustainable future, Warren-Myers (2022) raised specific

questions about how well sustainability is captured in the property valuation profession. The implicit responsibility towards colleagues, clients, and the environment requires a holistic and conscientious approach to decision-making. Corporate social responsibility initiatives, such as green building certifications and community development projects, must become integral to the ethical fabric of the property industry (Fuerst & McAllister, 2011; Leskinen et al., 2020).

Cluster 6: Financial Analysis and Evaluation

Cluster 6, designated 'Financial Analysis and Evaluation', explained 3.76% of the total variance. Finance and accounting, investment, feasibility study, and due diligence were loaded onto this cluster.

Finance and accounting serve as the foundational pillars, providing the necessary framework for understanding financial statements, assessing performance, and managing resources effectively (Hoxley et al., 2011). As a central component of this cluster, investment encompasses the strategic allocation of resources to maximise returns and minimise risks, requiring careful analysis of market trends and risk assessment (Manning & Epley, 2006). Although finance, accounting, and investment skills could be standalone core competencies in some professions, collectively, they reflect the property graduate's financial literacy level across several disciplines (Ayodele et al., 2020; Manning & Epley, 2006).

Due diligence involves a comprehensive examination and verification process, ensuring that professionals thoroughly assess risks, opportunities, and compliance factors before making critical decisions relating to projects, businesses, and clients (Epley, 2004; Gibler et al., 2002; Manning & Epley, 2006). Feasibility study skills are closely aligned with due diligence, emphasising the ability to assess proposed projects' viability and potential success.

Professionals in the property sector must conduct thorough feasibility assessments to evaluate a project's financial, legal, and operational aspects, helping to mitigate risks (Black & Rabianski, 2003). These tasks demand a high level of discretion and could significantly boost company prospects (Epley, 2004). Collectively, these four factors form an interconnected framework for conducting thorough financial analysis and evaluation, essential for making informed decisions and achieving sustainable financial outcomes in property professions.

Conclusions

The longstanding global discourse on the preparedness of property graduates for industry roles suggests significant gaps in their competency levels, indicating a disconnect between the training offered by education providers and the skills required by prospective employers. With these gaps potentially widening in the digital age, it is paramount to advance solutions that ensure the successful transition of future property graduates. As such, to better understand the expectation gaps and establish a common ground between the two core stakeholders (employers and graduates), this study explored key aspects of the employability discourse by identifying underlying themes and skill clusters affecting property graduates' employability in Australia. The study contributes to the literature by establishing critical relationships between these skills to provide a roadmap for stakeholders

to reconsider property education. The discussions also explored the practical implications of these themes to spur further discourse on property graduates' employability, particularly as industry roles become more dynamic in the digital age.

Despite difficulties defining a body of knowledge for the property sector, recent studies have largely agreed on the universality of the 45 core technical, interpersonal, soft, and generic skills required for diverse property roles. The perspectives of property employers and graduates were gathered through online questionnaire surveys, following which EFA was adopted to identify underlying themes and patterns in the key aspects of property graduate employability in the digital age. Six-factor clusters were retained following these analyses and subsequent screening.

These factor clusters explored diverse aspects of property graduates' employability: soft skills, technological skills, problem-solving and digital literacy, core property specialisations, ethical responsibility, and financial analysis and evaluation. Collectively, these factor clusters highlight the broad knowledge base required of modern property professionals. The most critical skillset, soft skills, underscores the multifaceted attributes of a well-rounded property professional, including innovation, adaptability, and emotional intelligence. Technological skills accentuate the increasing importance of cutting-edge competencies such as AI, ML, and real estate FinTech in navigating the dynamic digital landscape. Core property specialisations emphasise the foundational knowledge required in most roles, such as economics, law, town planning, and valuation. Ethical responsibility recognises the obligation of the property professional to clients, professional bodies, and environmental sustainability. Financial analysis and evaluation are also critical aspects of effective decision-making, necessitating a rethink of project-based course delivery and industry experience for property graduates.

In tandem with the burgeoning literature on graduate employability in the digital age, these themes underpin the urgent need to restructure existing curricula to incorporate the skills required by property employers. In particular, the extant literature has repeatedly called for improved project-based course delivery to provide students with hands-on experience with industry software and ease their eventual transition. Additionally, technological skills have become critical in this digital age, without which future property professionals are at increasing risk of becoming redundant. Practically, these expectation gaps also highlight the need for a collaborative approach to property education by the core stakeholders: employers' insights are required to determine the most in-demand skills, professional bodies must convey which standards are required for a more sustainable profession, academics need to upskill in newer digital competencies, education providers must develop up-to-date curricula, and the students' viewpoints on satisfaction and focus areas. This comprehensive understanding of themes provides valuable insights for educational institutions, employers, and policymakers, guiding the development of programs that cultivate the diverse skill set essential for success in the ever-evolving landscape of the property industry.

A few noteworthy limitations must be acknowledged when interpreting the findings of this study. One notable constraint is the relatively low sample size, which may restrict the generalisability of the results to a broader population within the property industry. This

study relied on a specific sample of property employers and property graduates of UNSW. While their insights offer valuable perspectives, caution should be exercised when extrapolating and generalising these findings. Moreover, future studies could consider the perspectives of additional stakeholders, such as educators, policymakers, and industry experts, to attain a more comprehensive and holistic framework. Including a broader range of opinions in subsequent research endeavours will provide a more nuanced understanding of the multifaceted nature of graduate employability within the property sector. Despite these limitations, the present study lays a foundation for further exploration, underscoring the importance of incorporating diverse perspectives to construct a more comprehensive and applicable framework for addressing the evolving dynamics of employability in the property industry.

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